

RECOMMENDATIONS TO IMPLEMENTATION – AN OPERATORS PERSPECTIVE OF MANAGING THE IMPLEMENTATION PROCESS

Peter Newman
BHP Australia Coal Pty Ltd - Crinum Mine

SUMMARY

The Warden's Inquiry process plays an essential role in focusing the attention of the underground coal mining industry on the improvement of risk management following any disaster involving loss of life. Unfortunately, this process requires a disaster for the industry as a whole to reassess its performance. The handing down of recommendations from the Warden's Inquiry into the Moura disaster in 1994 has resulted in the familiar flurry of activity as the industry, government and unions hurry to implement the recommendations. But what next? By necessity, these bodies impose new systems onto sometimes reluctant operators who may find their operating styles limited by this prescription. Consequently, the ownership of the systems in time falls by the way, replaced with grudging compliance.

In implementing the Warden's recommendations it is imperative that Operators, albeit Mineworkers, Deputies, Undermanagers, Managers, or Chief Executive Officers own the systems and changes to the business. Without this ownership the Warden's Inquiry process will continue to be one that the industry calls on periodically to keep it focused.

This paper discusses a management model being used to implement the recommendations from the Warden's Inquiry into the 1994 Moura disaster. The objective of the model is to learn from past experiences, and rather than obtain grudging compliance, achieve shared ownership of an enabling process.

INTRODUCTION

The Queensland underground coal industry has not had a good record of learning from its mistakes and implementing in full recommendations handed down by various Warden's Inquiries. In the past 24 years there have been six major underground incidents resulting in major loss of life and mines. From these incidents 82 recommendations have been handed down. Some have been implemented, but many others are still to be actioned. Have we forgotten our past and paid for it in the future? Why does the industry find it so difficult to implement the changes recommended by experts following a disaster.

Of the recommendations handed down some were actioned in prescriptive legislation, others looking for industry to take ownership of the issues, such as one of the recommendations from the 1972 Box Flat explosion. This recommended 'that provision be made for the rapid sealing of districts and the mine'. Twenty four years latter the same issue is addressed in the Moura No 2 recommendations. What model must the industry adopt to ensure that these recommendations from the 1994 disaster at Moura are implemented and the same question is not asked twenty four years on. Grudging compliance through prescriptive legislation should not be the answer. But what is? The Warden in 1996 handed down recommendations which provide an enabling framework that gives the industry the opportunity to adopt and implement the recommendations, thereby achieving ownership rather than grudging compliance through prescriptive legislation.

THE WARDEN'S INQUIRY

The Warden in his preamble to the recommendations outline the concern and frustration felt by him and no doubt his predecessors in the implementation process. He stated, "There has also consistently been the conduct of seminars and symposia as a response to these disasters, accompanied by the production of publications about the hazards of underground coal mining revisited in the course of those inquiries. These measures have, however, clearly not been effective in the longer term with the industry displaying as it does a capacity to loose sight of the lessons of the past and to not maintain an adequate knowledge base among key personnel". He then goes on to highlight, "it is with grave concern that the following recommendations have been drafted - a concern that there must be fundamental and permanent change in the current approaches and attitudes in the coal industry".

In making these statements the Warden appears to recognise the immaturity of this industry in its behaviour. However, he has through the establishment of industry Task Groups provided a framework for the industry to go forward and change the approaches taken and attitudes of the industry.

In his report the Warden handed down twenty one recommendations, if our performance of the past is to be repeated, only ten of these will be fully implemented. A shocking indictment of our industry.

IMPLEMENTATION MODEL

On 7th August 1994, just over two years ago many Mine Managers, Under Managers, Deputies will have no doubt reflected on their performance at their own mine and asked the question, could it happen here? But for how long after that fateful Sunday would the same question be asked of themselves? Unfortunately, too soon the heightened awareness dwindles being replaced with complacency.

Setting up a new mine at the time of the disaster certainly focused attention on the systems, hardware and training that was being implemented at Crinum. In the ensuing months as the Warden's Inquiry commenced and details of the incident emerged we reassessed our systems. As the inquiry continued all of the mine officials, be them statutory or otherwise, were afforded the opportunity to sit in at the inquiry. This was the start of our implementation process. It gave all those people who had a high level of responsibility at the mine for implementing systems an insight into the inquiry process. Fifty officials gained a better understanding of the consequences of systems failing and the detail their peers were exposed to in questioning. This certainly focused their attention on the importance of ensuring a high level of awareness in controlling the hazards in their workplace.

