RISSB Product Proposal (and Prioritisation)

RISSB
RAIL INDUSTRY SAFETY AND STANDARDS BOARD
ABN: 58 105 001 465

Primary information	
Type of product being suggested:	Code of practice
Title of product being suggested:	National Standardisation of Rolling Stock Refuelling Practices and Hardware
Date of suggestion:	13/02/2019
Reason for suggestion:	There is no standard in Australia that covers refuelling hardware. This means that there are multiple non-compatible pieces of equipment used to refuel locomotives. In order to refuel locomotives unconventional and unsafe practices are used in both dedicated provisioning depots and unbunded track side refuelling.
Railway discipline area:	infrastructure, rolling stock, operations, safety

Objective:

The objective of this code of practice is to create a National Standardisation of Rolling Stock Refuelling Practices and Hardware, since one does not exist.

This code of practice is to be used by all locomotive operators, loco provisioning (refuelling) service providers, and loco maintenance service providers for the purpose of increase safe operational practices.

Scope:

This product proposal is for the adoption of an Australian national approach to locomotive and railcar refuelling products and practice. This proposal aims to define a common refuelling nozzle and fuel receiver profile, a common safe work method for fuel transfers, minimum standard of tank overfill protection to prevent the over-filling of locomotives or tank damage, and mandatory replacement of refuelling products during every major service.

The Australian Rail network is dominated by diesel powered locomotives and railcars which consume large quantities of diesel on a daily basis. The equipment, flow rates, and automatic shutoff mechanisms by which these assets are refuelled vary from fleet to fleet. Australian railway companies will invariably require a range of refuelling equipment and often bulky and cumbersome adaptors at every provisioning station. Trackside refuelling by contractors – typically in an unbunded area - is particularly problematic if they are not equipped with the correct refuelling hardware required to carry out a safe refuelling event. What often becomes the case when the correct hardware cannot be found, is the improvisation of refuelling equipment, tampering of equipment, use of adaptors or employment of unsafe refuelling practises. Often a combination of unspecified practises is employed to ensure that a locomotive is quickly provisioned when the correct hardware is not available.

As locomotives and rail cars are leased, bought or acquired by different companies, this can cause quickly cause the issue of refuelling equipment incompatibility within the business.

This proposal looks to cover the following key areas:

- Determination of a national standard style of dry-break fuel receiver (tank-side refilling coupling);
- To “match” the standard tank-side receiver, determination of a national standard style of dry-break refuelling nozzle (fuel supply coupling);
- Call for a standard training package for locomotive drivers, locomotive provisioners or contracted trackside refuellers to understand safe refuelling procedure;

- Call for a minimum standard in reliable “zero tank pressure” tank overfill protection systems;
- Call for a mandatory replacement of critical refuelling equipment on rolling stock during each major service (or as otherwise recommended by equipment OEM’s);
- Establish a minimum *and* maximum fuel fill rate for all Australian locomotives that must be adhered to by all provisioning depots and trackside refuellers.
- Establish certain loco refuelling ancillary products and requirements, particularly for provisioning sheds where loco refuelling may not be constantly supervised. Such a requirement would be the use of a “break-away coupling” on the fuel supply line into the nozzle.

Hazard identification:

1	Environmental hazard (Fuel Spillage)	6	
2	Mechanical hazard (Manual handling of equipment and adaptors while refuelling)	7	
3	Breach of containment hazards (Tank Rupture will lead to equipment down time, fire, environmental and injury. High risk upon happening in a non-bunded area i.e. Track side refuelling)	8	
4	Operation hazard (lack of competency by operators for the refuelling operation of locomotives that can lead to any of the identified hazards in this document)	9	
5	Mechanical hazard (use of improvised tools and unsafe refuelling procedures when dispensing equipment is required to refuel incompatible receiving equipment on rolling stock).	10	

Definitions

i A ***Guideline*** is a set of informative guidance. It is not normative but informative.

A ***Code of Practice*** is a set of descriptions. It is the “how” one can meet a higher-level requirement (either of a Standard, or a piece of Legislation). It is normative, but by its nature can contain several options about how to achieve compliance with the higher-level requirement. It can also have some informative guidance within it if it is more practical than writing a separate guideline.

A ***Standard*** is a set of requirements only. It is the “what” must be done to be claim compliance to the standard. It is normative. It can also contain optional and/or supplementary requirements, but they still should be worded as requirements.

Benefits:

Safety

- Elimination/reduce of Fuel Spillages (environmental);
- Advancement of the health, safety and wellbeing for the operators;
- Process standardisation for equipment use and specific hardware/tools (manual handling);
- Reduce safety risk so far as is reasonably practicable;
- Eliminate the risk of fire while refuelling a rolling stock equipment.

Interoperability / harmonisation

There would be a harmonisation across refuelling depot infrastructure and locomotives. Currently operators can find a wide variety of equipment across locomotives and infrastructure that is not compatible and work in different methods and have different features.

The expectation is that all operators would adopt this Code of Practice to improve Reliability, Availability, maintainability and Safety of refuelling systems across rolling stock.

Financial

The new code of practice would bring practices that will increase the equipment availability, reduce risk for operators regarding equipment handling and could even prevent equipment failure (I.e. tank rupture)

- Installing standard equipment across locomotives would reduce inventory cost for spare parts;
- By using more reliable systems, operators will use it and maintenance programs can be proposed;
- Would improve effectiveness of delivering training packages for maintenance and operational users;
- Would benefit local trade by promoting the use of new technology and service providers across the infrastructure line;

Environmental

No fuel Spillages across bunded areas and non-bunded areas while refuelling locomotives.

Impacts:

Developing this Code of Conduct will be of value across the industry and we believe that a consensus will be reach easily.

There is a desire by workers in the industry to simplify and adopt a uniform refuelling system. There have already been movements by large well known railway companies to begin a process of unification of refuelling hardware, with investment in the sector to develop a hardware solution. This has resulted in a proven system that was implemented successfully without impact to operations.

Reference / source materials:

#	Reference / source material	Available from
1	ISO12100 Safety of Machinery General principles for design – risk assessment and risk reduction	SAI Global standards website
2	Banlaw FillSafe™ System catalogue	here
3	EBL-27 Engineering Bulletin Aeroquip to FillSafe Zero Upgrade	Attached to email

Definitions

ii ***Interoperability*** is the ability of a process, system or a product to work with other process, systems or products (aka compatible systems through managed interfaces).
iii ***Harmonisation*** - the act of bringing into agreement so as to work effectively together (aka uniformity of systems).