REVIEW: Use of Critical Controls within Mining

Consolidation of relevant findings from the use of Enterprise Risk Management across all sectors since 2014.

Satarla Risk Management, drafted by Dr Sarah Gordon.

31st July 2019

Critical Control Management is an accepted approach to manage safety risks within mining [e.g. 1, 2]. It has been actively supported by the International Council on Mining and Metals (ICMM) since the publication of its Health and safety critical control management guide published in April 2015 [1] in an effort to support its members in improving their health and safety performance. Many largescale mining companies have therefore adopted or enhanced their approach to CCM, often with an initial focus on specific "single fatality risks". Despite this, the first six months of 2019 have seen a worsening in safety trends for many large mining and metals companies.

The following paper outlines five reasons for why Critical Control Management may not be contributing to the improvements in health and safety performance anticipated by the ICMM members in 2015. These reasons are based on significant experience gained from working within both mining and other sectors in the field of enterprise-wide integrated risk management.

1) "Critical" controls are only appropriate for the management of some Health and Safety risks and do not always translate into other types of risk management.

Many organisations have now adopted an integrated, enterprise-wide approach to risk management. This is often called Enterprise Risk Management (ERM) and refers to the full array of risk management across an organisation, incorporating everything from strategic risk management, to health, safety, production, legal, reputation, etc. risk management.

ERM is considered good practice as it enables an organisation to view it's risks as an interconnected web, incorporating the full extended enterprise of causes and consequences of risks [3]. Many Boards of Directors, investors and regulators now expect a company to be using enterprise-wide risk management.

ERM defines risk as being *"the effect of uncertainty on objectives…. The effects can be positive and/or negative"* ISO31000:2018. This definition for risk is different to that often used in Safety and Health risk management which normally only focuses on the loss which may result as a result of a risk being realised. Confusion can therefore reign between ERM and H&S risk management teams before they can align on how they each view what a risk is and how they might be able to work together to manage risks holistically.

Similarly, the definition used by many companies for critical controls is only focused on Health and Safety controls, targeting those controls deemed to be more effective – ie. The engineering controls. The purpose of labelling a control as "critical" is often carried out in order to trigger the level of verification required to ensure it is in place. However, for functions such as Marketing, those controls which are human-based may in fact require more verification than those which are automated. This focus on the criticality of controls therefore has the potential to cause confusion.

As a result, those organisations who are attempting to make use of ERM often experience tension between the ERM risk management team and the Health and Safety team as the use of the term 'critical controls' leads to confusion and frustration outside of H&S risk management.

[Solution: Add on Health and Safety to CCM = Health and Safety Critical Control Management – means that your marketing team doesn't get confused and frustrated].

Fig 1. Integrated risk management brings together all other forms of risk management.

Solution:

1) *Only categorise controls if absolutely necessary.*
2) *Ensure you deliver on all of your controls, be they critical or not.*

2) Identifying the real controls

A recent study of some of the world's most impressive risk bowties resulting in the following numbers:

- Of 120 controls listed for the unwanted event of fire leading to potential explosion in a coal mine.
- 20 had been listed as critical
- However of the 120, only 60 were really controls (inline with the ICMM definition for a control)
- Of those 60 real controls, only 5 were listed as an original critical control.

What does this mean? It means that we aren't very good at identifying an *act, object or system which may prevent or mitigate a potential threat, or enhance a potential opportunity* [adapted from ICMM to be inline with ISO31000:2018 definition for risk]. Instead we list all the 'things' that we do to manage a risk, many of which are all part of the same control.

