SPAD and TPWS activity report

Quarter 2 - 2013/14

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The report may be downloaded from the RSSB website: www.rssb.co.uk

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Key

Last quarter: Q1 2013/14
Last year: Q2 2012/13

Unless otherwise stated, stated values are for the end of Q2 2013/14, and comparisons are made between this and the last quarter.
Executive summary

Key statistics
All SPADs annual moving total (AMT)
285 ↑
Last quarter: 268
Last year: 239

16+ SPADs AMT
83 ↑
Last quarter: 73
Last year: 66

Multi-SPAD signals (two or more SPADs in five years)
125 ↓
Last quarter: 126
Last year: 134

20+ SPADs AMT
17 ↑
Last quarter: 13
Last year: 13

SPAD risk relative to September 2006 benchmark
61% ↑
Last quarter: 58%
Last year: 44%

Annual moving percentage of TPWS brake demands which were interventions
59% ↓
Last quarter: 60%
Last year: 57%

Quarterly performance
SPAD numbers

The 79 SPADs in Q2 13/14 was above the Q2 average of 68.3 for the previous three years. The annual moving total has seen an increase both compared to the last quarter and the same time last year.

16+ and 20+ SPADs
Due to the small numbers involved, there is large variation in the number of 16+ and 20+ SPADs between quarters. Note that the 16+ category also includes 20+ SPADs.

SPAD risk relative to September 2006 benchmark
Q2 13/14 included seven passenger train SPADs which passed the conflict point, which is the main reason for the increase from a year ago, when this figure was five.

TPWS reset & continue
There was one post SPAD TPWS ‘reset & continue’ incident during the quarter, which occurred at Arkleton East Junction on 8 August 2013. The driver stated the signal was displaying a green aspect, although had received three AWS warnings prior to the intervention. The train passed the first potential conflict point.

Multi-SPAD signals
Of the 125 multi-SPAD signals, 82 (66%) have TPWS fitted. These signals carry a lower risk, as TPWS is designed to stop the train before it reaches the conflict point.

9% of SPADs in the last five years have been at Multi-SPAD signals.
**Context**

### Most recent notable incidents resulting from SPADs

<table>
<thead>
<tr>
<th>Passenger train derailment</th>
<th>Passenger train collision</th>
<th>TPWS reset and continue</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>28 Aug 2010</strong> Guildford</td>
<td><strong>3 Oct 2009</strong> Darlington</td>
<td><strong>8 Aug 2013</strong> Arkleston East</td>
</tr>
<tr>
<td>Non-passenger train derailment</td>
<td>Non-passenger train collision</td>
<td></td>
</tr>
<tr>
<td><strong>7 Nov 2011</strong> Healey Mills Yard</td>
<td><strong>16 Oct 2003</strong> Norton Bridge</td>
<td></td>
</tr>
</tbody>
</table>

### Last three SPADs resulting in fatalities

<table>
<thead>
<tr>
<th>Ladbrooke Grove</th>
<th>Southall</th>
<th>Watford Junction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5 Oct 1999</strong></td>
<td><strong>19 Sep 1997</strong></td>
<td><strong>8 Aug 1996</strong></td>
</tr>
<tr>
<td>Collision: 31 fatalities (29 passengers and 2 workforce)</td>
<td>Collision: 7 passenger fatalities</td>
<td>Collision: 1 passenger fatality</td>
</tr>
</tbody>
</table>

### Historic performance

**SPAD numbers (AMT)**

- Since 2000 annual SPAD numbers have decreased by approximately 50%, with the long term trend continuing to show a decrease.

**SPAD risk relative to September 2006 benchmark**

- Between March 2002 and September 2006 there was a significant reduction in SPAD risk following the installation of TPWS.

**Seasonality (10-year average)**

- In the last 10 years, average monthly SPADs numbers have seen peaks in July and October/November.

### Contribution to total accidental system risk

**Total accidental system risk**

- SPAD risk contributes 10.0% of train accident risk, and 0.6% of total system risk. While this is a relatively small level of risk, SPADs are an important precursor due to their ability to cause a multi-fatality accident.

