

A Safety Turn Around

Simon Hanrahan (SRK Consulting) and Stephen McLaughlin (Safety Services LLC)

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Abstract

A safety case study is presented involving two major contracts: a 1000 m shaft recovery and rehabilitation, and the development of a drainage gallery in a large open pit operation. In the early stages of the contracts, there were a number of incidents that created tension between the owner and contractor, which resulted in the contractor being placed on a final warning with potential termination. As a result of this, a focused safety recovery plan as a 'last chance' was initiated.

Over a period of two years, the engagement and subsequent performance of the contractor was turned around, steadily working to set it up for success, such that in one of the contract work areas, a record of One Year LTI (lost time injury-free) was achieved. The journey involved the owner and contractor teams working cohesively to educate all parties in the safety requirements and, most importantly, providing the context and understanding for certain requirements being put in place. Early on in the process, it was recognised that the Owner's Team did not fully understand the safety requirements, and so was not able to lead the way for the contractor effectively. This hurdle took a good deal of effort to resolve. The journey to rectify the situation was supported and followed up by focused engagement with the Project Team, which generated progressive improvement in what was a very challenging environment.

It is noteworthy that the contractor turnaround in safety performance was so significant that realising their existing systems needed improvement, they ultimately exported some of the site-based systems to other contract sites.

Introduction

This case study relates to two underground contracts taking place within an existing large-scale open pit operation in North America. One contract involved the establishment of a drainage gallery (to dewater the highwall) from within the open pit to support ongoing operations and to realise steeper slope design criteria. Development required trackless mining of a horizontal twin portal drainage gallery.

A second contract involved the recovery and re-establishment of a previously capped shaft to a depth of approximately 1000 m, as part of a longer term prefeasibility study. The shaft required an initial caisson type sinking through a consolidated waste dump to expose the previously capped shaft and subsequent opening and rehabilitation. In addition, a combined sinking and permanent head frame and winders were installed to support formal recovery once the shaft cap had been removed.

These two scopes of work were tendered to a number of potential mining contractors and awarded through a standard commercial tendering process. The contracts were awarded on a schedule of rates basis, and an Owner's Team project management delivery style was put in place to manage and direct the works.

The owner's existing safety requirements were of a Tier 1 level (the level of safety operation expected of a major resource company). No change management evaluation was done ahead of the commencement of the underground project and given the longstanding open pit operation and strong safety culture, it was expected that the incoming underground Project Team would perform at an equivalent level with immediate effect.

Shortly after work commenced on both projects, safety incidents occurred that alerted mine management to the fact that the underground project safety performance was quickly deteriorating and was not aligned with the existing operational standards.

Throughout this paper reference to two groups involved in the project is made. For clarity, the following definitions apply:

- Project Team – both the Owner's Team and the Contractor Team
- Owner's Team – the Owner Team only, consisting of management and field supervision and responsible for the overall project performance. This team reported to Executive Management.

The Situation

Safety incidents occurred early on in both projects. Examples of the type of incidents were:

- lost time injury:
 - slip and fall
- medical treatment injury:

- fall of ground incidents in lateral development
- working under unsupported ground
- manual handling
- significant near miss:
 - loose material falling to shaft bottom
 - incorrect procedural behaviour while travelling in a shaft sinking conveyance.

This had not been expected by corporate management and in addition, documenting and filing reports of the injury details to the regulatory agency was also required, which then generated an increase in regulatory compliance inspections.

It is important to note that at this stage, the focus was on the contractor as being entirely responsible for the poor safety outcomes.

Executive management's reaction to the incidents was firm. The Owner's Team (largely externally recruited for these specific projects) engaged with contractor management in a bid to improve safety performance and in doing so, a strong emphasis was put on the contractor to address the issues and hence rapidly improve safety performance. The general understanding was that the contractor had signed up to the safety requirements and expectations; hence could and would deliver on these. The Owner's Team was very much of the mindset that all they should be doing is to instruct the contractor to rectify their performance with a high expectation that the contractor would take it upon themselves to improve their safety performance. Internally, discussions regarding the contractor's safety performance and whether in fact, the contractor should be retained, were held. The outcome of this resulted in the contractor effectively receiving a final warning and a threat of contract termination, should safety performance not improve to the required level in short order.

