

AUSTRALASIAN SPAD CLASSIFICATIONS

Published 2021

Published by

RiSSB
RAIL INDUSTRY SAFETY AND STANDARDS BOARD

on behalf of the rail industry

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Australasian SPAD Classifications

Drawing on the UK scheme, Australian and New Zealand passenger and freight rail operators have agreed to adopt the following standardised Signal Passed at Danger (SPAD) classification system.

Although terminology and signalling systems differ between jurisdictions, this system provides a common scheme to categorise when authority has been exceeded and a rail system detects a SPAD (any unauthorised exceedance of a train movement limit of authority). Technical and human error SPADs are included.

In broad terms the classifications capture:

CLASSIFICATION A 1-4: the train interface / operation of the train

CLASSIFICATION B 1-4: the operating interface / signalling / network and network integrity.

Classification	Description ¹ <i>(Notes: No degree of severity or importance is implied within or between these categories).</i>
A	A1 When a SPAD has occurred and, according to available evidence, a stop aspect, indication or end of movement authority ² was displayed or given correctly and in sufficient time for the train to be stopped safely at it.
	A2 When a SPAD has occurred and, according to available evidence, the stop aspect, indication or end of movement authority concerned was not displayed or given correctly, but was preceded by the correct aspects or indications.
	A3 When a SPAD has occurred and, according to available evidence, verbal and/or visual permission to pass a signal at danger was given by a hand-signaller or other authorised person without the authority of the signaller/train controller.
	A4 When a SPAD has occurred and, according to available evidence, a stop aspect, indication or end of movement authority was displayed or given correctly and in sufficient time for the train to be stopped safely at it, but the train driver was unable to stop the train owing to circumstances beyond his/her control (<i>e.g., poor rail head adhesion, train braking equipment failure or malfunction etc.</i>).
B	B1 When a SPAD has occurred because a stop aspect, indication or end of movement authority, that previously showed a proceed indication, was displayed because of infrastructure failure (<i>eg, signalling or level crossing equipment has failed or malfunctioned</i>).
	B2 When a SPAD has occurred because a stop aspect, indication or end of movement authority, that previously showed a proceed indication, was displayed because it was returned to danger or displayed in error.
	B3 When a SPAD has occurred because a stop aspect, indication or end of movement authority was not displayed in sufficient time for the train to be stopped safely at the signal, indication or end of in-cab signalled movement authority as it had been returned to danger automatically or in an emergency in accordance with the Rail Infrastructure Manager Emergency Plans.
	B4 When a SPAD has occurred because vehicles without any traction unit attached, or a train which is unattended, had run away past the signal at danger or without an in-cab movement authority.

Guidance / Implementation Advice

To provide clarity and reduce SPAD reporting discrepancies, the following has been developed to assist the Australasian Rail Industry in determining what is and is not included in the standardised SPAD classification system.

¹ RISSB 'Category A SPAD and TPWS activity report'

² End of movement authority includes in-cab, signalled, paper and/or computer-based occupancy authority.

Why the need for consistent SPAD classifications?

The ARA coordinates an Australasian Rail Industry SPAD Working Group that consists of Australian and New Zealand passenger and freight rail operators. The Industry Group agreed to establish a standardised SPAD classification scheme.

Establishing a consistent SPAD classification system to be used by all Australasian rail operators and the Regulators will allow operators to benchmark, identify trends, share information and learn from each other. Aligning the SPAD classifications and data with what is provided to the Regulator will also help reduce regulatory burden on operators.

What is a SPAD?

A Signal Passed at Danger (SPAD) occurs when any rail traffic movement exceeds a signal or stop limit (including shunt limits) without the necessary safeworking authority (including but not limited to fixed signals, stop boards, hand signals, in-cab indicators, paper-based and electronic “occupancy authorities” and encroachment on a protected worksite).

A SPAD occurs when it is either formally detected by the signalling system or any other reporting process, including self-identification.

When should a SPAD be recorded?

A SPAD is any exceedance of the necessary working authority. Regardless of the type of signal or stop limit, if the correct authority is not followed and a signal or control is passed, a SPAD is to be recorded. Stopping and proceeding as per the rules are not to be recorded as a SPAD.

As per the above definition, a SPAD is to be recorded when a rail vehicle travels past a stop limit without the necessary safeworking authority. If however, a driver operated or runaway train passes multiple signals, multiple SPADs are not to be recorded. Rather it is to be captured as one incident.