**Train accident risk**

- 10-year moving total SPAD fatalities for last 50 years

- There have been no fatalities as a result of SPADs in almost 14 years, with Ladbrooke Grove having the highest number of fatalities since St John's Lewisham in 1957.
Risk

Modelled risk

Precursor indicator model (PIM)

![PIM Graph]

SPAD risk

![SPAD Risk Graph]

The PIM measures the underlying risk from potentially higher risk train accidents (PHRTAs) by tracking changes in the occurrence of accident precursors. In September 2006, SPADs contributed 14.1 of the 100 total risk benchmark, July 2013 shows SPADs contributing 7.62 to a total risk of 86.63, which is 8.6%.

High risk SPADs

There were seven SPADs with a risk ranking of 20+ during the quarter. The details are as follows:

- **SPAD risk ranking 20** – On 16 July, a passenger train passed signal M525 at danger (Law Junction) by approximately 94 metres. The first potential conflict point is 280 metres beyond the signal. As TPWS is not fitted, this yields a high overrun probability. Had the train reached the conflict point, there was the potential for a rear-end collision between the lightly loaded passenger train and a non-dangerous freight train, with a potential collision speed of 25 mph.

- **SPAD risk ranking 21** – On 18 July, a rail mounted maintenance machine passed signal L5322 at danger (Broxbourne) by approximately 216 metres. The first potential conflict point is 361 metres beyond the signal. As TPWS is not fitted, this yields a high overrun probability. Had the train reached the conflict point, there was the potential for a rear-end collision between the on-track machine and a lightly loaded passenger train, with a potential collision speed of 27.5 mph.

- **SPAD risk ranking 20** – On 6 August, a passenger train passed signal WJ775 at danger (Watford Junction) by approximately 44 metres. The first potential conflict point is 2113 metres beyond the signal. As TPWS is not fitted, this still yields a relatively low overrun probability. Had the train reached the conflict point, there was the potential for a rear-end collision between two peak loaded passenger trains, with a potential collision speed of 55 mph.

- **SPAD risk ranking 20** – On 6 August, a passenger train passed signal VC726 at danger (Gipsy Hill) by approximately 40 metres. The first potential conflict point is 410 metres beyond the signal. As TPWS is not fitted, this yields a relatively high overrun probability. Had the train reached the conflict point, there was the potential for a rear-end collision between two peak loaded passenger trains, with a potential collision speed of 25 mph.

- **SPAD risk ranking 20** – On 8 August, a freight train passed signal GP6032 at danger (Arkleston Junction) by approximately 1548 metres, following a reset and continue. The first potential conflict point is 748 metres beyond the signal; as the train passed it, the event has the maximum overrun
probability. Within the conflict point, there was the potential for a rear-end collision involving a freight train and a very lightly loaded passenger train, with a potential collision speed of 30 mph.

- **SPAD risk ranking 21** – On 21 August, a passenger train passed signal DN101 (Ditton Junction) by approximately 238 metres. The first potential conflict point is 567 metres beyond the signal. As TPWS is not fitted, this yields a high overrun probability. Had the train reached the conflict point, there was the potential for a rear-end collision between a peak loaded passenger train and a freight train, with a potential collision speed of 32.5 mph.

- **SPAD risk ranking 21** – On 3 September, a passenger train passed signal SY19 (Barnt Green) by approximately 132 metres. The first potential conflict point is 1183 metres beyond the signal. As TPWS is not fitted, this yields a high overrun probability. Had the train reached the conflict point, there was the potential for a rear-end collision between two lightly loaded passenger trains, with a potential collision speed of 45 mph.

### SPAD risk in detail

<table>
<thead>
<tr>
<th>AMT of SPAD train reaching conflict point with potential for passenger collision</th>
</tr>
</thead>
</table>
| ![Graph](image)

<table>
<thead>
<tr>
<th>SPADs by potential outcome</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger train collision</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Zero risk</td>
<td></td>
</tr>
</tbody>
</table>

In the last 12 months, the majority (59%) of SPADs involved the potential for a passenger train collision. 28% had the potential for other outcomes, such as derailments or overrunning level crossings, and in 13% of cases there was no potential conflict before the next signal.

