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Moving from contractor to owner operator: Impact on safety culture; a case study

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Abstract

Purpose –The research study investigated whether a change in staffing contractual arrangements, specific training in hazard identification, mentoring of supervisors and the introduction of a robust safety system could improve the organisations safety culture. How safety conditions change under contracted out labour compared to direct labour and the influence that contracting out has on organisational safety culture is explored.

Design/methodology/approach – The study used a case study methodology to detail how the change occurred over a six month period in 2011. As part of the analysis a model of the change process and push-pull factors is offered.

Findings – As a result of the change all areas saw some improvement. Work-related injury statistics dropped significantly, supervisors were clear of their roles, actively monitoring their crews to ensure they worked in a safer manner than before, and staff were actively addressing work-place hazards. With the safety system in place the organisation should be deemed compliant and diligent by the state auditing authorities. This study has also shown that using contractor workers together with in-house workers that are managed under different safety regimes is problematic. The problems don't occur due to the contractor's safety systems being less robust than the parent company's or that contract workers are themselves less safe; it is the added complexity of managing multiple safety regimes and the lack of trust of the robustness of each system that create conflict.

Research limitations/implications – The paper reports on the change process of one mining organisation in Western Australia as a case study from a managerial sample and is thereby limited.

Practical implications – This study demonstrates the difficulties in changing safety culture in an underground mining organisation. The paper argues the need for specialised training in identifying hazards by the staff, the mentoring of supervisory staff and the adoption of a robust safety system to support improved safety culture.

Originality/value – There is little research conducted in the resources sector researching changes in human resource supply and OHS management, in particular moving from contracted labour to hiring in-house. This case provides an insight into how a change in staffing hiring arrangements together with specific safety initiatives has a positive impact on safety performance.

Keywords: Organisational change, Occupational Health and Safety, safety culture, underground mining, change agents, contractor staffing arrangements, human resource supply, OHS management, safety compliance.

Introduction

Using the case of an underground mining operation in Western Australia this paper explores safety culture change. The research study underpinning this paper sought to understand whether a change in staffing contractual arrangements, specialised training in hazard identification, mentoring of supervisors and the introduction of a robust safety system could improve the organisations safety culture. Of specific interest in the paper is a discussion on the influence that using contracted labour as opposed to in-house personnel has on the organisational safety culture and subsequent performance. Hence the study mapped in detail the change from using a mix of contractor staff and in-house staff by the organisation to wholly employing in-house staff. The study also sought to determine whether specific training of staff in work-place hazard identification, one-on-one mentoring of supervisory staff and the introduction of a robust safety system would lead to a reduction of work-related injury. This article explores these issues and provides a model of the change process and the push-pull factors organisations of this kind are faced with. The paper begins with a review of the change literature before specifically narrowing down to the influence on organisational safety culture when using contracted and in-house staff.

CHANGE IN ORGANISATIONS

Change in organisations can be a difficult, emotional and lengthy process that requires skilful negotiations between managers and their employees. This study is no exception. The change process often divides the participants into two groups: the change agents (managers) and the change recipients (employees) who engage in reciprocal sensemaking throughout. Change agents seek to determine strategies to facilitate the change process; whereas the change recipient endeavours to determine how the change will directly affect them (Gioia, Thomas, Clark & Chittipeddi, 1994). Studies investigating change processes (Berman & McLaughlin,

1975; Beer, Eisenstatt & Spector, 1993) highlight the critical need for processes of 'mutual adaptation'.

Ford, Ford, and D'Amelio (2008) argue that resistance to the change process may be an interpretation made by change agents or that their own actions or inactions may have contributed to change recipient's unwillingness to change their behaviour. They describe three sides to the change 'resistance story' by change agents. First; it may be viewed as a self-serving label given by change agents as a reaction by recipients resisting change. Second; the change agents own behaviour can promote resistance, for example the breaking of trust (Cobb, Wooten & Folger, 1995; Tomlinson, Dineen & Lewicki, 2004), personal relationships (Pfeffer, 1994), and incongruent expectations of how the change should occur (Van de Ven & Sun, 2011). Third; the resistance to change may be a *positive* contribution to the change process (Knowles & Lin, 2004). Caldwell (2003) asserts that the interactions that occur between different change agents within the organisation act as inhibitors to the change process or as Van de Ven and Sun (2011) describe as change model breakdowns.

This study supports the second point described by Ford, et al (2008) and the work of Caldwell (2003) in that change agents vary from person to person in organisations. Inter personal skills and management style can affect the success of change initiatives. For this paper, the change process is reviewed according to Van de Ven and Sun's (2011) discussion of the differences in perceptions of change agents of how the change should occur according to their individual mental models of change. They explain that due to the differences of individuals, their experiences both personal and at work, and the intricacies of their roles and responsibilities, change agents and participants have different interpretations and mental models of the change process (Van de Ven, Polley, Garud, & Venkataraman, 1999). They

argue that participants use these divergent perspectives to support the change or undermine and suppress the efforts of change agents.

In order to counter resistance to change Parish, Cadwaller and Busch (2006) suggest that there is a belief that change recipients can change without disruption to their work flows and that change agents should consider the effect on their employees. They state further that without the commitment of employees to the change process behaviours will remain the same. Dvir, Kass and Shamir (2004) maintain that working with change recipients in forming a vision in which they all share supports behavioural organisational change. It is these personal relationships between change agent and recipient that are crucial to affecting lasting change (Pfeffer, 1994). Johnson, Parasuraman, Futrell and Black (1990) found that employees who have supportive managers are more committed to their organisations and Ford, et al (2008) argue that a trusting relationship between change agents and recipients further supports organisational change. The change process for the underground mine relied on the use of a Safety Consultant to create a link between Management, Supervisors and the contracted and in-house mining employees. Management were particularly concerned that the change process could affect the trusting relationship that they had with their current employees. Where the changes were viewed with hostility the mine manager was able to deflect possible confrontations to the consultant. This allowed the personal relationships to remain positive between managers and employees throughout the process.

