

## Innovations in seeking to provide an incident and injury free workplace during construction of the Hail Creek Coal Project

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### **Synopsis**

*Hatch Associates and Hail Creek Coal developed a Safety Management System for the Hail Creek Coal Project that delivered a step change in site safety management. It was built around hazard identification, risk assessment and risk minimisation or elimination, for every task being undertaken. Hatch was responsible for the implementation of the systems, and to verify compliance and measure effectiveness.*

*Whilst encountering initial doubt and resistance, it was a proven success with the Project achieving, at the first attempt, an NSCA 5 Star rating for the safety management system and application. The railway portion of the project was also awarded the Queensland Master Contractors' Association 2002 Safety Award.*

*The impact of the safety program has had a substantial effect on individuals and contractor organisations and shown that leadership can and must change the approach to safety management in the future. In many areas, the results should lift the current construction industry standards.*

### **Description of the Program**

Hatch was appointed as the Project Management Organisation for the Hail Creek Project in September 2001. The client was Pacific Coal, a wholly owned subsidiary of Rio Tinto that operates three other coalmines in Queensland.

One of the key criteria for award of the Project to Hatch was the demonstration given of our ability, preparedness and willingness to manage safety on the site and to meet or exceed Pacific Coal and Rio Tinto's safety standards. It was the first major construction project, carried out on a coal mine lease in Queensland, since the introduction of the new Queensland Coal Mining Safety and Health Act 1999 (the Act) and Coal Mining Safety and Health Regulation 2001 (the Regulation).

Therefore, the Safety Management System (SMS) used on the project, had to be assembled to incorporate the features of the Act and Regulation.

The cornerstone of the SMS and what drove the way it was administered was the Vision. This was a joint development between the Hatch and Hail Creek team members and stated our unconditional commitment to providing a safe and healthy workplace for all employees.

From this vision, we established a Safety and Health Policy. The policy contained the vision and set out our stands and principles.

We were strongly influenced by the commitment and passion of the Hail Creek managers. They left us in no doubt as to the level of performance and dedication they required. Together, we believed the following to be fact:

- Acceptance of the principle that all incidents and injuries can and must be prevented;
- Leaders and Managers at all levels are responsible for workplace safety.
- Safety should have at least equal status along with other primary business objectives, such as time and cost;
- The need to provide properly engineered and safe systems of work;
- Unsafe acts and conditions, which may result in incidents, must be eliminated;
- It is necessary to have all employees accept their responsibility to work safely and to understand that it is to their advantage, as well as to their Company, that they do so;
- Incident prevention is good business. A safe project is usually an efficient and cost effective project;
- Nobody wants to hurt themselves or other people.

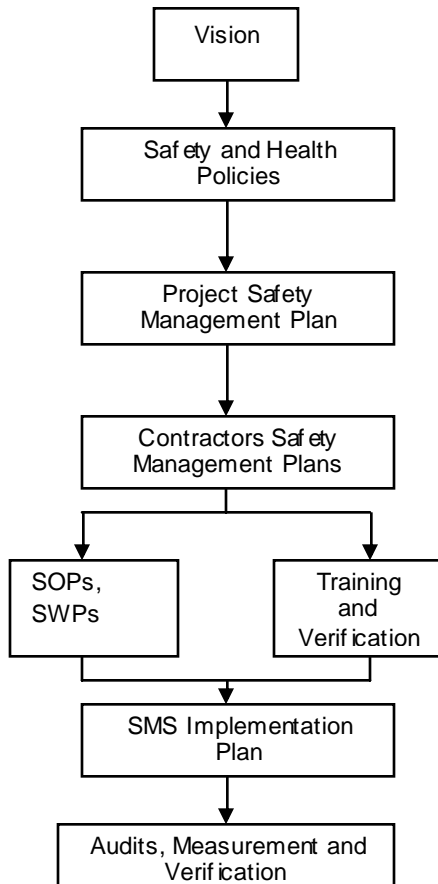
With these beliefs and values, we set out to implement a safety management system that

incorporated all of our undertakings to Pacific Coal and each other, the provisions of the new legislation and Hatch's corporate commitment.

