develops tools to assess mine re-entry options

The need for an established and consistent information management strategy and system to support effective and unambiguous critical decision-making during a mine emergency has been a fundamental and recurring theme in most reports about underground coal mine incidents and emergency exercises.

Many Australian coal mines still have difficulty obtaining and maintaining relevant and critical information from their safety management systems during an emergency. This is often due to the location and status of information being dependent on one or two specific people, and information required during an emergency – such as the location and operational status of boreholes – not being kept up-to-date.

A more effective information collection and management system was needed to help incident management teams make sound decisions, particularly relating to the safety of mines rescue teams entering or re-entering a mine.

Industry target

- The development of a functional specification for an emergency response information management system, including a prototype, to assist incident management teams with effective information management and critical decision-making during an emergency.

Industry investment

- ACARP: $300,000.

Results

- Development of the Emergency Mine Entry/Re-entry Guidelines by the Queensland Mines Rescue Service (QMRS) and Mines Rescue New South Wales (MRNSW).
- Completion of a gap analysis that identifies the capability and capacity of Queensland and New South Wales underground coal mines to manage information and make sound decisions during emergencies.
- Development of a proof-of-concept Mine Re-entry Assessment System (MRAS) using MS Access (available on CD). The system:
    ⇒ Assists decision-makers to prioritise required and outstanding information to facilitate efficient resource management
    ⇒ Maintain an up-to-date log of the incident's status
    ⇒ Allows decision-makers to formally acknowledge the adequacy of information
    ⇒ Provides a formal process to assess and acknowledge explosibility risk
    ⇒ Provides a formal process to approve entry or re-entry into a mine during or after an incident.
- Review of existing mines rescue control limits and exclusion zones for potential explosive atmospheres when re-entering a mine. The risk assessment – "The determination of limits for mines rescue teams operating in a mine with potentially explosive atmospheres" – was conducted at Woonona Southern District's station (MRNSW) and involved representatives from

Simtars, Coal Services, Coal Mine Tech Services, Queensland and NSW mines inspectorates, MISHC, MRNSW, QMRS and industry.

- Development of a proof-of-concept explosibility analysis tool in MS Excel to demonstrate how the controls recommended in the guidelines could be implemented and assessed.

- The Pike River mine incident management team used the logic and process from the preliminary MRAS (hard copy version) to develop its re-entry plan. Key functions used by the team were:
  - $\Rightarrow$ Re-entry control questions for the assessment of explosibility risk
  - $\Rightarrow$ Explosibility graph for assessment of explosibility, trending and rate of change at each sample point
  - $\Rightarrow$ Management actions required, priority and status as set by the incident management team
  - $\Rightarrow$ Current situation reporting and recording
  - $\Rightarrow$ Authority to enter document.

- MRAS was used during the level one emergency exercise at Anglo Coal's Aquila Colliery and helped to:
  - $\Rightarrow$ Identify and access the critical information relevant to the incident to avoid unnecessary information overload
  - $\Rightarrow$ Provide reports which quickly summarised the information status (known/unknown) of relevant hazards
  - $\Rightarrow$ Maintain an up-to-date log of the incident's status.
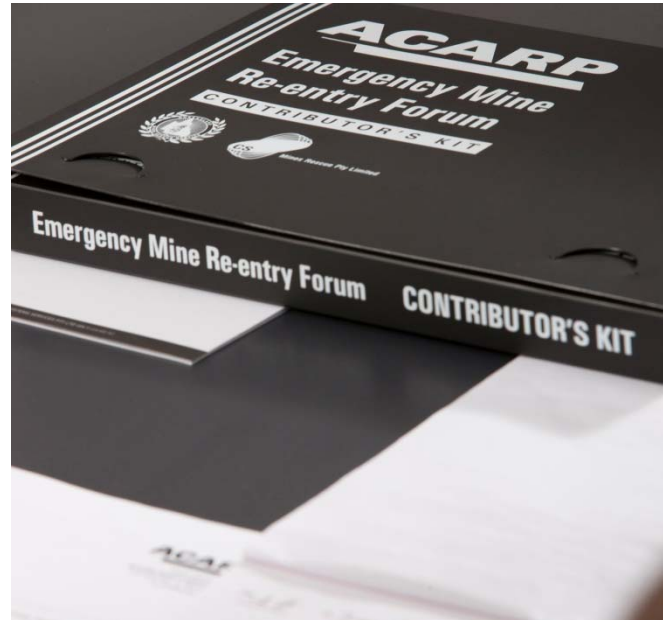
Return on investment

- Incident management teams can make better informed decisions during an emergency, potentially saving lives.