

MATTER OF INTERPRETATION

SEAN BRADY, the author of the Brady Review, discusses how the Review's findings have been received and the challenge that lies ahead.

The findings of the Brady Review have been discussed by a wide spectrum of the mining industry, from frontline miners and safety specialists, to the unions, industry bodies and the regulator.

While there has been much agreement, along with the inevitable but healthy disagreement, some common themes have emerged. These help to illustrate how the mining industry views itself, and also highlight some of the key safety challenges ahead.

The first theme relates to the perceptions of what causes incidents and fatalities. Throughout the discussions a wide range of views were expressed as to what causes fatalities and what needs to be done to prevent them. While these views were genuinely and sincerely held there were often disagreements among individuals, as well as differing views about what caused the 47 fatalities examined in this review. This was understandable – only scarce information had been previously released publicly regarding these fatalities.

A good starting place, therefore, when examining the findings of this review is to begin with Appendix B of the review report. This section sets out the specific details of the majority of the 47 fatalities examined, and often challenges readers to reassess what they believe causes incidents. For example, in many cases human error was not the sole cause of the incident. Typically, a wide range of causal factors combined to result in a fatality, such as a lack of training, and/or inadequate supervision, or a failure or absence of controls.

ADMINISTRATIVE CONTROLS

The second theme relates to the industry's use of administrative controls. The review found that in the aftermath of incidents the controls put in place to prevent recurrence were predominantly administrative in nature. For example, for serious accidents – accidents that require the injured be admitted to hospital for treatment – the majority of controls put in place were administrative. In other words, a hazard that had a demonstrated ability to require a person be admitted to hospital was responded to with a control that

was among the least effective in the hierarchy.

Few in the industry expressed surprise at this finding – this was simply how the industry worked. Managing incidents with procedures and administrative controls appears to be the norm for many companies.

Overcoming this view and making a determined, and industry wide, step towards the use of harder controls – and the implementation and checking of these controls – will be a critical step if the industry wants to reduce the number of incidents.

COMPLEX SYSTEMS

The final theme, somewhat related to the use of administrative controls, is the apparent Newtonian approach to safety. Safety plans are developed and implemented, with the view that if an incident occurs, someone must not have complied with the plan. This approach enshrines the use of procedures and administrative controls and assumes mining operations are Newtonian systems.

Newtonian systems are systems that are the sum of their parts: these systems can be broken into individual components, and once these individual components are understood, the overall behaviour of the system can also be understood. This thinking reduces understanding to components and assumes a direct relationship between cause and effect – that large effects are typically due to large causes and vice-versa.

But mining is not a Newtonian system, it's a complex system, and complex systems exhibit behaviour not because of individual components, but because of interactions between these components. These interactions can result in unanticipated and non-linear behaviour that was not designed into the system – the system can behave in a manner that is more than the sum of its parts. They are also adaptive – they reorganise themselves naturally, and they drift – what is true today may no longer be true tomorrow.

For example, take the level of actual safety on a mine site. How safe the site will be in practice will emerge as

a result of the interaction between many components, such as the safety plan used on the site, production pressures, workplace culture, and outside influences, such as the commodity price. Safety procedures will certainly have been designed into the system (as components), but the actual practical safety on site cannot be evaluated by examining these safety components in isolation. It can only be ascertained by observing the interaction that emerges between the safety components and the other components of the system.

ALLOWING FOR DRIFT

A safety plan is necessary and appropriate, but believing it will not interact and be influenced by other components in the system, such as production pressures, is flawed. The actual behaviour of the system will drift, and the safety plan needs to be constantly examined and amended in the light of this drift. A failure to do so can result in the system not providing the protection it was designed to – the administrative controls that were once thought effective, may no longer be so.

From discussions, many in the industry intuitively understand this, but the belief that the procedure-driven, Newtonian approach to managing safety is effective needs to be challenged if the industry is to progress to safer outcomes.

In summary, some of the key challenges facing the mining industry are:

- to ensure there is an understanding of the actual causes of incidents and fatalities;
- to re-assess the reliance on administrative controls; and
- to treat the mining industry as a complex system.

While these challenges are significant, they also bring an opportunity for real change. ■



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