After one and a half years of deliberation the warden handed down his findings in January 1996. During this period the industry continued operations, waiting for the recommendations. Apart from the Inspectorate highlighting pertinent issues arising from the inquiry for consideration by Managers, little else disseminated during the proceedings.

In handing down his recommendations the Warden not only listed, as his predecessors had before, the outcomes required of the industry, but also provided a process to achieve these outcomes. In this, unlike previous Inquiries, he gave the industry the opportunity to take ownership of the process and also provide a process that would be sustainable in the long term through the various Management Plans.

The implementation model identified by the Warden was one in which all interested stakeholders could develop guidelines, and these guidelines could then be used by the Government, through the Chief Inspector of Coal Mines, to either introduce prescriptive or enabling legislation dependent on the perceived level of risk. Through this process the stakeholders can develop ownership as they develop the guidelines that they will be responsible for implementing in the future.

IMPLEMENTATION PROCESS

The handing down of the Warden's recommendations in January 1996 saw the start of a rigorous process of implementation by the industry. Resources from all sectors of the industry were made available to participate in the industry Task Groups. The industry was focusing on implementation with the familiar scurry of activity seen following previous Inquiries. At Crinum Mine, as at no doubt other operations, a project group was established to implement the recommendations. A philosophy was adopted that rather than wait for the industry task groups to come up with their guidelines, a process that may take another six to twelve months, over two years after the disaster, each of the recommendations would be implemented at Crinum using the best knowledge that was available onsite and using external experts. When the industry guidelines were formulated, the standards at Crinum would be adjusted to suit in areas where higher standards were being suggested.

The Project Group at Crinum consisted of the Registered Mine Manger, Ventilation Engineer and Mine Planning Engineer who were dedicated to the task of implementation with no other responsibilities during this implementation phase. These individuals were selected as they would ultimately have the responsibility, on an ongoing basis, to action the implementation and therefore develop ownership of the process.

The implementation process involved seven steps. These were Preparation, Risk Assessment, Management Plans, Escape Strategy, Training and Auditing.