**SPAD risk closely tracks the overrun probability for SPADs where there is the potential for a collision involving a passenger train, with the number of trains reaching the conflict point in such scenarios having a strong effect on the shape of the SPAD risk graph. In the last 12 months, seven trains reached the conflict point where there was the potential for a passenger train collision.**

### SRM and SORAT

The SRR methodology is designed to provide an immediate indication of changes in SPAD risk, which relies upon certain assumptions which prevent it being used as a tool to look at the risk of individual SPADs or certain categories of SPAD. Once SORAT has been more fully rolled out, it will allow a better understanding of the risk from SPADs at individual signals.

The SRM allows us to look at the risk from some of the main SPAD sub categories, in FWI per year:

- **Junction**
  - 0.412 FWI

- **Plain line**
  - 0.237 FWI

- **Shunt**
  - 0.060 FWI

- **Other**
  - 0.112 FWI
Quarter in detail

Monthly SPAD numbers

The below two charts respectively show the number of SPADs and 16+ SPADs for each month during the quarter. The band shows an expected range for SPADs based on the past ten years.

All SPADs monthly variation 16+ SPADs monthly variation

SPAD numbers are relatively consistent throughout the year, with the SPAD numbers for each month of Q2 falling in the expected range based on previous years. There is a large variation in 16+ SPADs between months, due to their low numbers. In the last three years about 28% of SPADs have been risk ranked 16+.

SPADs by sub-category

SPADs numbers by sub category are shown below

A1 category SPADs A2 category SPADs A3 category SPADs

A4 category SPADs

A1 SPADs are attributable to driver error, A2 that the signal is imperfectly displayed or partly obscured, A3 that an incorrect authority had being given and A4 that the train experienced compromised braking performance. Full descriptions are given in Appendix 2.

Of those which have this field completed in SMIS, approximately 75% are A1, 18% are A2, 4% A3 and 3% A4. Incidents for which a sub-category has not been entered have been categorised as A1 SPADs.
Recent quarters have seen an unusually high percentage of SPADs involve a TPWS brake demand. This is due to an increase in the number of SPADs at TPWS fitted signals, with the number at non-TPWS fitted signals staying relatively constant.

Over the past three years, 49% of the TPWS involvement in SPADs was interventions; this has recently seen a spike, with a greater proportion of TPWS brake demands at SPADs being interventions.

Reset and continue

Since the installation of TPWS was completed in early 2004, there have been 28 ‘reset & continue’ incidents. None of these have resulted in either a collision or a derailment, although in one instance the SPAD train did damage some points by running through them.

Last three reset and continue incidents

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkleton East</td>
<td>8 Aug 2013</td>
</tr>
<tr>
<td>Shoeburyness</td>
<td>9 Jun 2013</td>
</tr>
<tr>
<td>Brereton</td>
<td>1 Oct 2012</td>
</tr>
</tbody>
</table>

Though there can be no question that TPWS has helped reduce the risk from SPADs, the ability to ‘reset and continue’ continues to present problems, as the most recent incident at Arkleton East suggests.

Issue 7 of Right Track – out now – takes a look at the issue and reminds drivers who get an intervention or activation to…

…KEEP CALM and DON’T CARRY ON.

For more details, see Opsweb, or email the team at righttrack@rssb.co.uk
There does not appear to be any correlation between the number of TPWS brake demands approaching signals at danger (which do not result in a SPAD) and the number of SPADs.

One possible reason for this marked seasonal variation is that drivers alter their braking technique when approaching signals at danger according to the prevailing conditions, and that slowing down earlier reduces the numbers of overspeed trips approaching signals at danger.

Prior to 2012, all TPWS brake demand data was collected from control logs, the data is now collected directly from SMIS resulting in a more complete data set.

There is currently insufficient historical data on brake demands at TSRs and PSRs to draw any conclusions about their seasonality. There is currently no evidence to suggest a correlation with SPADs.
## Route performance