Analysis

Seek first to understand, then to be understood

On initial review by the new incoming project leader (transferred to the project from within the owner's global operations), it was identified that a fundamental problem existed in the Owner's Team not understanding the safety requirements, resulting in a critical skills deficit for this team. The Owner's Team was criticising contractor management for poor performance without themselves having first examined how the contract had been organised and how they themselves were not providing adequate leadership. The reality of the situation, when critically reviewed, was that the Owner's Team was guilty of assuming that their previous externally gained safety cultures would be sufficient, while casting all blame on the contractor for poor but highly visible project safety performance. Based on this finding, the focus was then to address the Owner's Team's shortcomings so that there could be no question regarding their ability to provide knowledgeable and balanced leadership.

Of particular note was that the existing open pit operation did not have any recent underground construction experience and only limited capability. With few exceptions, a fresh (external to the company) Owner's Team had been established to manage the project and provide both project and construction management assurance for the owner.

These issues had not been initially recognised by Executive Management and any implications it would have on the contract safety performance. With hindsight, the project had in fact been set up for a poor safety outcome.

Contractor Selection

A typical contractor procurement selection process had been followed. This was led and adjudicated by the appointed Owner's Team. This had involved the normal process of tender submissions, contractor interviews and site inspections so as to be able to assess current contractor performance. A final contract award was based on an assessment which considered all of the above criteria.

During the commercial tendering process, the safety requirements were provided to the bidding contractors, together with expected compliance requirements. The safety requirements included site-specific standards and procedures, as well as corporate global safety standards. This document formed part of the formal executed contract and as can be expected, was extensive and voluminous in nature.

When awarding the contract, a key assumption by the Owner's Team was that the contractor understood and would abide by all the safety requirements as issued in support of the commercial tender, adjudication and contract award process. In turn, it was expected that the Owner's Team had sufficient knowledge of these requirements so that adequate safety leadership support could be applied. In hindsight it had not been

identified at the time of contractor evaluation that the preferred contractor had not previously worked at the necessary level, despite this being a requirement.

As a result of the initial incidents and on a much deeper investigation, it became apparent that the Owner's Team had assumed that the contractor fully understood all of the requirements, as these had formed a basis of the contract and as such, would be able to seamlessly execute the requirements. However, critically, the Owner's Team themselves did not have an adequate understanding of the context and detail of all these requirements in the contract. Hence, they were unable to provide adequate leadership to fill any voids in contractor understanding and application that would enable achievement of the required level of safety performance.

Allied to the Owner's Team lack of understanding, it was clear that the contractor had taken the mandated safety requirements at face value and assumed that their normal safety culture would be adequate at the new project sites.

These findings were backed up by a broad ranging review of both the Owner's Team and Contractor's understanding of the safety requirements, leadership, behaviour ability and systems that had been implemented.

The respective approaches (as evidenced in a review) by both parties were shown to be a key error for all parties. The contractor's existing safety culture and Owner Team's assumed knowledge were well short of that required to satisfactorily operate at the required level within the existing open pit operation. In short, this had not been identified during contractor tender evaluation process.

Leadership

At the time of escalating incidents, the Owner's Team leadership had very quickly levelled blame on the contractor management and team. The Owner's Team leadership effectively excused themselves from responsibility which resulted in a polarised Project Team and unnecessary animosity at a critical time when a unified front was required to address the issues around safety. There were clear shortcomings in the capabilities of both the Owner Team and the contractor. By way of example, the Owner's Team did not have adequate knowledge and understanding of the mandated safety requirements to lead and support the contractor to achieve the required level of safety performance. Similarly, the contractor management team had not been exposed to the required level of operational safety and hence the breadth and depth of requirements.

Misalignment

The poor safety compliance to the safety standards across the Project Team compared to the existing open pit organisation with a very mature safety culture, resulted in serious tension stemming from misaligned expectations. Given the nature of carrying out underground projects within a large- scale open pit operation, it was very much like working in a fishbowl for the Project Team. There was nowhere to hide and any sins were very quickly exposed by a long established and somewhat critical audience. This in turn increased the pressure on the Project Team to quickly rectify the issues.