Contract labour versus direct labour

This paper focuses on the change process for this organisation in the light of safety performance. The success of any culture change is often determined by the level of commitment or the value that managers place on the change initiative and their actions as change agents (Bahn, 2009). In order to support a change in processes for safety culture

improvement, employees need to trust in their managers and supervisors decisions. Trust or distrust between managers, supervisors, contracted workers and in-house workers was identified as a key predictor of safety performance in UK off-shore gas workers (Conchie & Donald, 2006). Distrust between in-house workers and contractors is exacerbated when each group of employees is regulated under differing safety regimes as was the case with the organisation investigated for this study.

The organisation, that was the focus of this study, made the move from using contracted staff to wholly in-house staff. In recent years, there has been a discussion within the literature about the blurring of health and safety management for contracted labour by the host organisation by Mayhew and Quinlan (1997); Underhill (2002); Johnstone and Quinlan (2006); and James, Johnstone, Quinlan, & Walters, (2007). These studies cited several cases of host organisations attempting to shift responsibility back to the contracted firm rather than take on that role themselves. Johnstone and Quinlan (2006) point to the blurring of OHS responsibilities, precarious employment conditions and the transfer of human resource management functions to contractor firms. It was this blurring of responsibility for managing safety on site that prompted the move to employing only in-house staff for the organisation under study. They indicated difficulties in managing and administering the two safety regimes on their site that covered the contracted staff and their in-house staff. This was a particular issue for the supervisors and shift bosses who prior to the change had to manage under different expectations. Responsibility was blurred, incidents were increasing and authority challenged.

Based on the previous empirical research changes to the safety processes for the underground mine were determined with the aim to improve the organisational safety culture. A safety

management system was introduced to produce safe work procedures (SWPs) and job safety analyses (JSAs), site specific safety inductions were revised and updated, and employee's certificates of competency were revisited and reissued under the company banner. Professional development training in hazard identification and the subsequent management of those hazards was provided by the safety consultant to all employees. In addition, the Safety Consultant worked closely with the Shift Supervisors to provide coaching in management and leadership skills in an effort to lift the safety practices through proactive auditing and identification of areas requiring improvement.

RESEARCH METHOD

A critical realist perspective (Sayer, 1992) informed the study. The "realist asserts that organisations are real. They have form, structures, boundaries, purposes and goals, resources, and members whose behaviours result from structured relations among them" (Dubin, 1982:372). Sayer (1992) defines organisational structures as sets of internally related objects and mechanisms as ways of acting. Objects are internally linked to the structure and their identity depends on their relationship with the other components of the structure. Regulations are structures within organisations; safe work practice is the mechanism and action of those in the workplace. Actions are mediated by the structures of regulation, training, and safety culture maturity. This was a qualitative study for which the data collected were conceptualised and reduced, 'elaborating categories in terms of their properties and dimensions, and relating through a series of prepositional statements' (Strauss & Corbin, 1998:12) or coding. This process allowed for the emergence of key sensitising concepts from the data (McConnell, 2002) and thus alerted the researcher to possible avenues for future investigation (Clarke, 1997). The analysis of the data taps into the strengths of qualitative research (Eisenhardt, 1989; Eisenhardt & Greabner, 2007; Yin, 2003) to understand how organisations make and adapt to change.

The research questions for the study were:

1. How does changing the employment arrangements of staff impact on safety culture?
2. Does specific safety training, mentoring of supervisors and the use of safety systems result in reduced work-related injuries?

The sample for the study was limited to the Underground Mine Manager who was interviewed by telephone three times during the change process: at the beginning of the study, at the end of the change process and half way through; and the safety consultant was interviewed every week during the process. Work-related injury statistics were collected and tracked from July 2010 to September 2011. It was not possible to interview employees for this study due to funding restraints.

FINDINGS

In February 2011 the decision was made by the Board of an underground mining operation in Western Australia (WA) to move from employing contracted staff at their site to only employ in-house staff. The reasoning behind this change in staffing arrangements was due to a rising trend in work-related injury and equipment damage incidents. At this time they had staff from two different contractors as well as their own, managed under two different safety regimes. They had a total of 77 employees, 54 of which were contractors working for the company and 23 direct employees. Their plan was to directly hire these contractor workers and this required them to re-apply for their positions to the mining company. About half of the contractors were hired directly by the company and the remaining half filled by new employees. To this end part of the change process was to employ the best contractors and to weed out those who were underperforming. In May 2011, a Safety Consultant was contracted to facilitate and manage the change process. From the perspective of managing occupational health and safety (OHS) several processes were required so that the mine was compliant

including: ensuring that there were adequate safe work procedures in place to cover the employee's tasks, capturing their specific work tasks within the site inductions, and re-issuing competency tickets and licences. The change process was to be completed by 1st August 2011; however the required documentation such as Safe Work Procedures (SWPs) and Job Hazard Analyses (JSAs) were not completed until the end of October 2011 and thus the project over ran by 10 weeks.

Beginning the change

The safety consultant was intensively engaged over twenty four weeks to complete the process. Table 1 details the tasks and significant outcomes as they were occurred.