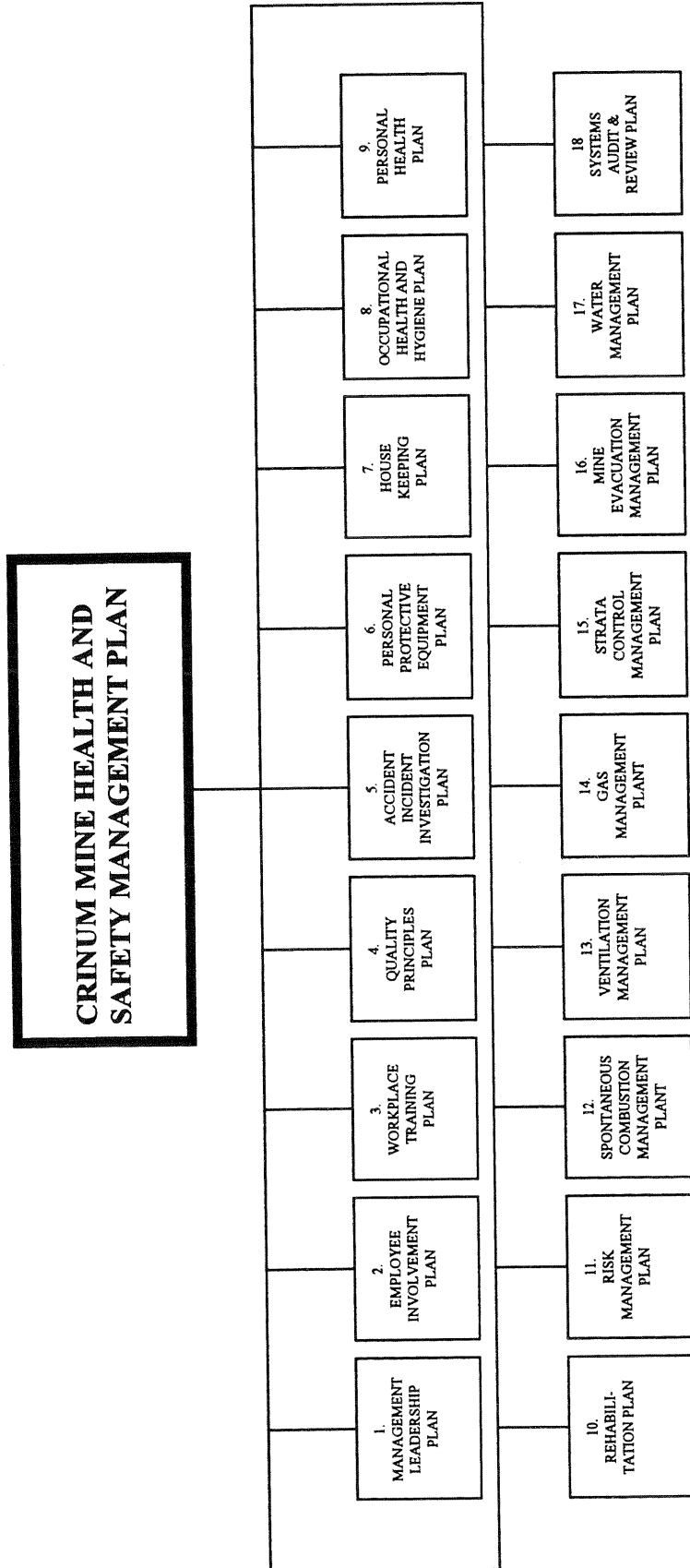
PREPARATION

The existing Health and Safety Plan at Crinum consisted of a number of Management Plans dealing with various health and safety issues such as Workplace Training and Risk Management. The Management Plans developed as part of the implementation process were integrated into the overall Health and Safety Plan (Refer Figure 1). This provided the framework for the ongoing maintenance of the management plans to ensure that the initial flurry of activity is sustained in the long term.

In committing the human resources to the implementation project there was a recognition that the work would not be effectively completed if treated as another operational problem. It had to be done as a defined project and managed as such. Although this had the risk of losing ownership of the operational staff, the process and project team selection negated this risk. It was important that the Management Plans which form the cornerstone of the implementation, were not developed by an external party, to be handed over only to comply with the requirements to have such plans. They need to be developed by minesite personnel who are going to own and implement them in the future.

Communication to the various stakeholders in the implementation process was an important part of the project. Monthly status reports were presented to the workforce giving feedback on the various issues being addressed. The other stakeholders included the Government, State Check Inspectors and Corporate Bodies, were also

FIGURE 1



updated regularly and involved in the process. The successful implementation of the recommendations is important if the stakeholders are to have confidence that Management is able to control the principal hazards in underground coal mines. The most important stakeholders being the workforce who are underground everyday.

RISK ASSESSMENT

The risk assessment methodology was adopted for the identification of the principal hazards and controls required to manage these hazards. In total eight risk assessments were undertaken in the areas of Spontaneous Combustion, Ventilation, Water Management, Strata Control, Gas Management, Seal Design, Withdrawal of Persons, Mine Evacuation and Surface Facilities. The risk assessments were facilitated by an independent facilitator. This allowed the subject experts to concentrate on the issue at hand. This was important also in managing any bias in the process.

The correct selection of a risk assessment team was fundamental to an effective outcome. The team consisted of all interested stakeholders, there being minesite and external participants. The minesite participants were taken from a vertical slice through the workforce, with a member of the project team participating in each risk assessment. The other minesite participants included Mineworkers responsible for implementation underground, Section Co-ordinators, Miner's Officers and Production or Engineering Co-ordinators dependant on the subject matter. In each assessment a Departmental Manager also participated. Typically there were seven minesite personal involved.

The external participants included recognised subject experts and external stakeholders such as the Inspectorate and District Check Inspectors. These external participants served two purposes, firstly they brought particular technical experience to the team, but secondly and as important they ensured that the minesite personnel were challenged and did not become blinkered in their views. In total eighty one people were involved in the risk assessment process, with over 250 manshifts committed to the project.

The risk assessments did not only focus on present and future operational processes, but took the process back to the inception of the mine, with the definition of the deposit to ensure that past practices did not in themselves present a potential loss scenario to the current operations. This made the process very onerous yet very thorough. As an example in the spontaneous combustion assessment thirty seven events were identified, from the evaluation of the deposit, through to the connection of longwall goafs. In these thirty seven events, 323 potential loss scenarios were identified requiring a control to be actioned for each scenario. Although the Spontaneous Combustion assessment was perhaps the most rigorous of the subjects each issue was dealt with in as much depth.

The risk assessment process has been covered in many other papers and will not be described here. However, the key components to the success of the process at Crinum is worthy of note. A well defined scoping statement, must be developed before the assessment starts. This ensures that the focus is maintained on the specific subject rather than the group heading off on a tangent. Selection of a recognised 'expert' team, having credibility in the workplace is critical. It is fruitless to form a team made up of people that the operation can afford to release for the day because they will have little impact on the operation during their absence. Finally, the generation of a working document at the end of the risk assessment, that defines new controls to be implemented, by whom and by when, is an important management tool to ensure the process is sustainable with time.