All SPADs that occur as part of your rail operations or those that occur on your network are to be recorded. You must record:

- All SPADs that occur where you are the Rollingstock Operator
- All SPADs that occur on any infrastructure where you are the Rail Infrastructure Manager

To ensure multiple reports of the same SPAD can be identified (and therefore not counted twice), it is necessary to include the timestamp, rollingstock identifier, and location/signal number with each SPAD report.

When a SPAD has resulted in a collision or derailment, some operators record the top / resulting incident i.e. a collision or derailment. This removes the record that a SPAD occurred and distorts data. Companies are encouraged to record the top incident as well as the SPAD but this will be on a per business basis. **Thus, if a SPAD results in a collision, a business may elect to record the incident as a SPAD and a collision and both incidents will be captured. However only one top event should be reported to the Regulator.**

What vehicles are included?

As a SPAD by any vehicle on the rail network presents a serious safety risk, all rail vehicles are to be included and recorded if involved in a SPAD incident. Specifically, a record should be made if any of the following vehicles SPAD:

- mainline rollingstock (passenger and freight)
- vehicles involved in shunting operations
- road-rail vehicles (including high rails)
- track machines

What sites are included?

Similar to different vehicle types, as a SPAD at any site on the rail network is a safety risk, all sites on the network are to be included, irrespective of the location in which they occur. This ensures all SPADs are captured.

Specifically, SPAD incidents that occur at the following locations should be recorded:

- mainline / revenue track
- passing loops
- sidings
- yards
- Depots/ manufacturing / maintenance / work sites

Practical scenarios

The following scenarios have been applied to the standardised SPAD Classification system to assist rail entities using the scheme.

Scenario 1

A train enters a terminal platform that is deemed too short for the train consist. The rear cab of the train is not within the protection of the signals that provides authority for the movement out of the terminal platform (rear cab now to become the leading cab).

The driver changes end and prepares to depart the platform. As the cab is forward of the starting signal the driver forgets to confirm the aspect with the controller and departs the platform. The signal was still at stop.

Classification: **A1**

Scenario 2

The driver departed a station platform on a caution signal and reported becoming distracted with continual alarms alerting a minor fault in the train. Driver attention was diverted to the alarm which had to be acknowledged and cancelled via the Train Operating System. When the driver sighted the next signal at stop, he applied full service brakes and went past the signal by 150m.

Classification: **A1**

Scenario 3

The driver of a high rail vehicle drove to track speed to make up lost time, then sighted a signal at stop and made a brake application. The high rail driver realised that this was not the signal for the line that he was on and so released the brakes, believing that the correct signal was 1km away. The driver then sighted the vandalised signal at stop and made an immediate brake application. The high rail came to a stand approx. 20m past the signal.

Classification: **A2**

Scenario 4

A train was being moved in a yard. The driver observed a caution signal at the start and others at caution during the journey at approx. 25kph. A shunted indicated to the driver to move past the next signal to the yard limit signal at stop. The signaller advised the driver that the preceding signal was at stop.

Classification: **A3**

Scenario 5

The driver observed the caution indication and slowed the train in anticipation of the next signal which he observed at stop when it came into view. He applied brakes at the normal location for wet weather but the anti-skid braking system did not operate correctly causing the train to pass signal by 30m. The same train set was involved in an overshoot the previous day attributed to a malfunctioning grease pot.

Classification: **A4**

Scenario 6

The driver of a train approaches a station where there is a signal located at the exit end of the platform. The driver notes the caution aspect on the previous signal and reduces the speed of the train to stop at the platform which is a booked stop. The train is reduced to a speed that is well below the normal approach to the platform due to the signal at the end of the platform being at stop.

While the driver is coming to a stop the train encounters low adhesion on track and enters a wheel slide. The driver operates the train as instructed when under these conditions and the train passes the stop signal.

Investigations identify that the driver controlled the train in line with train management instructions and there was evidence of rail contamination.

Classification: **A4**

Scenario 7

A power surge due to a lightning strike caused the signal to revert to stop in front of an approaching train. The driver applied the brakes on sighting the stop signal but the train didn't reach a stop until 110m after the signal.

Classification: **B1**

Scenario 8

As a train approached the signal, the signaller placed the signal at stop with the intention of changing routes to sidings. The approaching train was not provided with adequate stopping time and although the driver applied the emergency brake, the train did not reach a stop until 50m after the signal.

Classification: **B2**

Scenario 9

An area controller observed two male youths crossing the down and up main lines as the train was approaching. The area controller did not have time to contact the train and so placed the signal at stop. The driver applied the brakes but was unable to stop before the signal. The train continued 80m past the stop signal before stopping.

Classification: **B3**

Scenario 10

The train moved 30m along the station platform and past a stop signal after crew had left it for crib break.

Classification: **B4**

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products developed by RISSB
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