Insert table 1 here

In the first week a telephone interview was conducted with the Underground Mine Manager (UMM) to ascertain his aspirations and expectations of the change process. He explained the reason behind the change from hiring contractor labour to having all workers on the mine directly employed by the company:

> *"The reason we wanted to go owner operator is that the contractor staff because they were from a labour hire company didn't really want to accept responsibility for their people even though they were employed by them and using their equipment, so it made it very hard for the Shift Supervisors because they* [contractor] *weren't taking ownership of the contracted workforce".*

The UMM defended the introduction to a new safety management system:

> *"With the safety system introduction because the workforce was mainly supplied by the contractor we agreed to use their safety management system and procedures and everything else. It was a pretty good system, overall it was ok. With moving to the new system it's a system I've used before and one I like and it gets the employee involvement and they have ownership of the procedures. It's fully auditable and compliant and the thing I like the most is that it has specific task observations conducted on a regular basis".*

He explained the philosophy behind the change process:

> *"Every mine goes through various stages where everything is going ok, people get to a complacency level and then everything starts to drop off. I think that's pretty natural with human behaviour. When we went through and had a look at our incidents a lot of them were just stupid little incidents that shouldn't have happened. It's basic awareness, basic hazard recognition".*

The UMM explained the issues around managing and identifying hazardous situations within the workplace and the significant skills and training that are required for these tasks to be conducted properly:

> *"Most organisations who go through this change start off with Job Safety Analysis training. But to do a JSA you need to know how to identify a hazard and how to manage that hazard. Also much of this training is done on the surface [in the classroom] but no one ever goes into the workplace with them. So if you train them on the surface, that's where it stays. That is an important part of the process for me to get the consultant to go with the guys underground and point out the hazards with them".*

Individual coaching with the Supervisors of each shift was a priority in the change process:

> *"I also want the consultant to spend time with the Supervisors. If the supervisors aren't questioning and the supervisors aren't driving, then the whole battle is lost. You win or lose on the quality of the supervision".*

The UMM was asked to summarise what he wanted to achieve in the change process by the 1st August 2011:

> *"By the August 1st the thing I'd like to achieve the most, that's technical the start of the new contract and would be the day of a full {company} workforce. It'll be the first day of a more focussed underground workforce. The ownership will be a lot higher and we should also have all the new procedures in ready to truly move forward".*

The UMM discussed his hopes for future change and improvement stating that supervision skill improvement and a reduction is workplace incidents were a priority:

> *"In the long run come post August after this process, really what you want to see are the Shift Supervisors starting to stand up and manage their crew".*

> *"I am looking for a massive improvement in our safety performance. I don't think we have a bad safety record. But once you start having silly incidents, and a lot of them, you start building up the probability of having a bad accident – they are lead indicators. So this is a way of improving our safety in an effort not to have a serious accident".*

In this first week the Safety Consultant was asked what he perceived his role to be in the change process.

> *"I was asked to set up new site procedures in alignment with ISO 31000. It was also recognised that the Shift Supervisor skills were varied and that the project was going to be not only the procedures but training their middle managers to manage to a safety culture".*

With the change plan in place, the first task that management determined needed to begin the change process was to identify the strengths and weaknesses of the staff in their ability to identify work place hazards. Training in identifying hazards was delivered as a classroom workshop and by walking around the staff's work areas in week 1. The staff were divided into 6 groups (18 mixed teams of 4-6) over three consecutive days, 54 of which were contractors working for the company and 23 direct employees. It was found that the range of workplace hazards they could identify was extensive by some groups and very limited by others (Bahn, 2012). For example length of experience underground did not predetermine an ability to identify hazards. During this week random checks underground revealed the safe work instruction procedures had not been completed and that rock headings remained unsecured by some crews with no acknowledgement of the safety risk.

In week two the hazards identified in the first workshop were revisited in follow up training to determine strategies they could use to address the hazards they had identified. Interestingly, one team set the task of identifying strategies to address emerging hazards could not commence the task at all and required one-on-one assistance by the training facilitator. These were not inexperienced staff; in fact there was an average of twelve years

underground experience between the teams' participants. Conversely, some of the most recent entrants to underground mining within the teams showed greater understanding in addressing and managing hazards than the long term employees (Bahn, 2012). It was noted that after these two training workshops that the mine had achieved its first two week period free from incidents. Once again random checks underground were conducted during this week to find that all shifts audited had completed their safe work instruction processes.

The rewriting of the visitor, surface and underground workplace inductions began in week three along with the introduction of a safety management system. The first eighty Job Safety Analyses documents were sent to the staff responsible to edit and authorise the correct content. Additionally in week 3 the positions held by the contractor staff were reapplied for to work as a mine employee. The Safety and Training Officer of the organisation resigned to take up a position with another company at the end of September. The resignation of the Safety and Training Officer was considered beneficial to the company as this employee was not performing his role adequately and the slippage in safety performance was in part attributed to his inability to better manage the role.

In week 4 all staff were taken through an overview of effectively completing writing a job safety analysis including the risk ranking of workplace hazards. Risk ranking tools are commonly used in organisations; those in supervisor/management roles had used these tools before, however most of the staff had no knowledge of how to use this tool. In addition the staff had little appreciation of the perception of how risk is viewed between individuals (Manuele, 2010). It was evident at this stage of the change process that the staff had a mix of expertise, experience, literacy and numeracy skills. WA, at this time, was entering into

another period of increased mining production and experiencing a shortage of skilled workers.

The staff identified in the hazard identification workshop in week 1 that they needed increased training and clearer and extensive communication in regards to the impending change process. In week 4 the Human Resource representative for the company began to address the request for communication to the staff working in underground duties. Although this was requested in the workshop when explaining the change process to the staff he asked if there were any queries. The response he received from one senior staff member working as an underground operator was *"I'm not interested; I just want to go back to work underground"*.