MANAGEMENT PLANS

Much debate has occurred as to what defines a Management Plan and the Chief Inspector of Coal Mines has Task Group One addressing this issue. However, in line with our philosophy to commence the implementation process in February 1996, a framework was developed in which the various management plans at Crinum would be developed. This framework proposed to provide a management plan that was user friendly in the first instance, yet captured the key elements required to manage the principal hazards. To this end each of the five management plans being developed have the same structure which covers the following key elements.

- Objectives
- Scope
- Limitations and assumptions
- Mine characteristics
- Principal hazards and controls
- Roles and responsibilities
- Review and audit process
- Action response plans

The Management Plans which form the basis of a prevention strategy, are further developed at three levels to ensure they remain user friendly and become a reference document rather than one that gathers dust. The three levels are Mine Management, Mine Officials, and Mineworkers Management Plans. The Mine Management Plan remains the reference plan with relevant information gathered in the subordinate plans.

The model used to develop the Management Plans is shown in figure 2. It is based on the risk assessment which identifies the existing and new controls. These controls are then formulated into the Management Plan as a procedure or hardware description. The roles and responsibilities of the various mine officials are then defined. The next stage of the process is training of the workforce in these Management Plans.

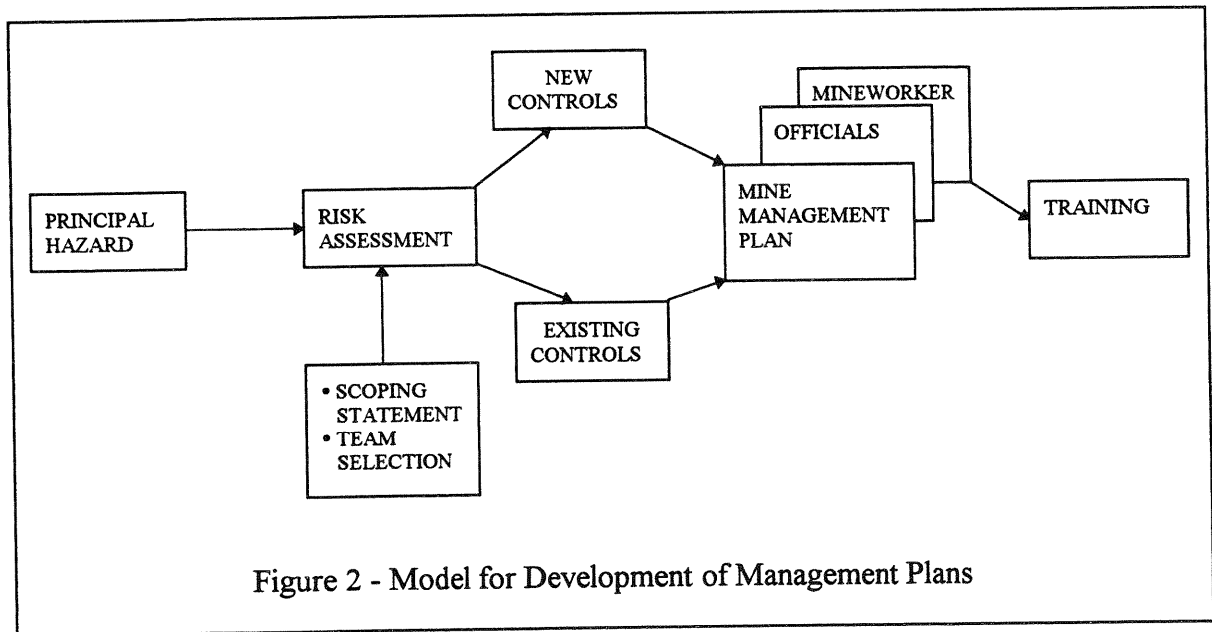


Figure 2 - Model for Development of Management Plans

ESCAPE STRATEGY

The escape strategy at Crinum is not indifferent to that of many underground mines in Queensland and New South Wales. It was based on telephone, radio or DAC communication systems, Filter Self Rescuers, defined egress routes with the second egress located in the return airway with a lifeline from the gate panel to pit bottom. The route was travelled by Mineworkers at least once a year or when their place of work changed.

