UG Coal Mining Equipment design project initiation

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Presentation outline

• Xstrata’s role in UG Equipment design project
• What initiated the project
• What are our guiding principles
• How are we using the results
• What are the next steps

Structure 2006
Xstrata Coal employs 10,000 people worldwide

20.9 Mt
- coking 8.7 Mt
- thermal 12.2 Mt
Xstrata Coal
Queensland (XCN)
Ian Cribb

36.1 Mt
- coking 5.2 Mt
- thermal 30.9 Mt
Xstrata Coal
New South Wales (XCN)
Mick Buffer

18.6 Mt
Xstrata Coal
South Africa (XCSA)
Sam Coetzee

Peter Coates, Chief Executive
Peter Freyberg, Director of Operations

2005 Total Managed Production: 75.6 Mt
(XCSA - Attributable production)
Xstrata Coal NSW

Coal production 36 Million tonnes p.a.
Employment 2,100

XCN - Developing a Healthy Culture

Resilient

Proactive

Compliant

Reactive

Vulnerable

Accept that incident happens

Prevent a similar incident

Prevent incidents before they occur

Way we do business

Minerals Industry Risk Management (MIRM) Maturity Chart

Safety Performance

TRIFR LTI FR

2002 2003 2004 2005 2006 YTD 2006B

2002 2003 2004 2005 2006 YTD 2006B

2002 2003 2004 2005 2006 YTD 2006B
Part of body

- Neck
- Shoulder
- Knee
- Back
- Hand & Finger
- Others injury locations

Task at time of injury (2003-6)

Ergonomics place within SMS
Setting the standard

HSEC STD5.05 - ERGONOMICS

PURPOSE

- To minimise the risk of injury to our people that may occur as a result of poorly designed equipment or poor work practices.
- To minimize the risk of injury including Cumulative Trauma Disorder (CTD) and Occupational Overuse Syndrome (OOS) when using equipment.

STANDARD

An Operation should implement processes so that an ergonomically sound environment is provided through the identification and management of ergonomic hazards. Ergonomic factors are to be considered when:

- designing the workplace
- purchasing materials, equipment and tools
- designing work procedures and practices
- changes are made to existing work procedures or equipment.

3.1 Ergonomic surveys

A baseline survey and ongoing reviews shall be conducted to identify key risk areas and necessary remedial actions.

3.2 Training

Employees should be provided with training in ergonomics relevant to their work. Training should be both general and job-specific.

3.3 Design

Ergonomic guidelines for design of work stations and layouts for machinery or computer operation should be applied, with consideration to:

- Work Station height and suitability
- Seating arrangements and suitability
- Lighting requirements
- Ventilation requirements
- Excessive vibration
- Individual differences, needs and requirements
- Equipment and tool design and placement
- Storage design and item placement
- Reducing the effects of, or where possible eliminating, repetitive tasks.
3.4 **Controls and work practices**

Administrative controls for consideration to reduce ergonomic stressors include:

- Repetition reduction
- Rest pauses
- Job rotation
- Job enlargement
- The number of employees required to perform a task
- Preventative maintenance
- House keeping.

When designing safe work practices consideration shall be given to CTD and OOS risk factors including:

- Repetitive or prolonged tasks
- Forced exertion
- Prolonged static postures
- Awkward positions of the upper body, for example, reaching above shoulders and twisting
- Excessive vibration
- Cold temperatures
- Inappropriate or inadequate use of hand tools.

3.5 **Reporting and analysis**

Hazard and injury reports and statistics should be used to aid analysing and identifying key ergonomic hazards to be addressed.

Where to start?

- We had a standard but our machinery did not reflect requirements fully
- Safety Performance improvement had plateaued
- Gut feel - we had a major issue with UG equipment design
  1. In 2004 we asked Robin to assist in a review to determine where to start
  2. Initial Review (Phase 1) of XCN statistics and site equipment
     - identified issues around continuous miners, S/C’s and LHDs
  3. ACARP funding application for a major review
Funding application

2004 Funding
Shortlisted Proposal

2004 Phase 1 studies, mine site involvement
Incorporation into HSEC Strategy & Plans
2005/6 involvement in ACARP funded Phases 2 and 3
Real commitment to planning and expenditure on new and upgraded equipment:
Continuous miners
Shuttle cars
LHD’s
Man transporters
Materials Handling

Site based initiatives - United

Reducing Injury Risks Associated with (Underground Mining Equipment) [Ref. No. 24912]

Your proposal has been considered by the ACARP selection committee and I am pleased to advise that it has been shortlisted for more detailed consideration.

You are invited to submit a full proposal. Please ensure that the expenditure and outcomes of the research are clearly documented and the disposition of the funds requested is informed. Your proposal will be enhanced if you identify key stakeholders or stages that can be seen to enable progress during the course of the proposed research. A copy of the “Preparation of ACARP Full Proposal” Guidelines will follow.

A large proportion of accidents and injuries continue to occur that are related to the ergonomic design of, and operation of processes around continuous miners and multi units. Xstrata Coal have judged that second and Phase 1 has been completed, identifying
Second Phase of the project has been identified to deliver improved equipment design and work process improvement which will involve all stakeholders.
WHAT IS INVOLVED?

1. Training session
   - Manual Tasks Risk Management Process

2. Workshop session
   - Prioritise and select projects
   - Conduction Perform RA

3. Implementation of control measures
4. Evaluation and follow-up sessions

Changing a DA Ram

**DA RAM**

The task has been identified as a major cause of musculoskeletal injury, with numerous incidences reported. This task is performed only a few times per month but is very strenuous.
Other Projects

Over 40 tasks were identified to benefit from the PEforM analysis during the workshops e.g..

• Rib Bolting with handheld rib bolter
• Hose and Cable Management

Next Steps

• Introduction of new machinery & vehicles
• Modifications where change outs not imminent
• Development of tender specifications incorporating design criteria
• Smaller project identification and control
• Focus on more difficult issues such as vibration and noise
• Continued monitoring of impact on health & safety performance

.........end presentation