



## FINAL PROJECT STATUS REPORT FORM

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| <b>Project Number:</b> CLM-07-17  | <b>Task Force:</b> Coal Mining   |
| <b>Title of Project:</b> Coal Mines Fires Prevention and Control Technologies   |  |
| <b>Lead Partner Country:</b> Australia  |  |
| <b>Participating Partner Countries and Organizations:</b>   |  |
| <ul style="list-style-type: none"> <li>• CSIRO Exploration and Mining (Australia)</li> <li>• Singareni Collieries Company Ltd (India)</li> </ul>  |  |
| <b>Project Location:</b> India, Andhra Pradesh, Ramagundam  |  |
| <b>Project Manager Information</b>  |  |
| <b>Name:</b> Dr Rao Balusu<br>Mining Research Group Leader  | <b>Phone:</b> + 61 (0)7 3327 4614  |
| <b>Organization:</b> CSIRO Exploration and Mining   | <b>Fax:</b> + 61 (0)7 3327 4666  |
| <b>Address:</b> Post Office Box 883<br>Kenmore Qld 4069<br>Australia  | <b>Email:</b> <a href="mailto:Rao.Balusu@csiro.au">Rao.Balusu@csiro.au</a> |
| <b>Project Start Date:</b> August 2008  | <b>Date of Project Status Update:</b> February 2011                        |
| <b>Brief Description of the Project Activities:</b>   |  |
| <p>The main objective of this project is to develop and demonstrate advanced technologies and strategies for prevention and control of fires in underground coal mines, specifically at bord and pillar mines in India and at longwall mines in Australia. The project has integrated extensive field studies and computational fluid dynamics models of gas flow behaviour in caved goaf areas to develop optimum mine fire prevention and control strategies. The project field studies involved a comprehensive review and analysis of fires issues and ventilation systems at the field site, geological and geotechnical characterisation, design and implementation of a comprehensive goaf gas monitoring systems, and initial field trials with preliminary fire prevention strategies. The project has also carried out extensive modelling investigations and developed a fundamental understanding of gas flow behaviour in goaf areas and provided a detailed understanding of the effects of various geological, ventilation, operational and inertisation design parameters on goaf gas distribution. Based on the above studies, optimum technologies and strategies for prevention and control of fires in underground coal mines have been developed and implemented at the project site during field demonstration studies. The results of the field demonstration studies have shown that the developed technologies and strategies are highly successful in preventing fires at the field sites and the extraction panels have been sealed off successfully without any incidents of fires in goaf areas.</p> |  |
| <b>Outputs Delivered by the Project:</b>  |  |
| <ul style="list-style-type: none"> <li>• Detailed geological and geomechanical models have been developed for site characterisation and to investigate the effect of various geological parameters on underground workings.</li> <li>• Comprehensive analysis of mining layouts, ventilation systems, laboratory results, previous fire</li> </ul>  |  |



incidents and goaf gas monitoring data has provided significant insight into contributing factors and mechanics of fires development and migration in extraction panels.

- Extensive CFD modelling and parametric studies have provided fundamental understanding of air and gas flow behavior in caved goaf areas of extraction panels, both in bord and pillar mines and longwall mines, and the effect of various mining parameters and strategies on this goaf gas flow behaviour.
- Developed innovative technologies and optimum strategies during the course of this project for prevention and control of mine fires in bord and pillar panels and longwall extraction panels.
- Three progress reports delivered on site characterization studies, laboratory studies and numerical modelling investigations, and on the development of innovative technologies and strategies for the prevention and control of fires in coalmines.
- The project has significantly improved efficiency, resource recovery and safety of mining operations at the field site and developed guidelines and strategies for future mining operations.

**Date Completed:**

**Milestones Reached Over Lifetime of Project:**

- Installation of a comprehensive gas monitoring system for detailed goaf gas monitoring at the field site for project studies – April 2009.
- Geological and geotechnical site characterisation studies and laboratory investigations have been completed – September 2009.
- Completion of 3D numerical modelling investigations to assess caving behaviour at the field site with different panel layouts and designs under thick seam mining conditions – December 2009.
- Extensive Computational Fluid Dynamics (CFD) modelling studies to investigate the effect of various mining parameters and strategies on goaf gas behaviour – May 2010.
- Field demonstration of mine fire prevention technologies and strategies developed during the course of the project and performance monitoring at the field site – February 2011.

**Proposed Project End Date:** November 2011

**Project Already Complete:**  Yes  No

*Please provide url address for where activity can currently be found along with new name and/or identification number of project (if applicable).*

NA

**New Contact Information: (If different from above)**

Same as above

**Other Information:**

Please attach any supplemental project information to this form.