The risk assessment undertaken on the current escape strategy highlighted the need for change. The process by which these changes are being implemented again involved both internal and external experts. People who had escaped from the Moura incident, working at Crinum, have been invaluable in giving their first hand experience of escape conditions when dealing with dense smoke and dust. When you cannot see in front of your face, the issues of communication, signage, modes of escape and human issues of survival become very pertinent.

Southern Mines Rescue have been utilised to undertake scientific assessments of oxygen consumption rates across a cross section of the workforce. This work involved exiting the mine with and without oxygen self rescuers, monitoring heart rates, consumption rates and fitness levels. This information will be used in the selection of oxygen units stored underground to optimise the frequency of storage stations. With belt worn units ergonomic studies have been commissioned to ascertain any long term consequences of wearing a heavier and bigger unit. The work aimed at addressing the ergonomic issues associated with a change in the escape strategy.

An evaluation of the means of communicating to all persons working underground notifying them of the need to evacuate the mine and by which route, has been completed. In a simulated emergency evacuation in 1995 from the declaration of the emergency it was some twelve minutes until all persons were contacted underground. This is in a mine with limited workings at this stage of the mines development.

The requirement to have a means of immediately contacting all personnel was established, with current technology that involves some additional weight to be carried on the belt. In the process of establishing a suitable escape strategy, there is no clear easy answer, and at Crinum there is more work to be done in this area. However, at this stage of the implementation process an oxygen based escape strategy with personal communication capability and a egress plan which puts the additional second egress out of the return into a segregated intake is in the strategy being implemented. The return airway being the last means of escape.

TRAINING

The development of Management Plans, procedures, new systems, hardware and responsibilities requires a training strategy to ensure the successful implementation of the recommendations at the working face. Without this the ability of management to manage the change in the workplace is made more difficult. The very simplest of tasks, that of communicating the existence of a hazard requires certain skills, those of identification and communication.

The implementation of the recommendations will not be complete until training has been completed in all the facets of the implementation process and the stakeholders are operating to those standards developed as a minimum by industry or as developed at the minesite. The resources currently being committed to the development of the guidelines will need to be committed in kind again for training, if the recommendations are to be effectively implemented.

The strategy adopted at Crinum has been one that prioritises the principal hazards. To this end the workforce is currently being trained in Spontaneous combustion awareness through a four one hour program developed to be site specific for the Crinum operation. Communication training has commenced for Mine Officials and the whole workforce have been recently trained in workplace hazard identification awareness. The challenge now is to continue this training through the various elements of the recommendations.

AUDITING

The final stage of the implementation process at Crinum is the auditing of the introduced systems. External audits have been completed on the Mine Plan and Ventilation system with respect to the associated spontaneous combustion hazards. The gas monitoring system and protocols have also been audited by external experts. These audits were aimed at assessing the effectiveness of the existing controls in place. The key to the success of the implementation process will lie in the strength of the systems when audited both internally and externally in the future.

There is a need in the development of management plans to include audit schedules. It is only through these audits that the stakeholders within the industry will obtain the confidence that the industry is mature enough to manage the principal hazards, ensure the growth of the industry, and gain stakeholders confidence that the Queensland underground coal industry can be a safe one.

CONCLUSION

We must never forget the past, otherwise it will have a habit of repeating itself. This is the unfortunate situation the underground coal industry in Queensland finds itself. The management of the implementation process from any Warden's Inquiry must be owned by the Mine Operators, Mine Management and Workforce alike. Ownership solely by the Warden, Inspectorate and Research Bodies is not acceptable. The imposition of prescriptive legislation is not the solution to achieving ownership. The management model outlined in this paper can provide the framework to achieve full implementation of the recommendations. A framework in which the stakeholders are involved, management systems are defined, auditable and understandable, and where expectations are defined in the form of roles and responsibilities.

At the operator level it should no longer be acceptable to procrastinate while the Chief Inspector sets the standards and then challenge their validity. Operators must have confidence in their minesite experts to develop site specific standards and be open to external scrutiny. In doing this, recommendations handed down by the Warden cannot be treated as another operational problem to be dealt with alongside all the other day to day problems and then find their way into the 'too hard basket'. This has been the fate of previous recommendations. Operators must ask the question what resources would have been used if the incident had occurred at their mine and utilise some of those resources to implement recommendations.

The implementation process has been ongoing at Crinum for five months and is expected to continue through 1996. The systems developed will form part of the overall Health and Safety Management Plan. In doing so the implementation process will become a part of the way we do business and form key elements in the management process as the mine moves forward. The objective through this process is to instil confidence in our stakeholders that we are serious about not letting history repeat itself.