



Investigation tool

This information is collected in accordance with the *Privacy & Personal Information Protection Act 1998 (NSW)* and the *Health Records & Information Privacy Act 2002 (NSW)* and will be treated confidentially.

SPAD data collection tool for rolling stock operators - tool B

Instructions

- Completed forms can be forwarded to ITSR either by **email:** occurrences@transportregulator.nsw.gov.au or **fax:** 02 8263 7200.
- It is recommended that a copy of this form be provided to the rail safety worker involved.

Part 1 - SPAD reference details

| | | | |
|------------------------|----------------------|-------------------|--|
| SPAD reference number: | <input type="text"/> | Date: | <input type="text"/> / <input type="text"/> / <input type="text"/> |
| Time: | <input type="text"/> | Signal number(s): | <input type="text"/> |
| Location of SPAD: | <input type="text"/> | | |

Part 2 - Driver factors

2.1 Is it possible that factors associated with the driver's history contributed to the SPAD?

Consider the following questions:

- | | | | | |
|--|-----|--------------------------|----|--------------------------|
| 2.1.1 Does the driver have less than 2 years experience? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.1.2 Is the driver under 25 years of age? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.1.3 Were any of the driver's training and competency records incomplete or not up to date? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.1.4 Does the driver have a recent history of previous SPADs or frequent other safety related incidents? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.1.5 Did the SPAD occur on the driver's first shift back after returning from annual leave or prolonged sickness? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.1.6 Did the SPAD occur on the driver's last shift prior to commencing a period of annual leave? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |

2.2 Is it possible that decreased alertness or fatigue contributed to the SPAD?

Consider the following questions:

- | | | | | |
|---|----------------------|--------------------------|-------|--------------------------|
| 2.2.1 What is the driver's usual basic nightly sleep need (when left to wake naturally after a few days off work)? | usual sleep needed = | <input type="text"/> | hours | |
| 2.2.2 Did the driver get less sleep duration than usual (calculated above) over the previous 72 hours? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.2.3 Was the previous 72 hours sleep lower quality (e.g. fragmented or disturbed)? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.2.4 Was the quality of rest influenced by the sleep environment or other unusual events? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.2.5 Had the driver been awake for over 16 hours at the time of the SPAD (excluding naps)? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.2.6 Did the SPAD occur during a low point of alertness, i.e., at night (00:00 to 06:00) or in the afternoon (14:00 to 16:00)? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.2.7 Did the driver experience any feelings of sleepiness or difficulty sustaining attention during the shift prior to the SPAD? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |
| 2.2.8 Did the driver have an extended period of commuting that may have impacted on sleep opportunity? | yes | <input type="checkbox"/> | no | <input type="checkbox"/> |

See **part 3.1** over page to determine if work schedules contributed to

2.3 Is it possible that factors associated with the driver's physical and mental state at the time of the SPAD contributed to the SPAD?

Consider the following questions:

- 2.3.1 Did the driver report a lapse in concentration due to personal worries or having other things on their mind? yes no
- 2.3.2 Did the driver fail a drugs or alcohol screening test applicable to the time of the SPAD? yes no
- 2.3.3 Was the driver using any medication at the time of the SPAD that may have adversely affected his/her vigilance or reaction times? yes no
- 2.3.4 Was the driver suffering from pain, illness or a health issue that may impact on sleep or alertness? yes no
- 2.3.5 Has the driver experienced any excessive daytime sleepiness or difficulties falling or staying asleep? yes no

Part 3 - Operational/organisational factors

3.1 Is there a possibility that the work schedule impacted on the driver's alertness/opportunity to recover?

| details of shifts worked on previous two weeks | | | | | | | | |
|--|-------|--------|------|-------|--------|------|-------|--------|
| date | start | finish | date | start | finish | date | start | finish |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Consider the following questions:

- 3.1.1 Does the 14 day work schedule history contain dimensions that reduce opportunity for recovery sleep, such as:
- excessive hours/overtime yes no
 - excessive night work yes no
 - quick turnarounds (e.g. 1 day or less after night work) yes no
 - excessive lift ups or lay backs (i.e. shift start time was changed at short notice) yes no
 - excessive consecutive shifts (e.g. more than 7) yes no
 - irregular starting times. yes no
- 3.1.2 Did the driver fail to have adequate breaks (to maintain alertness) during the shift in which the SPAD occurred? yes no
- 3.1.3 Were there workload factors (e.g. demanding or monotonous tasks) in combination with prior sleep loss that may have degraded performance? yes no

3.2 Did the driver experience any unusual or unfamiliar circumstances which may have contributed to the SPAD?

Consider the following questions:

- 3.2.1 Was the driver experiencing an unusual/uncommon situation? yes no
- 3.2.2 Was the driver facing time pressure, such as:
- aiming to keep to a route booked ahead of a slower train? yes no
 - trying to reach a changeover or relief point? yes no
 - altered timetable due to trackwork or transposed running? yes no
- 3.2.3 Did the driver feel that he/she was unfamiliar with the route driven or the location where the SPAD occurred? yes no
- 3.2.4 Did the driver feel that he/she was unfamiliar with the train controls or driving characteristics? yes no

3.3 Were there internal distractions that may have caused the driver to have a SPAD?

Consider the following questions:

- 3.3.1 Was the driver experiencing physical discomfort (e.g. too hot/too cold/excessive noise or vibration)? yes no
- 3.3.2 Was the driver distracted by operating any of the train radio systems? yes no
- 3.3.3 Was there an auditory distraction within the cab on approach to the signal (e.g. radio, telephone, tones or alarms)? yes no
- 3.3.4 Was the driver distracted by any other in-cab equipment or operational activity (e.g. vigilance devices, train operating systems, PA, train fault alarms, reading timetables or other documents, station duties)? yes no
- 3.3.5 Was the driver distracted by any in-cab non-operational activity (e.g. adjusting the driver's chair, boiling the kettle or obtaining a drink, packing a bag, reading newspapers or mobile phone use)? yes no
- 3.3.6 Is there evidence that another person(s) in the cab distracted the driver? yes no
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3.4 Were there external distractions that may have caused the driver to have a SPAD?

Consider the following questions:

- 3.4.1 Was the driver distracted by activity at a level crossing? yes no
- 3.4.2 Was the driver distracted trying to read lineside information on the approach to the signal? yes no
- 3.4.3 Was there a compelling but non-operational distraction on the lineside (e.g. a trespasser)? yes no
- 3.4.4 Was the driver distracted trying to control the train speed on a falling gradient? yes no
- 3.4.5 Was there a temporary speed restriction in operation close to the SPADed signal at the time of the SPAD? yes no
- 3.4.6 Was the driver distracted by contractors working at the lineside or any temporary lineside equipment/material? yes no
- 3.4.7 Was the driver distracted by a passenger? yes no
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3.5 Was the driver's view of the signal obscured?

Consider the following questions:

- 3.5.1 Was the blind obscuring the driver's view of the signal? yes no
- 3.5.2 At the time of the SPAD was the driver's view of the signal obstructed by the presence of another train? yes no
- 3.5.3 Was the driver's view of the signal obscured by any temporary equipment or material associated with building work on or around the line? yes no
- 3.5.4 Was the driver's view of the signal obscured by ground vegetation/foilage? yes no
- 3.5.5 Was the driver's view through the windscreen limited, e.g. by dirt on the glass? yes no

3.6 Was there anything that affected the driver's perception of the signal?

Consider the following questions:

- 3.6.1 Was the driver wearing sunglasses that are suitable for driving¹? yes no
- 3.6.2 Was the driver's vision affected by direct glare from sunlight shining in their eyes? yes no
- 3.6.3 Was there fog, mist, rain, sleet or snow at the time of the SPAD? yes no
- 3.6.4 Did the driver misjudge the distance to the signal due to low light levels? yes no
- 3.6.5 Could the signal's visibility be adversely affected by sun glare shining off the signal lens? yes no
- 3.6.6 Could a signal-like light be in the driver's field of vision on approach to the signal? yes no
- 3.6.7 On a curved approach, could the driver mistake a parallel signal as his/her own? yes no
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3.7 Did the driver make an incorrect early assumption about the signal aspect?

