Resources Regulator

Regulator perspective on Outburst Management

Dave McLean
Chief Inspector of Mines

Gas and Coal Outburst Committee, Wollongong June 2017
Overview

- Significant incident – Outburst on LW
- Current industry practice & mindset
- Regulator activity
- Outcomes
Metropolitan outburst event

• A relatively small gas and coal outburst occurred on a geological structure on 24\textsuperscript{th} December 2016.
• No harm to workers
• The mine ceased operations and immediately notified the regulator

\textbf{THIS WAS THE FIRST REPORTED OUTBURST ON A LONGWALL FACE FOR ABOUT 20 YEARS}
Metropolitan outburst event

- After an inspection by the regulator a worker exclusion zone of some 30m on the intake side of the shearer was imposed whilst mining through the structure.
- The mine was permitted to continue operating under direction from the regulator.
- This was considered a minor event.

Had similar events occurred in the past and not identified as an outburst?
Metropolitan outburst event

- A more significant gas and coal outburst occurred on 4\textsuperscript{th} January 2017.
- An estimated 800t of coal was displaced, with about 200t into the working environment.
- An irrespirable atmosphere was detected 30m outbye of the shearer.

Had the initial event not been identified AND an exclusion zone not been in place, it is likely that the outburst would have resulted in multiple fatalities.
Metropolitan outburst event
Metropolitan outburst event
Metropolitan outburst event
Metropolitan outburst event

• Contributing factors

✓ This was a known outburst prone structure
✓ Outbursts had occurred in the development panel adjacent to the longwall – under controlled mining procedures
✓ Lack of gas drainage holes in the vicinity
✓ The gas content was not verified
✓ Complex geological structure – high stress environment
Metropolitan outburst event
Current Industry practice & mindset

- No verification of gas content in longwall block
- Large areas of coal not drained
- Authority to mine for LW does not consider outburst criteria
- Front abutment/stress relief considered as a control

General view is that outbursts are not considered as a risk on the longwall face
<table>
<thead>
<tr>
<th>COLLIERY</th>
<th>DATE</th>
<th>No. KILLED</th>
<th>SIZE</th>
<th>GAS</th>
<th>STRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan</td>
<td>10 June 1896</td>
<td>3</td>
<td>Unknown</td>
<td>CH₄ (firedamp)</td>
<td>Dyke and soft fault zone</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>27 July 1926</td>
<td>2</td>
<td>140</td>
<td>CO₂</td>
<td>Fault with 5m throw</td>
</tr>
<tr>
<td>Metropolitan</td>
<td>2 December 1954</td>
<td>2</td>
<td>90</td>
<td>CO₂</td>
<td>Normal fault with 0.3m throw</td>
</tr>
<tr>
<td>Tahmoor</td>
<td>24 June 1985</td>
<td>1</td>
<td>400</td>
<td>CO₂</td>
<td>Behind a dyke associated with strike slip movement</td>
</tr>
<tr>
<td>South Bulli</td>
<td>25 July 1991</td>
<td>3</td>
<td>300</td>
<td>CO₂ &amp; CH₄</td>
<td>Thrust fault with 35 cm of mylonitic coal; very high gas pressure.</td>
</tr>
<tr>
<td>West Cliff</td>
<td>25 January 1994</td>
<td>1</td>
<td>350</td>
<td>CO₂</td>
<td>Intersection of 2 strike slip structures; 30 cm of mylonitic coal.</td>
</tr>
</tbody>
</table>
Comments taken from outcomes of a LW outburst at West cliff April 1998

- Area not adequately covered by gas drainage – 21m3/t
- No apparent structure identified
- High localised stress
- Extremely low permeability coal (Piper, 1998; Walsh 1999)

Action taken by the mine
Updated the OMP to ensure that LW panels are effectively pre-drained
Challenge our thinking

- Our thinking behind our methodology is over 20 years old, based on a small group of outburst pioneers.
- The system has been quite successful, however……
- Research work has continued & shared with industry.
Regulator Activity
Safety Alert

- Geological assessment
- Gas content of LW blocks
- Effectiveness of gas drainage methods – below threshold limits
- Remote mining methods where threshold limits are unable to be met
Outburst activity 2017

- Program of work started in March 2017
  - Focussed on LW mining only
  - Bowtie analysis completed
  - Internal workshop completed
  - Preliminary investigation at outburst prone mines completed
Outburst activity 2017

• Outburst targeted intervention program commencing July 2017
  ✓ Appin
  ✓ Tahmoor
  ✓ Metropolitan
  ✓ Narrabri
Outburst activity 2017

- Shared early learnings with industry
  - reports published on website
  - Seminar presentation
- Commence update of MDG 1004
- International outburst conference Q4 2017