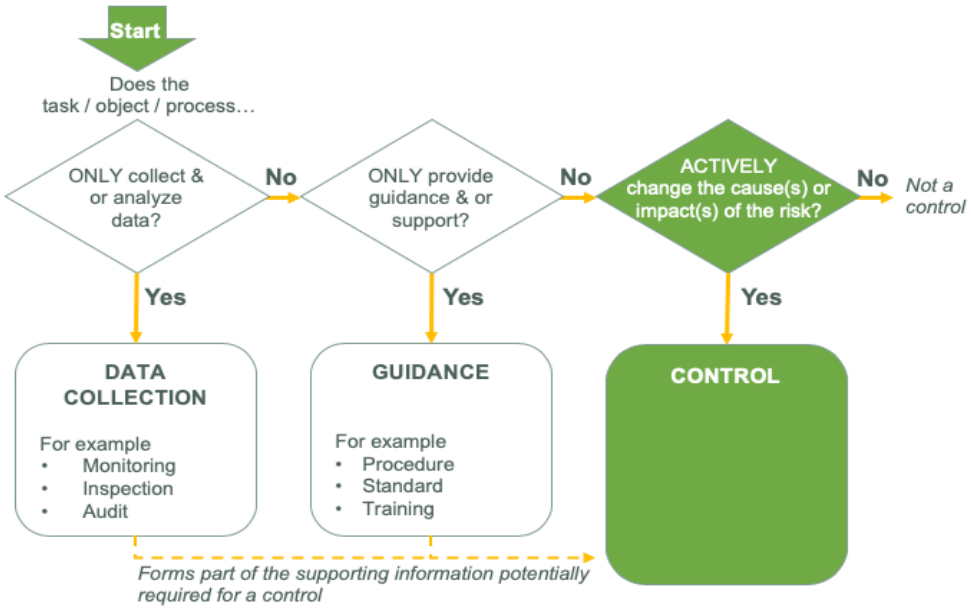

Fig. 2. Simple flow chart for identifying and defining controls

If an act, object or system is listed as a control, it should still be implemented, be it deemed critical or not. However, many organisations who have adopted CCM have often done so to the detriment of the non-critical controls. While all focus of verification is on the critical controls, the non-critical controls have slid beneath the radar and gently off the table (to mix metaphors). As a result, those controls which are still important to the management of the risk are often not undertaken.

In a recent study undertaken of a large mining company, of the 10 sites reviewed, all admitted to actively not implementing controls which were not deemed to be critical.

3) **Verification of controls has, in many cases become a tick-box (and very time consuming) exercise.**

In an effort to automate the verification of controls, be it through technology or task-based scheduling systems such as SAP, these activities to showcase that we must be managing our risks because we are undertaking verification activities. However, verification does not equate to the management of our risks.

For example, if we are just verifiying that we have piezometers present in a tailings dam, that is great to know, but gives us very little indication of if we are managing the potential failure of that dam. Instead, we need to know that the data being gathered by those piezometers is leading to the correct and up to date decisions being made, and where appropriate, action being taken to manage that tailings facility.

A recent study showed that 80,000 work task orders were being generated every 6 months for critical control verification for a mine site which only employed 700 people. The miracle is that 50% of them were being completed….

Also, our internal risk management processes often don't entirely align with regulations within the jurisdictions in which we operate. As a result, we often get duplicate verification activities being required of the front line, much to their frustration and disbelief.

The simple solution here is to:

1) *Ensure that the controls we are verifying are real controls*

2) *Design the verification to focus on the effectiveness of the controls (not the presence of the data collection points)*
3) *Align verification activities with those required by regulators and only add on additional verification activities where required.*

4) Limitation to material risks rather than all risks identified for the organisation.

Every organisation determines what "material" means to it in a different way. Most organisations incorporate safety, health, environment, social, reputation, legal, production and financial as categories through which they can determine what material is. The key mistake that is made is that this level of materiality is only for the company as a whole rather than scaled down to each operation. As a result, risks that are "material" to an operation are not deemed to be "material" to the organisation as a whole… which leads to confusion as to whether a risk really needs to be managed or not…. And if it does, if it needs to follow the huge paper trail required by the corporate centre.