The hard work phase

In the 8 week period between weeks 5-12, coaching of the Shift Supervisors in effective leadership became a priority and entailed the consultant accompanying them on daily visits underground. Positive changes in behaviour were noted by management in that the shift bosses were becoming more effective in their managing and delegation skills.

Additionally, the writing and reviewing of Job Safety Analyses (JSA) for all tasks carried out by the underground staff was well underway. The first 80 JSAs had been issued to the staff in week 3 of the process. These documents had been edited and were signed off as correct and were awaiting input into Safe Work Procedures (SWPs). The final 80 JSAs were distributed to the staff for editing and approval in Week 12.

In week 13 the writing of the visitors, surface and underground inductions was completed. In this week the mine experienced a lost time injury. At the end of this week a second interview was conducted with the UMM who reported that there was evidence that the change process was having a positive effect on the workforce as displayed in the extreme reaction to the first Lost Time Injury the mine had experienced in two years.

> *"We had a bit of a setback this week because we had an LTI* [Lost time injury] – *that was pretty disappointing. But overall things are going very well with positive feedback from the Supervisors. I think they have started to step up more to the plate. They are beginning to hold their crews to account; you can see the general frustration from them when they see things happening that shouldn't have happened. The guys seem a lot more passionate about their own safety performance and that was pretty evident after we announced the LTI this week because there were a lot of unhappy people across the crews. They were furious!"*

The change practices of the Safety Consultant were unusual when compared to other training in that part of his role was to directly challenge the Shift Supervisors and their crews in their everyday work practices.

> *"It's very rare to have the trainer challenge people on the job and I think that it's had a major impact. It reinforces from the classroom into the workplace and I think that's what's been important".*

Week 14 – 1st August deadline

The 1st August 2011 marked the date of the new contract with the underground mine with all staff now employed by the mine and no contracted staff within the workforce. New mining equipment was introduced along with a new equipment maintenance contract. The visitors, surface and underground inductions had been completed and were in use. Eighty JSAs had been approved by the staff by 1st August, with the final 80 were still being circulated. No JSAs had been converted into SWPs and consequently the mine was continuing to use the contractors SWPs even though none of their staff were working on the mine. The UMM was asked to reflect on where they were in the change process and it was noted that although the written documentation such as the JSAs and Procedures were about a month behind there was

evidence that concerted effort by the staff was occurring to complete and that the existing procedures provided by the contractor could continue in the very short term.

> *"We are a month behind from where I wanted to be but there was a lot of other work put in with the Supervisors, the guys are now really beginning to put in an effort now and take ownership of it* [the Safety System]*".*

> *"We can run under the existing ones* [procedures and JSA's] *for another month, so we are pretty covered. There has been a lot of rationalisation from the safety side to tie in our site with the rest of the mining operations".*

The Safety Consultant explained that the overrun of the project was due to the misunderstanding by management of how long the change process would take to achieve commitment and ownership of the staff.

> *"The task that was outlined was bigger than the client thought. The timing was always going to depend on accessibility to the people and the importance of the process to the people".*

The Safety Consultant confirmed that the success of the change process to this point was due to the close working relationship with them in their actual work areas, rather than relying on training in the classroom setting.

> *"Visiting the people in their work areas has contributed to the credibility of the training and changes".*

Looking forward the UMM was asked to determine what he could see as a mechanism to bed down the change and ensure it remained constant. He explained how that even though extensive and solid safety systems could be put in place and audited on a regular basis there was no guarantee that people would indeed follow them. However, from a compliance perspective regular audits demonstrate that staff understand and are aware of the correct manner to carry out a task.

> *"The cycle needs to continue, the procedures look after themselves, but the key to success with this system is the Supervisors doing individual task observations. We need to get the consultant in every two months to audit the Shift Supervisors. If in the event something happens [serious incident] I can turn around and say I audited the*

Shift Supervisors and say they did it correctly at the time of the audit. If they do it differently from when they are audited then really it's the Supervisors who will be hung out to dry because they have demonstrated that they know the system and haven't complied with the system".

Finalising the change

Although the majority of the people working for the underground mine had adopted the new processes and had shown significant improvement there were still some staff who continued to act irresponsibly. In week 15 the mine recorded three incidents involving damage to plant that required investigation. The staff responsible for these breaches in safety were newly appointed staff that had not undergone the hazard identification training held in week one of the change process and were assigned to one of the four Shift Supervisors at the mine. The result of the investigation included the dismissal of two of the staff. It was evident that this Shift Supervisor had failed to mentor and monitor his staff. The Safety Consultant began intensive mentoring with this Shift Supervisor in week 16 to begin to address and improve his leadership skills. In addition, the recruitment processes were reviewed to place greater emphasis on safety practices and experience. In weeks 16-20 all 160 JSAs were awaiting sign off by the UMM. The decision was made to have the newly appointed Safety and Training Officer review these documents before final sign off by the UMM. By the end of week 20 four JSAs had been reviewed and approved by the Safety and Training Officer. The change process had lost some momentum due to the resignation of the UMM and the mine going into caretaker management for three months. Prior to the UMM leaving an exit telephone interview was conducted to collect narrative on his perception of the change process up to this point. Although he found the training effective at the start of the change process the effect on safety practice was short lived as is evident in Figure 1. The UMM attributed the decreasing trend in incidents to the improvement in the Shift Supervisor's managerial skills as a result of the intense mentoring that had occurred.