### Anglia

<table>
<thead>
<tr>
<th>Category</th>
<th>Q4 2013/14</th>
<th>Q3 2013/14</th>
<th>Q2 2013/14</th>
<th>Q1 2013/14</th>
<th>Q4 2012/13</th>
<th>Q3 2012/13</th>
<th>Q2 2012/13</th>
<th>Q1 2012/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>All SPADs AMT</td>
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<td></td>
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<tr>
<td>Last quarter</td>
<td>20</td>
<td>22</td>
<td>30</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16+ (incl. 20+) SPADs AMT</td>
<td>8</td>
<td>6</td>
<td>9</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last quarter</td>
<td>5</td>
<td>3</td>
<td>20</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train miles AMT (millions)</td>
<td>32</td>
<td>22</td>
<td>8</td>
<td>12</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Last quarter</td>
<td>34</td>
<td>23</td>
<td>6</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-SPAD signals</td>
<td>22</td>
<td>23</td>
<td>30</td>
<td>25</td>
<td></td>
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<td>Last quarter</td>
<td>20</td>
<td>13</td>
<td>22</td>
<td>22</td>
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<tr>
<td>Proportion of total SPADs</td>
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<td></td>
</tr>
<tr>
<td>SPADs per million train miles</td>
<td>1.19</td>
<td>1.07</td>
<td>1.07</td>
<td>0.83</td>
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<tr>
<td>Last quarter</td>
<td>0.89</td>
<td>0.90</td>
<td>0.89</td>
<td>0.83</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Kent

<table>
<thead>
<tr>
<th>Category</th>
<th>Q4 2013/14</th>
<th>Q3 2013/14</th>
<th>Q2 2013/14</th>
<th>Q1 2013/14</th>
<th>Q4 2012/13</th>
<th>Q3 2012/13</th>
<th>Q2 2012/13</th>
<th>Q1 2012/13</th>
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</thead>
<tbody>
<tr>
<td>All SPADs AMT</td>
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<tr>
<td>Last quarter</td>
<td>20</td>
<td>22</td>
<td>20</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16+ (incl. 20+) SPADs AMT</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td></td>
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<tr>
<td>Last quarter</td>
<td>6</td>
<td>2</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Train miles AMT (millions)</td>
<td>22</td>
<td>14</td>
<td>10</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last quarter</td>
<td>23</td>
<td>13</td>
<td>14</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-SPAD signals</td>
<td>14</td>
<td>13</td>
<td>20</td>
<td>14</td>
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<tr>
<td>Last quarter</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
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<td></td>
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</tr>
<tr>
<td>Proportion of total SPADs</td>
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<td></td>
</tr>
<tr>
<td>SPADs per million train miles</td>
<td>1.07</td>
<td>0.83</td>
<td>0.83</td>
<td>1.19</td>
<td></td>
<td></td>
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<tr>
<td>Last quarter</td>
<td>0.86</td>
<td>0.0</td>
<td>1.19</td>
<td>1.07</td>
<td></td>
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</tr>
</tbody>
</table>

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**Lessons learned**

- Improved data quality
- Enhanced route performance

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**Data quality**

- Improved data collection
- Enhanced data analysis

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**Route performance**

- Anglia
  - All SPADs AMT: 38 (↑)
  - 16+ (incl. 20+) SPADs AMT: 8 (↑)
  - Train miles AMT (millions): 32 (↓)
  - Multi-SPAD signals: 22 (↑)

- Kent
  - All SPADs AMT: 12 (↓)
  - 16+ (incl. 20+) SPADs AMT: 5 (↓)
  - Train miles AMT (millions): 22 (↓)
  - Multi-SPAD signals: 14 (↑)

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**Context & Risk**

- Quarterly report summary
- Risk management strategies

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**Quarter in detail**

- Data quality analysis
- Route performance metrics

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**Executive summary**

- Key findings and insights
- Strategic recommendations

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**Lessons learned**

- Best practices and improvements
- Sustainability and innovation

---
London North Eastern

All SPADs AMT

55 ↑

Last quarter: 48
Last year: 40

Multi-SPAD signals

19 ↓

Last quarter: 20
Last year: 24

Proportion of total SPADs

16+ (incl. 20+) SPADs AMT

19 =

Last quarter: 17
Last year: 15

Train miles AMT (millions)

73 ↓

Last quarter: 76
Last year: 76

20+ SPADs AMT

2 =

Last quarter: 2
Last year: 4

SPADs per million train miles

0.75 ↑

Last quarter: 0.63
Last year: 0.53

SPADs per MTM from average

0.83

0.75

London North Western

All SPADs AMT

50 ↑

Last quarter: 46
Last year: 50

Multi-SPAD signals

27 ↑

Last quarter: 26
Last year: 29

Proportion of total SPADs

16+ (incl. 20+) SPADs AMT

19 ↑

Last quarter: 17
Last year: 9

Train miles AMT (millions)