Hatch took with it into the project a basic safety management system built around Hatch's eleven key elements of safety management: -

- Leadership and commitment.
- Performance measurement and reporting.
- Involvement, communication and motivation.
- Contractor alignment.
- Training and competency.
- Hazard and risk management.
- Occupational health and hygiene.
- Safe systems of work.
- Incident reporting.
- Site management and
- The environment.

Using this format, we produced a safety management system that set out our process to manage safety on the Project. A road map shows the system in its logical hierarchy:



So far, what I have described we were doing and the way we were approaching it would be fairly standard procedure for a new project, just starting up. The BIG difference and what set us apart on the Hail Creek Project, was that WE ACTUALLY DID EVERYTHING THAT WE SAID WE WERE GOING TO DO!!!

**Implementation**

The Act came into force in March 2001. Operating companies had had approximately two years (since 1999 when the legislation was passed) to implement the provisions. Hatch was appointed the Coal Mine Operator for the Project and provided the Site Senior Executive in September 2001. This meant that the Project team had less than six months, to get a compliant SMS in place before major construction work started on site.

The first priority was to establish the Safety Management Plan. This plan detailed the Project's safety objectives and incorporated over sixty Standard Operating Procedures, dealing with various activities and conditions, a Principal Hazard Management Plan for activities likely to cause multiple fatalities, an Emergency Response Plan, Personal Safety Action Plans that detail actions to be undertaken by staff members and responsible persons and supporting training programs. It was a significant body of work and was a joint effort by Hatch and Hail Creek safety professionals, with support from consultants. It set the tone for our performance and that of the contractors.

The construction industry differs from mining in many respects. Hatch and the contractors, had to carry out construction work under an Act that was clearly focussed on safety in and around a coalmine. Whilst the safety message was valid, the provisions and methods of implementing the Act were new to most contractors. Traditionally, construction safety is less prescriptive and the discipline less rigorous, than the standards expected on a mine. The construction workers are emerging from an era, where safety thinking believed that it wouldn't happen to them and that they just had to be careful. There was no fundamental belief that safety was good for your health and long-term wellbeing! This lack of having safety as a core value in the

workforce was the principle obstacle we had to overcome. Durations on site ranged from days to months and the challenge was to start to change behaviours in such a short time frame. Many construction workers would not have heard of risk assessments, or had not come to the realisation that safety was all about planning rather than trusting to luck. They'd been doing this for 20 years and never been hurt!

To be successful, we had to make our expectations known and to gain commitment from the contractor companies to make it happen. We therefore identified some key requirements in the process of allocating work.

- *Careful selection of contractors.* Prospective tenderers had to show that they shared the necessary values, attitudes and behaviours that could achieve our desired results. A detailed prequalification questionnaire was sent to prospective tenderers.
- *Careful selection of Project Managers.* As discussed later, leadership was a vital component to success. The contract's Project managers were therefore key people in changing workforce behaviours. Each prospective Project Manager was interviewed and required to submit and meet, a personal safety action plan that was regularly reviewed for compliance.
- *Careful selection of people.* A detailed recruitment program verified compliance with the specific project and legislative requirements. We established a labour coordination office in Mackay to review job applicants and assist contractors with the mobilisation process.
- *Leadership.* We believed that the most important element of getting workforce safety behaviours to meet our expectations was through all line managers and supervisors demonstrating clear, unambiguous, consistent leadership as to what was an acceptable level of performance. This leadership was shown from the Hail Creek and Hatch senior Manager down.

Anyone in charge of personnel was deemed to be in a leadership position and had to go through a two and a half day leadership workshop, with follow up sessions on site. For many supervisors and leading hands, this was their first exposure to understanding and acquiring leadership skills.