> *"I think the training was effective and its effectiveness was for two months. What is more important is the coaching of the supervisors. That is probably to me **the** single most important thing. The training was the start of the process, for the first three months it had a big impact in month one, less in month two and three and that is where the workforce was pretty much the same. What has changed is the supervisors are starting to hold their guys to account and that is the single biggest influence to me of the whole process".*

In week 21, UMM position become a caretaker role with a temporary 3 month appointment in place while the formal recruitment occurred. The new UMM was highly supportive of the change and actively reviewed the JSAs and began the sign off process. By the end of October (week 24) all JSAs had been approved by the UMM and the Safety and Training Officer (STO) with the Safety Consultant converting the JSAs into Safe Work Procedures. The Safety Consultant provided this final comment:

> *"The process of change is slow and laborious and subject to the participants daily priorities. An organisation needs time to effectively implement change. The bigger the organisation the longer the period time it seems".*

Incident statistics and the change

Figure 1 provides actual reported incident numbers for the underground mine between July 2010 and September 2011. Incidents are divided into 8 categories: Lost Time Injury, Near Miss, Modified Work Injury, Medical Treatment Injury, First Aid Injury, Environmental Damage, Non Compliance (not performing task according to procedures) and Equipment damage. It should be noted again that there had been no fatalities at this mine site during this period. There was one lost time injury in March 2011 and another in July, prior to these two incidents the mine had been lost time injury free for almost 2 years. The figure shows that February 2011 recorded the highest number of equipment damage incidents that by April 2011 had reduced by 50% but were back to the high level by August 2011. However, it should be noted that August marked the change to a new machinery maintenance contract, the introduction of new machinery and the employment of new personnel. In addition there

was pressure on sourcing skilled workers due to increased mining activity in WA at this time and a replacement Safety and Training Officer did not commence work until October 2011. It could be argued that all of these factors contributed to the jump in equipment damage incidents in August. First Aid Injury incidents remained fairly constant between March and July 2011 but gradually reducing from July 2011. Near misses decreased from February 2011 with none reported in May, June and August 2011. All other incident categories reported remained infrequent and at constant low numbers. Of the 80 reported incidents since April 2011, 35 were attributed to newly employed personnel that hadn't undergone the hazard identification of management of hazards training. Prior to the safety culture change initiative the incident statistics were generally trending upwards. From April 2011 this trend reversed suggesting the training, mentoring and documenting of safe work procedures had a positive effect on the safety culture.

Examples of damage to equipment incidents included: tyre damage on heavy machinery and damage to vehicles through rocks hitting or rolling onto them and reversing into walls. Examples of medically treated injuries included: sprains and strains and a fracture. Examples of first aid injuries included: sprains and strains cuts and abrasions and an eye injury. Near miss examples included: Failure to use fall arrest equipment, vehicles left running without wheel chocks in place, and a refuge chamber with inadequate carbon dioxide cylinders.

Insert Figure 1 here

Modelling the change

Figure 2 models the change process of the organisation and illustrates the push-pull factors that determined the need to change. Prior to the change the organisation was accessing staff through two contracting agencies as well as some limited in-house staff. This arrangement

placed pressure on the front line supervisory staff in that the two contractors managed their staff through their specific safety systems, policies and procedures and this left the supervisor unsure of his role and his ability to discipline the staff under him. In addition the organisation did not have their own safety system in place but relied on one of the contractors systems instead. The lack of ownership of their own specific policies, procedures, inductions and safety documents placed the organisation at the risk of being deemed non-compliant if formally audited by the states mining regulators. In addition because the organisation was failing in their due diligence in these areas and had limited safety training in place for staff it was at risk of having a serious work-related injury occur. This was a major concern of the UMM and hence the organisation was encouraged to change. As a result of the change all areas saw some improvement even though the incidents figures rose and fell and rose again as is the case of the equipment damage in August. Work-related injury statistics dropped significantly (particularly in the September 2011 figures), supervisors were clear of their roles and actively became engaged in monitoring their crews to ensure they worked in a safer manner than before, and staff were actively addressing work-place hazards. With the safety system in place and in active use the organisation should be deemed compliant and diligent by the state auditing authorities. Finally, where some staff were resistant to the change resulting in some resignations at the end of the process those remaining with the organisation had come to an understanding and support of new regime.

Insert Figure 2 here

DISCUSSION

Change takes longer than is planned and is not an easy process. The original contract with the Safety Consultant was to achieve the change process by August 1st 2011 when the mine

would no longer employ contracted staff. The process overran by 12 weeks and was completed at the end of October with a 'bedding down' period of two weeks in November.

Although damage to equipment incidents continued to occur there was some evidence that the new safety system and mentoring of Shift Supervisors had resulted in positive safety culture improvement. It should be noted that many of these incidents occurred with newly appointed staff who had not undergone the hazard identification training. The upward trend of incidents reversed from April 2011 to that of a general downward trend. Injuries requiring First Aid treatment were on a decreasing trend and near misses were not only reducing but for three months during the change process none had been recorded. However, the mine recorded its first lost time injury for two years in July 2011.

The Underground Mine Manager expected all staff to adopt the new safety system and accept the changes to the organisation without hindering the process resulting in a significant reduction in incidents. However, there was some resistance in that some staff continued to ignore directives and procedural change and continue to operate in their preferred manner. This was mostly with newly appointed staff who had not been a part of the change process from the outset. For example, there were still regular breaches of procedures such as idling vehicles left unattended, failure to wear seatbelts and non completion of safe work instructions prior to beginning work. These breaches could be described as Ford et al (2008:362) have as "unreasonable obstacles or barriers" to block the change process. Subsequently there was not the significant sustained reduction in incidents that was the vision of the Underground Mine Manager and the Safety Consultant. This aligns with the findings of Van de Ven and Sun (2011) who noted that change agents and participants can have

opposing views of the outcomes of the change process and that these views can restrict the change outcomes.

