Department of Employment, Economic Development and Innovation

# Safety Bulletin

Mines

**Mines Inspectorate – Underground Coal Mines** **Safety Bulletin No. 119 | 15 February 2012**

# Explosion-protected diesel engine system standard updated

## Overview

Diesel engines in underground coal mines must comply with, and be tested and maintained to, Australian Standards. The standard **AS/NZS 3584.3:2012 Diesel engine systems for underground coal mines Part 3: Maintenance** was reviewed, substantially rewritten and republished early in 2012.

Provisions strengthened in the rewrite include the integrity of the explosion protection. This follows an alarming increase in failed inlet and exhaust system joints on diesel engines in Queensland and New South Wales underground coal mines. Failures have occurred in both 'open joints' and 'fixed connections' (using diesel engine terminology) and the failed joints were found to be no longer explosion-protected.

## Where is the risk?

A diesel engine with a failed joint operating in an underground coal mine risks igniting methane that may be present in the mine atmosphere. Most failed joints are preventable and investigations have highlighted failures caused by insufficient inspections, maintenance personnel lacking competence, and substandard audits/checks (all major defects in mine and workshop systems).

The revised standard uses a **three-tiered approach** to joint integrity:

1. **Manufacturing** relies on type testing and use of a quality system in manufacture and assembly.
2. Specific examination and testing processes are defined (under the terms 'Code A' to 'Code D') and detailed for various **maintenance** requirements.

   Service facility requirements include a quality system, adequate premises, specialist tools, drawings and settings for the engine components.
3. **Competence** of mine personnel conducting maintenance and joint inspection is sometimes inadequate. The standard lists the competencies to be used relevant to the tasks undertaken and supervision applied. These competencies, from the RII09 Resources and Infrastructure Industry training package which are proposed for endorsement in February 2012, are:
   - RIIDES301 Inspect, test and maintain diesel engines and their ancillary systems
   - RIIDES302 Inspect, test and maintain joints on diesel engine systems
   - RIIDES303 inspect, test and maintain cooling systems on diesel engine systems
   - RIIDES304 Inspect, test and maintain inlet systems on diesel engine systems
   - RIIDES305 Inspect, test and maintain exhaust systems on diesel engine systems
   - RIIDES306 Inspect, test and maintain safety shutdown systems on diesel engine systems
   - RIIDES307 Test, determine the cause and rectify excessive emission levels on diesel engine systems

All links can be found by going to http://www.skillsdmc.com.au/Training%20Packages/Issues%20Register.aspx

The Coal Mining Safety and Health Regulation 2001, Section 82 (2) (e), requires the use of the endorsed components of the coal industry training package.

A lack of skilled personnel in mines or off-site workshops is no excuse for using unqualified workers to complete checks and maintenance. This, combined with a lack of knowledge of, or regard for, the maintenance standard, raises concerns with regulators.

## Recommendations

1. Safety and health management systems at coal mines should be reviewed to ensure issues highlighted in this safety bulletin are controlled.
2. Sites should ensure positive inspection systems for joints are used and their training scheme should include the listed competencies with relevant personnel holding those required.

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