- A “no compromise” approach was adopted. We demanded compliance with the Site Rules, Contractors’ Golden Rules and Procedures as laid down.

In the event that changes were identified, or Rules needed to be modified for particular issues, these were handled through a risk assessment and the application of the formal change management process.

- *Full involvement of the Contractors’ Project Managers,* managers and supervisors in the safety management process. The site personnel were team oriented and all matters that affected the workforce were discussed via the Safety Steering Committee and Safety Implementation Committee. This involved all the contractors.
- *Contractor Safety Management plans (SMP).* These were prepared by the Contractor and either written by them or modelled using Hatch’s SMS. We made the SMS available to all Contractors on CD-Rom. After submission by the Contractor, their SMPs were audited against a formal audit tool developed to assess compliance. A score of over 90% was necessary before a plan was accepted. Contractors were refused permission to mobilise until their plan had been approved. In particular we were looking for clear evidence of
  - Ownership
  - Leadership
  - Commitment
  - Responsibility
  - Accountability
  - Verification

by the contractors in their plans.

- *Safety meetings* were held with the contractors before mobilisation. The first was held in the post tender – pre award period, where Hatch would interview the tenderers' CEO, Site Project Manager and Safety Adviser. The meeting took them in detail through the contract provisions and Hatch's expectations and obtained a commitment, at the highest level, that they were prepared to meet those standards.

Once they were awarded a contract, we held a further kick-off meeting with them, where we again went over the safety performance requirements on site.

The outcome from these meetings was that contractors were unable to claim ignorance of what was going to be required at site, or to say that they had not made appropriate allowances in their contract price.

- *Auditing and Inspection.* Within two weeks of a contractor mobilising to site we carried out a mini systems audit against their SMP's. For many contractors this was their first taste of having to implement their SMP's. Within one month, we carried out a field audit and followed up with a second systems audit. Both these audit tools were designed for project start up. As the contract bedded down, Hatch developed another audit tool that had greater depth of interrogation and dug down to ensure the systems were being correctly applied and operating in the field.

In addition, Hail Creek, Rio Tinto, NSCA and external auditing bodies carried out regular third party auditing.

- *Formal workplace inspections* were carried out on a scheduled basis (at least weekly) in each work area. The inspection team consisted of a representative from Hatch, Hail Creek, the Contractor Project Manager and the area supervisor. This group had the power to stop work or change work methods immediately in the field, without referring back for management approval.

- *Inductions.* An induction was mandatory for all personnel coming to site. This gave details of the Project's expectations and commitment to safety. The Project Manager and a Hail Creek representative opened all site inductions. The Safety Manager delivered job hazard analysis (JHA) training, so hazard assessment and risk reduction skills were covered. Workforce numbers peaked at 900 and in eleven months, almost 2000 people received this induction.

- *Support from Hail Creek Coal* This was one of the most significant aspects of the Project's success. Hail Creek Management fully supported any initiative that could assist in improving the safety performance. Program and cost considerations were always secondary to the primary goal of providing a safe work place. Throughout the Project, I cannot recall any occasion when Hatch has been denied or questioned on a safety initiative or Hail Creek has failed to support a safety issue that we have proposed or needed. This kind of Client support and commitment bred the confidence necessary to demand people to change their attitudes and behaviours.

### **Safety Initiatives**

A safety management system is ineffective unless it is live and dynamic. This requires leadership and motivation. We found that as soon as leaders and managers lost focus, the level of incidents would rise. We kept things alive and vibrant with a series of Safety initiatives.

- *Pre Start huddles*  
Every work group attended a daily huddle at the start of the shift to discuss safety initiatives undertaken the previous shift; what made it safe or unsafe and what was going to be different about the next shift and how could we improve our collective safety performance.
- *JHA (Job Hazard Analysis)*  
This was the fundamental tool used by everybody on site to identify hazards and assess and mitigate risks. A JHA was completed for every task and reviewed at the start of each shift. If a new person

was introduced to the area or a new hazard, or conditions changed, the JHA had to be reviewed and, if it was no longer applicable, it was re done.