79 ↓

Last quarter: 83
Last year: 84

20+ SPADs AMT

1 =

Last quarter: 1
Last year: 3

SPADs per million train miles

0.63 ↑

Last quarter: 0.55
Last year: 0.59

SPADs per MTM from average

0.83

0.63
Scotland

All SPADs AMT

20 ↑
Last quarter: 17
Last year: 14

16+ (incl. 20+) SPADs AMT

7 ↑
Last quarter: 4
Last year: 2

Train miles AMT (millions)

35 ↓
Last quarter: 36
Last year: 35

Multi-SPAD signals

8 =
Last quarter: 8
Last year: 10

SPADs per million train miles

0.58 ↑
Last quarter: 0.47
Last year: 0.40

Proportion of total SPADs

Scottish

Spad/TPWS Report, Q2-2013/14

Sussex

All SPADs AMT

22 ↓
Last quarter: 25
Last year: 20

16+ (incl. 20+) SPADs AMT

8 ↑
Last quarter: 7
Last year: 3

Train miles AMT (millions)

22 =
Last quarter: 22
Last year: 22

Multi-SPAD signals

10 =
Last quarter: 10
Last year: 10

SPADs per million train miles

1.02 ↓
Last quarter: 1.11
Last year: 0.89

Proportion of total SPADs
Lessons learned

Data quality

Route performance

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Context & Risk

Quarter in detail

Route performance

Data quality

Lessons learned

Wessex

All SPADs AMT

29 ↓

Last quarter: 30
Last year: 23

Multi-SPAD signals

9 ↓

Last quarter: 11
Last year: 12

Proportion of total SPADs

Train miles AMT (millions)

30 ↓

Last quarter: 31
Last year: 31

SPADs per million train miles

0.97 ↑

Last quarter: 0.95
Last year: 0.73

SPADs per MTM from average

Western

All SPADs AMT

30 ↓

Last quarter: 33
Last year: 26

Multi-SPAD signals

15 =

Last quarter: 15
Last year: 14

Proportion of total SPADs

Train miles AMT (millions)

31 ↓

Last quarter: 32
Last year: 35

SPADs per million train miles

0.96 ↓

Last quarter: 1.02
Last year: 0.75

SPADs per MTM from average

16+ (incl. 20+) SPADs AMT

9 =

Last quarter: 9
Last year: 8

20+ SPADs AMT

1 =

Last quarter: 1
Last year: 1

SPADs by quarter

Proportion of total SPADs

SPADs per MTM from average

SPADs by quarter

Q2 Q3 Q4 Q1 Q2
2012/13 2013/14

Q2 Q3 Q4 Q1 Q2
2012/13 2013/14

0.83 0.97

0.83 0.96
Wales

All SPADs AMT

17 ↓

Last quarter: 19
Last year: 10

Multi-SPAD signals

2 ↓

Last quarter: 3
Last year: 2

Proportion of total SPADs

16+ (incl. 20+) SPADs AMT

4 =

Last quarter: 4
Last year: 2

20+ SPADs AMT

0 =

Last quarter: 0
Last year: 0

Train miles AMT (millions)

16 ↓

Last quarter: 17
Last year: 15

SPADs per million train miles

1.04 ↓

Last quarter: 1.11
Last year: 0.66

Proportion of total SPADs

SPADs by quarter

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2012/13</th>
<th>2013/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Q3</td>
<td>4</td>
<td>5</td>
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<td>Q4</td>
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<td></td>
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<tr>
<td>Q1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q2</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

SPADs per MTM from average

0.83

1.04
Data quality

**Reporting**

We are confident there is no underreporting of SPADs, as SMIS has a direct link to CCIL, which we check to make sure all the SPAD events are entered.

**SPADs with a completed investigation**

The SPAD investigation is important, as it is the final stage of the process, after which SMIS is updated to reflect any additional information or corrections which have come to light.

It is also often used to help establish cause, where this is otherwise not clear, which is used in the safety risk model and furthering our understanding of SPAD risk.

It is expected that more recent SPADs may not have a completed investigation, while older SPADs should have a completed investigation that has been added to SMIS.