The Underground Mine Manager recognised that it was imperative to enlist the support of the Shift Supervisors in the change process as not all staff were promoting the changes. As Ford et al (2008) noted change agents inactions may contribute to the change recipient's unwillingness to change their behaviour. Caldwell (2003) argued that successful change relies on the inter personal and management style of change agents. To address these shortcomings significant concentrated mentoring occurred with the Shift Supervisors to encourage them to champion the changes with their crews; to become active change agents. There was evidence that their leadership abilities had improved with several managers actively demanding improved practice. Safe Work Procedures were updated and with a scheduled monitoring to ensure relevance and continued compliance.

Several personnel changes occurred in the company during the change process. The STO who was particularly unsupportive of the change initiatives resigned in April 2011 and was replaced in August 2011. The replacement STO commenced employment 1st August and demonstrated clear support and the safety system was handed over to him to manage. This staff member was ready to take on the challenge of bedding down the change and to become the champion of the safety system for the organisation. New staff continued to be appointed through the process with 20% of the workforce failing to be included in the hazard identification and management training provided at the beginning of the change process. It was agreed that the hazard identification and management training would be conducted regularly (3 times a year) by the STO with new staff members. The Underground Mining Manager was head hunted to work for a much larger resources company in Queensland and

left the company at the end of September 2011. Fortunately, the incoming Underground Mining Manager, who was on a temporary 3 month contract, was highly supportive of the changes.

Conclusion

Prior to the change the organisation was accessing staff through two contracting agencies as well as some limited in-house staff. This arrangement placed pressure on the front line supervisory staff in that the two contractors managed their staff through their specific safety systems, policies and procedures and this left the supervisor unsure of his role and his ability to discipline the staff under him. This study has shown that using contractor workers together with in-house workers that are managed under different safety regimes is problematic. The problems don't occur due to the contractor's safety systems being less robust than the parent company's or that contract workers are themselves less safe; rather in a forthcoming paper in this journal by Bahn and Rainnie (forthcoming) it is the opposite that can occur. The problem in this instance was that there were two safety regimes in play prior to the change process. The organisation did not have their own safety system in place but relied on one of the contractors systems instead. The lack of ownership of their own specific policies, procedures, inductions and safety documents placed the organisation at the risk of being deemed non-compliant if formally audited by the states mining regulators. The contractors and in-house staff didn't trust each other to work as safely as possible under the differing safety requirements of the two systems. The company needed to either employ all contracted staff under their own safety regime or all in-house staff (as they chose) to reduce the complexity of managing numerous systems and improve overall safety performance and a stronger safety culture.

Because the organisation was failing in their due diligence in these areas and had limited safety training in place for staff it was at risk of having a serious work-related injury occur.

As a result of the change all areas saw some improvement although there were increases in equipment damage again in August and a LTI was recorded in July. The change process was compromised by the UMM's resignation and this threatened sustained safety performance. However, the positive results attributed to the change process included: the work-related injury statistics that dropped significantly (particularly in the September 2011 figures), supervisors were clear of their roles and actively became engaged in monitoring their crews to ensure they worked in a safer manner than before, and staff were actively addressing work-place hazards. Although the short-term spike in incidents in November to February of 2011 appear similar to those recorded post April 2011, the improvement in safety procedures and their formalization remain regardless of the measured outcomes. The new safety mechanisms are more comprehensive and internally consistent than when workers were employed as contractors and in-house under two different safety regimes. With the safety system in place and in active use the organisation should be deemed compliant and diligent by the state auditing authorities.

This study demonstrates the difficulties in facilitating change in safety culture in an underground mining organisation. It also shows that by focussing on hazard identification and management of hazards training, one-on-one mentoring of Shift Supervisors and the introduction of a robust safety management system has positive improvement on incident statistics. However, it is yet to be seen if the reduction in incident statistics continues to decrease or remains constant before we can deem this safety culture change process a success.

REFERENCES

Bahn, S, April, 2009. Power and influence: Examining the communication pathways influencing safety in the workplace, *Journal of Occupational Health and Safety*, 25(3):213-222.

Bahn, S, (2012), Workplace hazard identification: What do people know and how is it done?, Proceedings of the 26th AIRAANZ Conference 2012, 8-10 February, Hotel Grand Chancellor Surfers Paradise, Gold Coast, QLD.

Beer, M, Eisenstatt, A, and Spector, B, 1993. Why change programmes don't produce change, in C. Mabey & W. B. Mayon White, *Managing Change,* 2nd Ed Open University, Buckingham.

Berman, P and McLaughlin, M W, 1975. *A model of educational change*, The Rand Corporation, Santa Barbara, California.

Caldwell, R, 2003. Models of change agency: A fourfold classification, *British Journal of Management,* 14(2):131-142.

Clarke, A E, 1997. A social worlds research adventure: The case of the reproductive science. In A. Strauss & J. Corbin (Eds.), *Grounded theory in practice.* Thousand Oaks, CA: Sage Publications.

Cobb, AT, Wooten, KC and Folger, R, 1995. Justice in the making: Toward understanding the theory and practice of justice in organizational change and development, *Research in Organizational Change and Development,* 8:243-95.

Conchie, ST and Donald, IJ, 2006. The role of distrust in offshore safety performance, *Risk Analysis,* 26(5):1151-1159.

Dubin, R, 1982. Management: Meanings, methods, and moxie. A*cademy of Management Review*, 7:372-379.