- *RESTART program*  
This was an initiative Hatch developed after witnessing a similar program on the Comalco Aluminium Refinery project in Gladstone. It was a formal program that empowered anybody to stop a work group if there was an unsafe act or condition in the area and go through a process of identification, communication and removal. The work crew then signed off on the revised work procedures and recommenced work.
- *Good Performance Safety Awards*  
These were issued to workforce members who implemented better ways of doing things or showed good initiative and who demonstrated a positive attitude to safety. A laminated certificate accompanied the award. Even though these were 'small' gifts, they carried great kudos.
- *"Getting the Message Across" Program*  
This was a program designed to ensure that sub contractors mobilising were brought up to speed in the expectations of the Site as quickly as possible. It was a five-week program that commenced before the sub contractor mobilised and continued for the first month on site.
- *"Refocus" Programs*  
From time to time during the project, we would find our attention and concentration wandering. We felt that the safety management was starting to drift. This was often accompanied with a rise in incidents. The Refocus Programs were a chance to regather ourselves and get us back to managing safety in a proactive way.
- *"Safety Stars" Program*  
A program used towards the end of the project to take the high safety achievers from each contract group. These were the people who had impressed their Managers with their excellent safety attitudes and who you would want to work with again. We involved them in

workshops and challenged them to use their skills to explore ways to do "it" better and take the skills learnt with them to the next job. This program gave positive recognition amongst their peers, to the people who had shown initiative in safety leadership.

- *Safety Behaviour Observations (SBO).*  
The construction workforce initially treated this process of assessing work behaviour with suspicion. They tended to feel threatened by being approached by a group of 'heavies'. Over time, these reservations disappeared and a "pick me!" attitude emerged. The discussions became very productive and built a good bridge between workers and management.
- *Sundowners with the Supervisors.*  
This was a drink after work with the contractor supervisors and Hatch Managers, on a company by company basis. It was an informal discussion to get things out in the open. Once people realised that these were meant to be a positive exchange of views, a lot of ideas and concerns were put up for discussion and corrective actions initiated, often before they became issues.
- *Incident Reporting and Lessons Learnt.*  
There was a culture on site that allowed people to feel comfortable in reporting incidents. Hatch was able to use the investigations and the resultant actions as proof that the process brought positive changes back to the work place that improved safety. The lesson learnt from the investigations were used at toolbox sessions and helped in preventing similar occurrences.

During the course of the project, there were several other programs initiated to encourage the contractors attain higher standards. Some of these were applicable to individual contractors, others were developed collectively and rolled out site wide including.

- Hand protection and glove use
- Working at heights
- Confined space
- Housekeeping
- Barricading

- Vehicle safety
- Electrical Safety
- Isolations and zero energy testing

### **Learning and Competencies**

It was recognised that people cannot perform as expected unless they have acquired the necessary skills and competencies. The level of instruction and learning on the project was very high with all companies making a positive commitment in this area.

Induction training was given to all employees, covering.

- Generic Induction – Basic safety principles
- Hatch Induction – Site Rules, SOP's and JHA's
- Contractor Induction – Golden Rules and specific company procedures
- Work Area Induction – Job Hazards and Risk analysis

Training programs, with assessment and verification, were produced by Hatch for the Standard Operating Procedures and the safety programs and safety initiatives. These were made available to the contractors for their use.

In all, a person on site could expect to spend up to ten hours a week in pre start huddles, formal training and toolbox meetings and supervisors would spend up to six days leadership and competency training before being ready for site. Add to this the time spent in JHA preparation, SBO's, inspections, RESTART programs and the time would be significantly more. The intensity of training and daily reinforcement was what kept the workforce focussed.