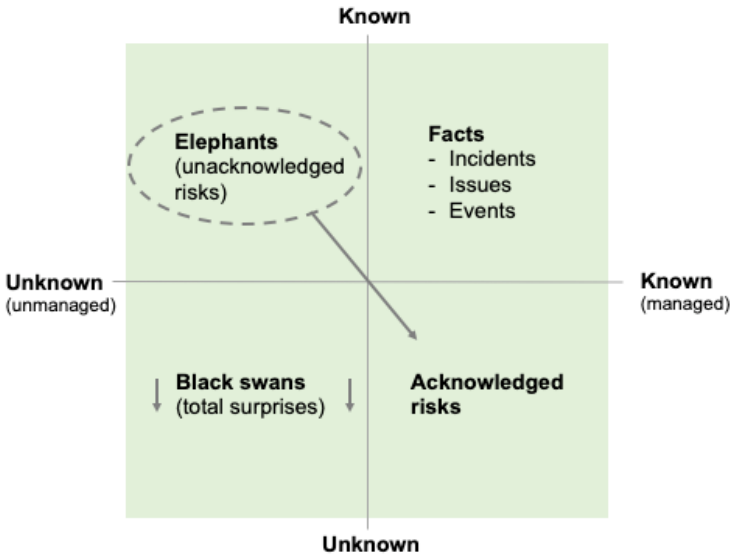

Fig. 3. Ensuring we acknowledge all of our risks – only impose categorisation of our risks AFTER we have acknowledged them. Otherwise we will be surprised by many of our risks materialising.

Solutions:

1) *Be open to collating all ideas for risks in your risk register – remove the barriers to someone suggesting their ideas.*
2) *Once this data is collected THEN categorise it.*

5) Complexity and detail required by the Critical Control Management process.

"Can you help us work out what our real Critical Controls are?" is a request consultants often receive when working in risk management within the mining sector. The motivation behind this question is two-fold:

a) If an act, object or system is deemed to be a critical control, it leads to a huge volume of paperwork and activity – therefore we want to make sure we really are focusing on the right controls as we all like to save time and money.
b) Relative to other forms of risk and safety management, the process outlined by the ICMM to define a critical control is relatively complex and therefore difficult to understand. It also does not translate very well into disciplines outside of health and safety. Therefore unless you have

had significant training in mining health and safety critical control focused risk management, you can be forgiven for getting confused!

While the above is fantastic for consultants, it does not work well for mining and metals companies who are trying to operate in a responsible yet cost efficient manner.

Furthermore, for risk management to provide real value to a business, it needs to be as dynamic as possible - anticipating changes in the risk profile and enabling teams to proactively manage their risks, be they safety, health, environmental, legal, operational, financial etc. The CCM process is not dynamic, often requiring significant levels of signoff when implemented within organisations, thereby stalling the risk management process as a whole.

Solution:

1) *Keep risk management systems as simple as possible*
2) *Those providing guidance make it really clear where that advice can be best applied.*

SOLUTIONS:

a) Get rid of the term "critical" and move to "control management" ensuring that the real controls are identified. IF there needs to be further categorisation of controls, that is fine, however the name of the discipline / risk that that control pertains should be placed on the front e.g. *Safety and Health Critical Control Management.*

b) Use a simple, central, enterprise-wide risk management process that can be applied across the business. This can be made more complex where required by e.g. safety risk management, however enables integrated risk management and therefore the comparison of a financial risk with a safety risk. Through this, the appetite and tolerance for risk within the organisation an be determined, and leaders held to account.

c) Use auditing best practice to focus the verification of control activities on the most important aspects, rather than verifying everything to do with a control. This makes the verification more efficient, effective and often lower cost.

d) If materiality needs to be determined (ideally we manage all risks where appropriate), align it to the context of that operation or team rather than the organisation as a whole. Materiality should scale depending on the context in which you are operating.

Satarla is a risk management consultancy founded by a team who met working in the mining industry in 2014. Since then, the expanded team have had the opportunity to work in risk management across a myriad of different sectors.