Recovery

Given the ultimatum issued to the contractor (and by default the Project Team), the Owner Team's leadership embarked on a journey to address and steadily improve safety performance across both project sites. Given what had been exposed as key challenges, it was decided to implement a phased safety recovery campaign to improve safety performance by:

- progressively developing a shared and aligned understanding of the safety requirements
- achieving a sustainable level of compliance in the field.

This requirement would be across all Project Team members and activities – with the aim to significantly improve safety performance.

The champions identified to lead this journey were initially the recently appointed project leader and the safety manager; however, once the journey matured, ultimate success was very much a result of efforts by the whole Project Team. This made for a very pleasing team result, particularly in the face of intense scrutiny from the existing open pit operation generated by the initial poor performance.

Phase 1 – owner team knowledge

The Owner's Team consisted of a management level and field supervisors. With limited exception, this team had not been sourced from within the existing operation, but rather had been externally recruited specifically for this project. As such, the members of the team each brought their own safety experience and culture, and an expectation that, because the contractor had signed up to a contract that included all of the safety requisites, the contractor's compliance would be automatic. With increased pressure due to the safety incidents occurring, the Owner's Team very much regarded these as being the contractor's fault and that they could simply instruct the contractor to fix it. However, the reality of the situation was that, having made a recommendation to appoint the contractor, the Owner's Team was not justified in standing back and apportioning the blame.

It was obvious in hindsight that the Owner's Team had made a number of incorrect assumptions and incomplete or inadequate assessments during the contractor adjudication process. At the time, these errors proved to be difficult to acknowledge by the Owner's Team. In their eyes, they had conducted a more than adequate contractor selection process and as such could simply hold the contractor to account.

On examination, it became apparent that the Owner's Team had not fully understood the contractual safety requirements. Without a detailed knowledge of the safety requirements, the Owner's Team were not able to coach the contractor on how to improve; they could only effectively react by issuing instructions.

Together, the newly appointed project leader and existing safety manager then set about providing the Owner's Team with an understanding of the safety requirements. This consisted of holding focused discussions to provide the Owner's Team with the context for key standards and the requirements for compliance. The aim was for the Owner's Team to have the full background knowledge for them to be able to effectively coach, lead and enforce safety compliance across the project. A good example of this was an initial full understanding of the isolation process and in turn being able to properly educate the contractor in its use and effectively ensure compliance.

Phase 2 – contractor education

In parallel with Phase 1, a similar exercise was carried out with the contractor. This engagement started with the contractor management team alone and, as with the Owner Team, aimed to empower the contractor management team with a full suite of knowledge on the standards, and in particular, how they should be applied. As with Phase 1, focused discussions were held with the contractor management team to walk them through all the requirements until an agreed understanding was reached.

In support of this phase, a formal monthly safety meeting was mandated. In keeping with the focus, only safety matters were discussed, and at each monthly meeting, one safety-related focal point was introduced or reinforced. The idea of introducing a single focal item each month allowed a manageable focus to be maintained, so that the team were not overwhelmed. Of note, as time went on, there was continued buy-in to this approach and at no stage did the contractor show any unwillingness to engage.

Phase 3 – reinforcement and success

Once both sides had been educated, it was then a process of reinforcement. By this stage, the project leader and safety manager had the support of the Project Team leadership, where personnel were now significantly more knowledgeable in terms of the safety requirements. The reinforcement consisted of on-the-job safety engagements (more casual) and safety interactions (more formal) during field visits, and formal investigation of all incidents/accidents. This was supported by ongoing leadership interaction to reinforce the accountability for safety performance.

As can happen in these situations, there was personnel fallout due to some parties not wanting to actively take on the required role model level of leadership. This occurred in an instance involving senior personnel; however, the team moved on to achieve significant safety milestones.

Throughout this phased engagement, no high powered/externally driven safety initiative was used; only direct leadership engagement by the new project leader and safety manager to interact with the affected parties. Through being able to utilise previous experience gained at other owner group operations, the engagement was successful and achieved the required outcome – to educate, gain compliance and achieve required (and better) levels of safety performance. What started as a top-down process successfully became a whole of team engagement and one that all participants could take pride in. It should be recognised that for a number of people involved, this had required a significant personal turnaround in behaviour.

Learnings

In the process of addressing the initial requirements for intervention and the subsequent journey, a number of learnings became apparent.

