

CODE OF PRACTICE

Inspection, maintenance and repair of rail locomotive boilers



Document details

First published as: Inspection, maintenance and repair of rail locomotive boilers

Published by the Rail Industry Safety and Standards Board, PO Box 518, Spring Hill, QLD, 4004, Australia

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Document control

Document identification

Document title	Version	Date
Code of Practice: Inspection, maintenance and repair of rail locomotive boilers	2.0	20 March 2018

Document history

Publication version	Effective date	Reason for and extent of change(s)
2.0	20 March 2018	Product aged review – Re-format and minor updates
1.01	16 June 2011	Errata raised by DG. Minor update.
1.00	27 May 2011	First publication

Approval

Name	Date
Rail Industry Safety and Standards Board	20 March 2018

Code change procedures

The RISSB maintains the master for this document and publishes the current version on the RISSB website. Any changes to the content of this publication require the version number to be updated. Changes to this publication must be approved according to the procedure for developing management system documents. The RISSB will identify and communicate changes to this publication.

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1 Introduction

1.1 General

The heritage and tourist sector are represented by many operators, maintainers and repairers across Australia. In 2010 there were over 100 steam locomotives working across Australia. They range in size from very small types (like those used in the sugar industry) operating in a leisurely tourist or heritage environment, through to main-line express locomotives running at high speeds on tight schedules on the Australian commercial main-line network.

Every steam locomotive is equipped with a boiler classified under AS 4343 Pressure Equipment—Hazard Levels as a hazard level B pressure vessel. Their design is covered by AS 1228—2016, Pressure Equipment—Boilers, which also references the original design standards (such as CB1—1957, part 3) where applicable. Their inspection and assessment of fitness for service is covered by AS 3788—2006 Pressure Equipment—In-Service Inspection. There are several other standards covering similar items, such as pressure piping and smaller attached equipment, like pressure relief valves.

Locomotive boiler design, construction, operation, inspection and maintenance practice dates to the early days of the Industrial Revolution in the 19th Century. Except for a few isolated cases, the locomotive boiler design was removed from commercial service in Australia by the early 1970s when dieselisation of the railways was completed.

During the steam era, Australian railways were mainly owned, operated and maintained by state government agencies. Also, dotted across Australia were many small, private operators, such as those in the sugar and coal industries.

Inspection, maintenance and repairs to boilers were carried out at local depots, and major rebuilds and new construction occurred at major workshops. This was supported by specialised staff and infrastructure. The staff was specifically trained in their specialist fields, backed up by many years of experience working with locomotive boilers.

With the advent of the diesel and electric locomotive age, this large engineering work was shut down from the late 1960s, and the personnel moved into other roles to support the new locomotive technology. Today, most of the people who had direct experience with these boilers have retired or passed away.

As the steam locomotive was being phased out in Australia, many examples were preserved by government, local councils, volunteer organisations, private individuals and museums. Many of the organisations aimed to keep the steam locomotive operating. Many have been successful.

These organisations have ranged from government railway operating departments, through organisations working from an entirely volunteer base that operate intermittently, to those with a mixture of full-time paid and volunteer staff maintaining a year-round daily operation.

Away from the main line, the heritage and tourist railways sector has over 80 recognised accredited operators in Australia.

1.2 Scope

This Code of Practice is the product of a development group of subject matter experts (the Boilers COP Group) operating under the accredited Standards / Code development process and governance framework of the Rail Industry Safety and Standards Board (RISSB). The Development Group consists of members from the Association of Tourist and Heritage Rail Australia, rail operators and manufacturers.