Dvir, T, Kass, N and Shamir, B, 2004. The emotional bond: vision and organizational commitment among high-tech employees, *Journal of Organizational Change Management*, 17(2):126-43.

Eisenhardt, K M, 1989. Building theories from case study research, *Academy of Management Review*, 14:532-50.

Eisenhardt, KM and Graebner, ME, 2007. Theory building from cases, *Academy of Management Journal*, 50:25-32.

Ford, JD, Ford, LW and D'Amelio, A, 2008. Resistance to change: The rest of the story, *Academy of Management Review*, 33(2):362-77.

Gioia, DA, Thomas, JB, Clark, SM and Chittipeddi, K, 1994. Symbolism and strategic change in academia: the dynamics of sensemaking and influence, *Organization Scienc*e, 5(3):363-83.

Johnson, MW, Parasuraman, A, Futrell, CM and Black, WC, 1990. A longitudinal assessment of the impact of selected organizational influences on salespeople's organisational commitment during early employment, *Journal of Marketing Research,* 27(3):333-44.

James, P., Johnstone, R., Quinlan, M. and Walters, D. (June, 2007). "Regulating supply chains to improve health and safety", *Industrial Law Journal,* Vol. 36 No.2, pp.163-187.

Johnstone, R. and Quinlan, M. (2006). "The OHS regulatory challenges posed by agency workers: evidence from Australia", *Employee Relations,* Vol. 28 No.3, pp. 273-289.

Knowles, ES and Linn, JA, 2004. The promise and future of resistance and persuasion, in E.S. Knowles and J.A. Linn (Eds.), *Resistance and Persuasion*, pp.3-9, Mahwah, NJ: Lawrence Erlbaum Associates.

Mayhew, C. and Quinlan, M. (1997). "Subcontracting and occupational health and safety in residential building", *Industrial Relations Journal,* Vol.28 No.3, pp. 192-205.

McConnell, D, 2002. Action research and distributed problem-based learning in continuing professional education. *Distance Education,* 23(1):59-83.

Parish, JT, Cadwallader, S and Busch, P, 2008. Want to, need to, ought to: Employee commitment to organizational change, *Journal of Organizational Change Management,* 21(1):32-52.

Pfeffer, J, 1994. *Competitive advantage through people: Unleashing the power of the workforce*, Harvard Business School Press, Boston, MA.
Sayer, A, 1992. *Method in social science,* 2nd Ed., Routledge, London.
Strauss, A and Corbin, J, 1998. *Basics of qualitative research*. California, Sage Publications.
Tomlinson, EC, Dineen, BR and Lewicki, RJ, 2004. The road to reconciliation: Antecendents of victim willingness to reconcile following a broken promise, *Journal of Management*, 30:165-87.
Underhill, E. (2002). "Extending knowledge on occupational health and safety and labour hire employment: A literature review and analysis of Victorian worker's compensation claims", Melbourne: WorkSafe Victoria.
Van de Ven, AH, Polley, DE, Garud, R and Venkataraman, S, 1999. *The innovation journey*. New York: Oxford University Press.
Van de Ven, AH and Sun, K, 2011. Breakdowns in implementing models of organization change, *Academy of Management Perspectives,* 25(3):58-74.
Yin, RK, 2003. *Case Study Research Design and Methods*, Thousand Oaks, CA: Sage Publishers.

FIGURES:

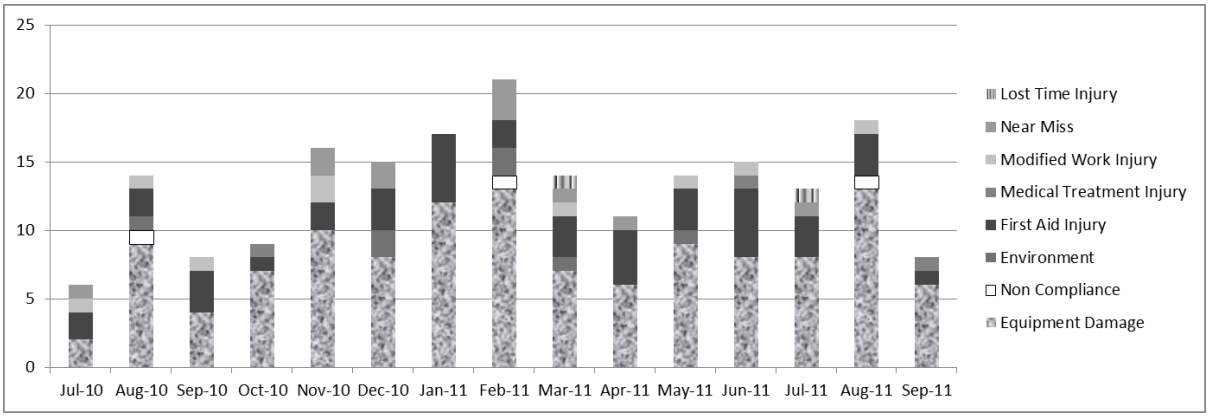

Figure 1: Incidents July 2010 – September 2011

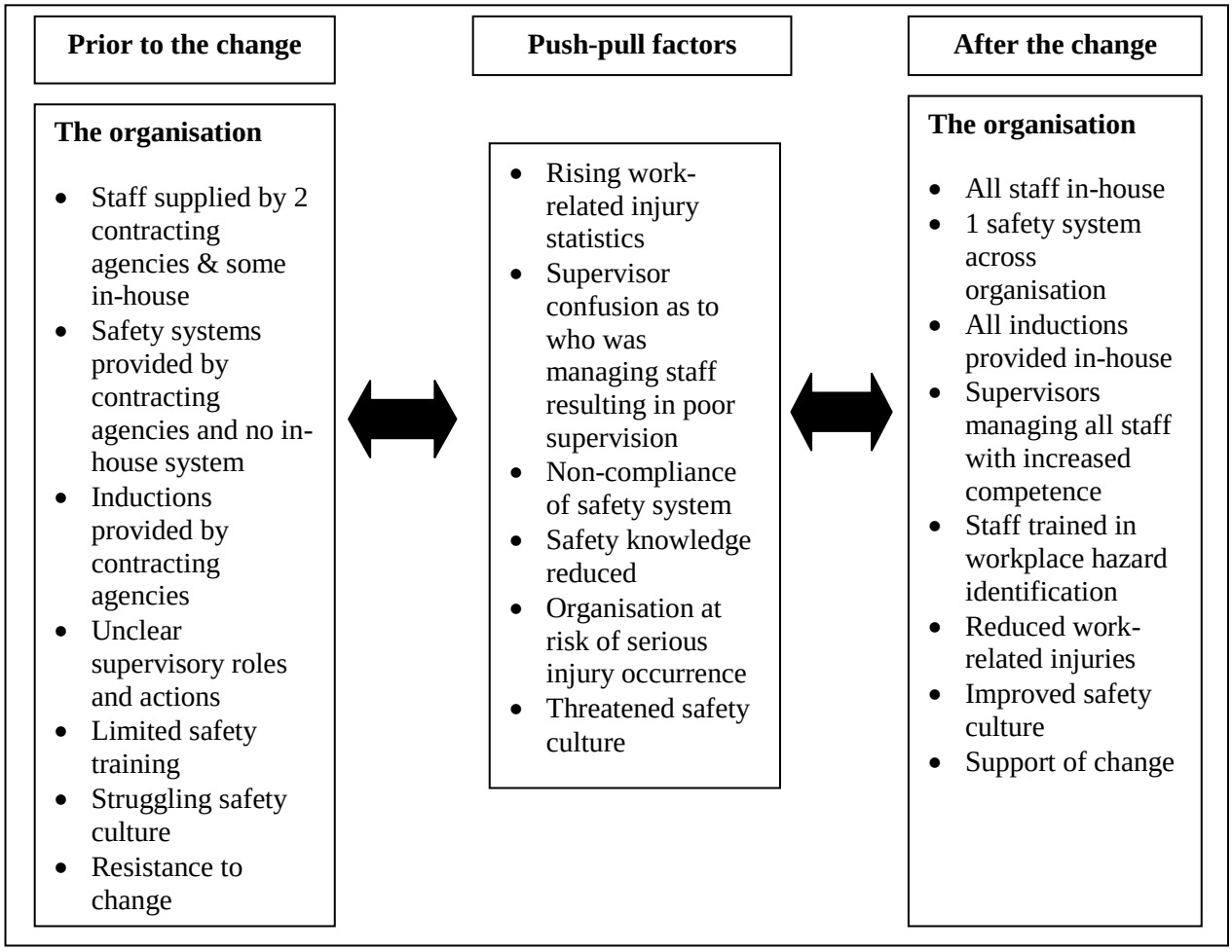

Figure 2: Modelling the change process against push-pull factors

TABLES:

Table 1: The change process

Week	Change process	Results
1	Conduct hazard identification training workshops with all staff including management to determine the level of ability. Accompany shifts underground to identify obvious and emerging hazards.	Checks on 4 shifts revealed that in 2 cases rocks were ready to fall from the heading – they had not been secured and it was not recognised by employees as a potential hazard.
2	Conduct hazard management training to determine the strategies that can be used to reduce the risk.	2 weeks incident free – this was the first time the mine had a two week period free from incidents. Checks on 4 shifts revealed that all 4 had completed their safe work inspections.
3	Redrafting of visitors, surface and underground inductions. Introduction of safety management system. Contractor employees reapplying for their positions. Financial incentive discussed by management to reward staff who identified and addressed hazards. Drafting of 160 Job Safety Analyses (JSA).	The re-employment of contractor staff in some instances at a reduced rate. Safety and Training Officer resigned and position advertised.
4	All staff trained in the effective writing of job safety analyses. 80 Job Safety Analyses sent to staff to review.	Staff had no knowledge of how to use a risk ranking tool.
5-12	Coaching of shift bosses and supervisors in effective leadership. Visits underground. Review of final 20 JSA's by staff.	Shift Supervisors were displaying more effective leadership skills such as delegation of tasks to other staff.
13	Completion of visitors, surface and underground inductions.	Lost Time Injury occurred – Shift Supervisors extremely upset.
14	**1st August deadline.** All staff employed by mine – no contractor staff. Inductions approved and in use. Still operating under contractors Safe Work Procedures (SWP) as JSA's are still circulating, requiring approval and sign off before SWP conversion.	Underground Mine Manager happy with Shift Supervisors improvement in taking ownership of the change process.
15-20	All Job Safety Analyses completed and waiting for sign off by Underground Mine Manager.	3 incidents that involved damage to machinery on the same shift resulting in the sacking of two workers and intensive mentoring of the Shift Supervisor. Underground Mine Manager resigned to take up a new position in Queensland.
21-24	160 JSAs reviewed by Underground Mine Manager and Safety and Training Officer and reissued to all personnel across all 4 shifts for final sign off and production into Safe Work procedures.	Appointment of temporary Underground Mine Manager for 3 months during formal recruitment process. Lowest number of incidents recorded (Sept) since beginning of the change process.