Management expectations – in hindsight it was clear that site Executive Management had not carried out a rigorous change management process to identify the risk of being able to safely execute the underground contracts. The large scale and nature of the mature existing open pit operation created an expectation of assumed safety performance achievement and did not consider the risks in taking on significantly different underground projects with a comparatively lower safety skill base.

Project implementation planning – implementation planning had not sufficiently considered the Owner's Team personnel requirements in terms of suitable experience and cultural fit within a very mature operation and an existing embedded safety culture. The Owner's Team (with the main exception of a newly appointed project leader subsequent to project initiation) was made up to a large degree by personnel who were new to the operation and therefore had limited exposure to the corporate safety culture. A significant shortcoming initially was that the Owner's Team did not have the level of understanding, hence knowledge, to lead and enforce safety compliance well. Without exception, it pays to first look internally to check that all is in order before laying blame externally.

Contractor selection – it should not be assumed that once a contract is in place and formally executed, all requirements will have been automatically understood and hence complied with once the work is underway. As became apparent on initial investigation, the Owner's Team had assumed that because contract documents (including safety requirements) had been issued, the bidder had, by default, fully understood the safety requirements. During the contractor adjudication process carried out by the Owner's Team, they should have tested this presumption in order to ensure that there was a full and aligned understanding of the requirements. This needs to be robust so that on either side, there can be no excuses, misunderstandings or misaligned expectations. With the benefit of hindsight, it was obvious that there was a large degree of accountability on the owner for a less than complete adjudication process.

Engagement – the project leadership team took responsibility and the existing (open pit) operation/ business had limited involvement, other than high expectations that the problems regarding the contractor performance would be addressed one way or another. Initially, the fact that there was a real issue had to be communicated and the source of the problem needed to be determined once it was understood where the points of leverage were. The engagement with the Owner's Team and contractor occurred in parallel. The process started from the top down, but successfully became a whole of team engagement and very pleasingly, gained contractor management's full support.

Leadership – to initiate a robust, sustainable safety culture takes leadership and an initial top- down approach until there can be a broader buy-in across the team. In this instance, a key aspect to leadership was to first educate the teams, ie provide context and reasoning for the safety standards. Following that, at a steady and manageable pace, the use and compliance to standards needed to be applied and reinforced by the leadership team. A top-down approach was then gradually replaced by meaningful engagement across the whole team to buy in to and work together towards achieving a common goal. It should be noted that while some personnel changes were made in the Owner Team, none were required in the Contractor Team.

Contractor support – once a successful turnaround was being achieved, the contractor sought to implement some of the project/mine site safety systems (seen as an improvement to their own) elsewhere within their group at other contract sites – this was very symbolic of the contractor seeing value in taking ownership for the safety requirements. Based on a much improved level of support, the ongoing journey at site became much easier and workplace relations also improved.

Conclusions

From a very poor safety performance start on two underground projects, the team performance was turned around through a process of identifying key stumbling blocks and then initiating a methodical recovery process that ultimately led to sustainable improvements.

While a thorough contractor selection process was carried out, the predominantly externally sourced Owner's Team did not have earned experience for the required standard of work within the existing open pit operation. As such the Owner's Team unknowingly set the contractor projects off to a poor safety start. Allied to this issue was the oversight that the contractor had not previously worked to the required level previously.

A significant outcome was demonstrated in the shaft rehabilitation team, which had no significant injury-related accidents during the remaining 84 weeks of the project, allowing them to achieve in excess of one year without a lost time injury. The drainage gallery team had three additional injury accidents during their 80 weeks to project completion; however, these injuries were much less severe than the previous incidents.

Key supporting enablers to the process were the education of the whole Project Team, so that everyone operated on a similar level of knowledge regarding safety requirements, and contractor support.

Of note was that the team achieved this performance turnaround without external assistance and without high powered safety programs or engagements. The basis of the turnaround was:

- an initial top-down leadership focus
- honest identification of shortcomings
- realignment of the Owner Team as a priority
- contractor buy-in
- personnel change out
- systematic education and reinforcement of safety culture and behaviour.

The contractor did not object to any of the initiatives at any stage throughout this process, which was significant contributor to the achievement of such a meaningful improvement in safety performance.