Consider the following questions:

- 3.7.1 Did the driver make an incorrect assumption about a signal indication because they only saw one of the aspect lights (e.g. top or bottom aspect)? yes no
- 3.7.2 Did the driver believe that the SPADed signal was showing a low speed indication? yes no
- 3.7.3 Had the driver been driving on successive caution signals prior to the SPAD? yes no
- 3.7.4 Did the driver focus on the turnout indication rather than the cautionary aspect of the signal in rear? yes no
- 3.7.5 Is this signal normally (i.e. more than 75% of the time) encountered at a proceed aspect? yes no
- 3.7.6 Did the driver expect the SPADed signal to conditionally clear? yes no
- 3.7.7 Did the driver assume that they could go past the SPADed signal at stop, e.g. under Special Working? yes no
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3.8 Did recent changes or other factors affect driver braking behaviour or judgement?

Consider the following questions:

- 3.8.1 Did the driver fail to account for low adhesion at the time and location of the SPAD? yes no
- 3.8.2 Prior to the SPAD had the driver transferred from one train to another with different braking capabilities? yes no
- 3.8.3 Prior to the SPAD had the driver or train recently switched between different types of braking system, e.g. EP to auto or auto to EP? yes no
- 3.8.4 Did the SPAD occur shortly after drivers changed ends? yes no
- 3.8.5 Have recent changes been made to the landscape/non-operational infrastructure along the lineside (e.g. landmarks, buildings, advertisements)? yes no

¹ Sunglasses should comply with AS/NZ 1067 and Fair Trading Regulation 2007. Certain types of lenses are marked with a warning that they "must not be used when driving" if they are not suitable for driving (e.g. if they are too dark or coloured in a way that could affect perception of colours)

3.6 Was there anything that affected the driver's perception of the signal?

Consider the following questions:

- 3.9.1 Did the SPAD occur shortly after a driver change? yes no
- 3.9.2 Did any action of the guard/PSS contribute to the SPAD? yes no
- 3.9.3 Is there any evidence that the signaller may have contributed to the SPAD (e.g. by setting the signal back in the face of the driver)? yes no
- 3.9.4 Is there any evidence that a failure in safety critical communications may have contributed to the SPAD (e.g. drivers - driver communications during changeover; driver - signaller communications; driver - protection officers/hand signaller communications; driver/guard communications)? yes no
- 3.9.5 If there were recent infrastructure changes prior to the SPAD were they effectively communicated in a timely manner to the driver? yes no
- 3.9.6 Did the driver believe that he/she was authorised to move by a signaller, shunter or hand signaller? yes no
- 3.9.7 Did the service stop at an intervening station or a worksite after the caution signal and before the SPADed signal? yes no
- 3.9.8 Has the signal layout been altered recently? yes no
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3.10 Was the driver attending to the wrong visual cues that they may have taken as evidence that they could proceed?

Consider the following questions:

- 3.10.1 Was the driver attending to train stops? yes no
- 3.10.2 Was the driver attending to an opposing movement? yes no
- 3.10.3 Was the driver attending to changes to other signal indications? yes no

Part 4 - Data logger information

- 4.1 Is there evidence that the driver was powering against the brake at the time of the SPAD? yes no
- 4.2 Is there evidence that the driver was exceeding the nominated track speed prior to the SPAD? yes no
- 4.3 Is there evidence that the vigilance alarm went off at the time of the SPAD? yes no

Note: Potential mitigating measures for each item in this tool can be found in the guide *Mitigating measures for tool B SPAD data collection tool for rolling stock operators*.