**Days taken to enter SPAD events into SMIS**

Over the last five years, the vast majority (98%) of SPADs have been entered into SMIS within five days of the event occurring.

The majority of those which have been entered into SMIS after five days have been events which were not originally thought to have been a SPAD.
Lessons learned

**SPADs: an international perspective**

*Greg Morse, Operational Feedback Specialist, RSSB*

The four major overseas train accidents that occurred in July have given the GB rail industry cause to reconsider its own mitigation methods and policies. Of the four, however, only the collision at Granges-près-Marnand, Switzerland, resulted from a SPAD.

At around 18:45 on 29 July, a departing S-bahn train passed a signal at danger and struck an incoming Regio Express just outside the station. The driver of the latter was killed; 26 passengers were injured.

Investigations are ongoing, but there is speculation that the S-bahn service was dispatched while the platform starter was red, thus making the incident a ‘SASSPAD’.

The section of line between Palézieux and Payerne is single tracked. Four trains are scheduled to cross at Granges-près-Marnand each day (two in the morning, two in the evening).

The signalling at the station features the Swiss SIGNUM automatic train protection system, which is only partially effective at reducing SPAD risk, having only a warning/stop function, no over-speed supervision, and no departure-stop function when combined with a passing loop. It is designed to slow down a train passing a red signal, but often fails to prevent it from reaching a potential conflict point. Further confusion is also caused by the simplified station signal layout, which has only one departure signal for all lines.

It is understood that SBB plans to accelerate its ERTMS programme.

**The GB situation**

In this country, the Driver Reminder Appliance (DRA), which the driver must proactively reset before the train can move, helps prevent SASSPADs. And of course we also have TPWS, which is designed – where track and infrastructure layouts allows – to automatically stop trains within the safety overlaps and before it reaches a potential conflict point.

However, TPWS does have some known weaknesses in the context of SASSPADs, including the ‘reset and continue’ phenomenon, which – as our figures suggest – remains an issue.

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1 Lac-Megantic, Quebec (06/07/13): tank wagon runaway, leading to derailment, explosion and fire; Breitigny-sur-Orge, France (12/07/13): high-speed passenger train derailment on pointwork at station throat; Santiago de Compostela, Spain (25/07/13): over-speeding passenger train derailment on curve; Granges-pres-Marnand, Switzerland (29/07/13): SPAD and collision between two passenger trains.
Appendices

Report scope
The information in this report covers SPADs which occurred on Network Rail managed infrastructure (NRMI) during the first quarter of 2013/14, comparing it with previous quarters and years.

Note: Following the recent reissue of Railway Group Standard GO/RT3119, the term ‘SPAD’ now refers to those events which were previously labelled as a ‘category A SPAD’.

Definitions
Various definitions can be found in appendix 1 and 2 can be found as a separate file on the website, alongside this report.

Details of all SPADs on the network
Details of all SPADs that have occurred on the network since 1998 can be found on the SPAD and TPWS page of Opsweb, http://opsweb.co.uk/spad-and-tpws-reports-data. This file is updated every month to include the latest available data.

It is possible to filter on the risk ranking column to identify potentially significant (risk ranked 16+) and potentially severe (risk ranked 20+) SPADs.

Multi-SPADs
A multi-SPAD signal is defined as one which has had two or more SPADs in the preceding five years. A current list of multi-SPAD signals may be found on the SPAD and TPWS page of Opsweb, http://opsweb.co.uk/spad-and-tpws-reports-data. This is updated every Monday.

It is possible to filter on the events in current 5 years column on the Multi-SPADed list tab to identify signals that have had three or more SPADs in the period. It is also possible to see any signals which were cited in the two post-Ladbroke Grove Improvement Notices, by filtering for T22 and IN in the multi-tag column.

SPADs per million train miles
SPAD rates per million train miles by company can be found on the SPAD and TPWS page of Opsweb, http://opsweb.co.uk/spad-and-tpws-reports-data in the OPSRAM data for Network Rail Routes file. This file is updated every month to include the latest available data.

Previous reports
This section details items which can be found in previous reports, but haven’t been included in this one as they either aren’t updated quarterly or are only included at times of interest.

2012/13 Q4 - SPADs per 100 drivers
- SPAD rate by driver age and experience
### Table 1. All SPADs: monthly totals

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