The Act also called for workers to be deemed competent to carry out designated tasks. This took the form of written and practical tests carried out by authorised Assessors or a Registered Training Authority.

### **Personal Changes by Individuals and the Workforce Culture**

To mobilise a contractor and get acceptance and compliance with the site Rules and conditions and fully supporting the Safety

Management Systems, took contractors, two to four months. Hatch worked closely with the contractors and helped them implement the systems. Over time, came a realisation that there was value in what was being asked for and the actions became more automatic and self sustaining. It was then that changes in the safety culture became evident.

As construction contractors mobilised to site at different times, the level of growth and development varied between work areas. It wasn't until well into the Project that some uniformity was achieved.

Hatch has witnessed the workforce change in the way individuals approach personal health and safety in the workplace and at home. Comments were made that "I will never again go back to how I worked before Hail Creek". This attitude is spreading and has been noticed on other projects, where workers from Hail Creek have been commended for the initiatives they brought to that site.

This culture has led to high levels of commitment and motivation in the workforce. However, the challenge was constantly there for managers and supervisors to maintain positive attitudes. Communication directly between Hatch's Project Manager, Construction Manager, Area Managers and the workforce worked hard at this.

Hatch acknowledges the part the contractors played. The level of commitment by the on site Project Managers and their off site Management was an important factor in the successful coordination of the Site.

### **Innovations**

The strong focus and level of effort expended by all site personnel allowed innovations in safety management to be made.

It was almost a case that managing safety became the "real" job. Building the coal mine was something that just happened as a consequence.

Over the construction period, using the methods and programs I have described, the Project was able to establish the following.

- Creating a working environment where safety was the major focus and driver of the team, rather than the traditional measures of time and cost.
- Changing attitudes to working safely from a being a priority, which could change, to being a personal value and a way of life, that was instinctive.
- Striving for consistency of performance across the contractors, by coaching training and attention to detail.
- Being proactive and being ahead of the game, planning for what's coming up next and not being reactive.
- Bringing the leaders together regularly to address common issues and arrive at acceptable solutions.
- Sharing information on recent incidents, both on and off site, in a way that the information gets to everybody on site and then tool boxing lessons learnt.
- Convincing people by leadership, perseverance, demonstration and encouragement that the methods are effective and letting them witness the results.
- Ensuring by assessments and verification that we were employing trained and competent companies and people.
- Stopping work or suspending operations if necessary to get peoples' attention and changing what they were doing.
- Recognising and rewarding people who had displayed good safety behaviours and doing this regularly.
- Not being afraid of having a "WOW" experience on site that takes the workforce by surprise but gives an important message.

Several staff members, when they arrived on site, expressed the view that they didn't have time to attend another safety meeting, do

another SBO, or go on another inspection. There was huge frustration at what they saw as an unrealistic level of effort required and for what? People were not going to change!

However, the issue was, that they were the ones who had to change. Once the individual made this realisation, they understood what was taking place and could move forward. They found that people can change and that continuous reinforcement and application can get you there.

This realisation, that change is achievable, is one that has come to nearly all involved with the Project. It is something they will take away with them.

### The Results

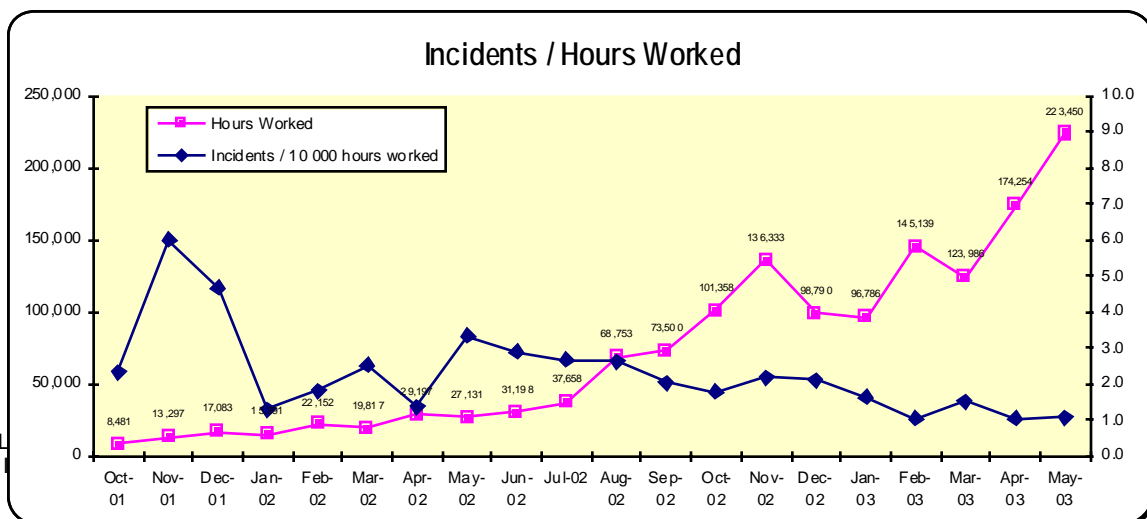
At the time of Hatch commencing on the project, industry safety indicators for Queensland were:

	Mining	Construction <sup>2</sup>
AIFR	17.3 <sup>1</sup>	20.8 <sup>1</sup>
LTIFR	6.8 <sup>2</sup>	7.2 <sup>1</sup>

Hatch's performance, over the nearly two years of the Project, has achieved an AIFR of 14.1 and an LTIFR of 2.3.

The following graph shows how our performance improved over time. It shows Incidents per 10,000 man-hours. Whilst the level of incidents is above where we want to be, the trend is healthy.

The path was difficult. The initial response from all contractors and many individuals was pushback and non-cooperation. They attacked the system as being "too rigorous; took no account of their years of experience;



was too overpowering; showed little in the way of trust and respect; was detrimental to safety; cost too much, took too long" and so on.

However, there are significant benefits the safety management system gave the Project:

- it reduced the level of incidents and injuries
- it provided a safe system of work across the contractors and participating companies
- it can deliver a competitive advantage in the market place
- it might cost initially but the paybacks more than compensate
- if planned properly, it took no longer so the program did not suffer
- the quality was better
- there was less re work
- there was a generally happier workforce with less hassles
- better employee and industrial relations
- less absenteeism

In terms of lessons learnt, or what we would do differently, the following points are worth making:

- Strong leadership and support is required from a client.
- Strong belief and commitment is required from all levels of management. The message has to be driven from the top down.
- You cannot put too much effort into selecting your contractors and, in turn their site Project Managers
- A sound well thought out, relevant SMS must be available early in the Project.
- Workforce participation and interaction is a powerful tool.
- Risk workshops give good early notice of hazards and risk that require managing.
- Construction is a sceptical industry, but will improve its safety performance if it can be demonstrated there are benefits.
- It requires an exceptional effort to get an exceptional result.

The experiences at Hail Creek have initiated major advances to Hatch and all the participating contractors in making a step change in safety management, raising

significantly the level of performance and the commitment to safety. There has been a significant shift in culture in a number of areas.

As a proof of the capability of the site's performance an audit by the NSCA in March 2003 gave the project a 5 Star rating at the first attempt. The NSCA auditors awarded 5 Star Certificates to Hatch and all the participating contractors. They commented "we have never seen anything as good as what we ran into up there". In late July, the MINEX Awards Evaluation Team visited us and we are hoping we will be successful at the Presentation Night in October.

With those sort of comments and recognition and the support from Hail Creek and the contractors on site, we are encouraged that Hatch has taken a big step for the industry towards providing an incident and injury free workplace.

#### References

- 1 National Workers' Compensation Statistics database.
- 2 Queensland Government, Natural Resources and Mines, Safety Performance & Health Report 1 July 2000 to 30 June 2001