



SPAD numbers and risk up in Q3.

Introduction

This is a four-page summary of the category A signal passed at danger (SPAD) and Train Protection and Warning System (TPWS) activity Q3-2010/11 report.

Key Facts: December 2010

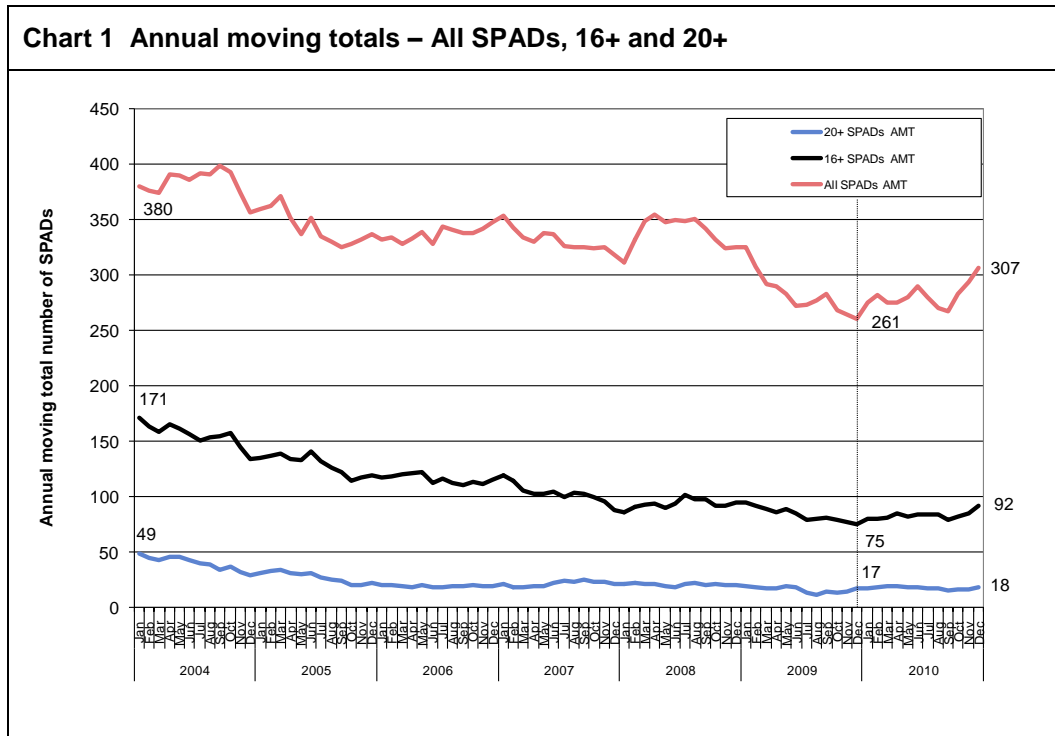
December 2010:	34 category A SPADs during December, which is 13 more than December 2009, which is 62% worse. December 2010 was also 50% worse than the three-year average of 23.
Risk ranking:	12 SPADs were risk ranked 16 or above (five of which were risk ranked 20+). This compares to five in 2009 (three of which were risk ranked 20+).
TPWS:	Five TPWS interventions (TPWS applied the brakes before, or in the absence of, driver action). 11 TPWS activations (the driver initiated braking before the system). One where the TPWS involvement is currently unknown. There was one 'reset and continue' event.
Multi-SPADs:	Eight SPADs by multi-SPAD drivers (two or more since qualifying as a driver), Three of which register within the current five-year period. Seven SPADs at multi-SPAD signals (two or more within the current five-year period).

Key Facts: Q3 2010/11

Quarter 3:	100 category A SPADs during Q3 2010/11, which is 40 more than Q3 2009/10, which is 67% worse. Q3-2010/11 was also 25% worse than the three-year average of 80.3.
Risk ranking:	31 SPADs were risk ranked 16 or above (Ten of which were risk ranked 20+). This compares to 18 in Q3-2009/10 (of which seven were risk ranked 20+).
TPWS:	17 TPWS interventions (TPWS applied the brakes before, or in the absence of, driver action). 34 TPWS activations (the driver initiated braking before the system). One where the TPWS involvement is currently unknown. There was one 'reset and continue' event.
Multi-SPADs:	23 SPADs by multi-SPAD drivers (two or more since qualifying as a driver), 13 of which register within the current five-year period. 27 SPADs at multi-SPAD signals (two or more within the current five-year period).

Summary of SPAD numbers

The number of SPADs recorded in the 12 months ending December was 307. This represents an 18% increase when compared to the position a year ago. This increase is statistically significant at the 90% confidence level. The AMT for '16+ SPADs' has also increased during the past year, reaching 92 as at the end of December, whereas that for 20+ SPADs has risen slightly from 17 to 18. This is shown in chart 1.



SPAD risk.

SPAD risk¹	December 2009 – 63%	■ 13% worse: Representing a 21% change over the year
	December 2010 – 76%	

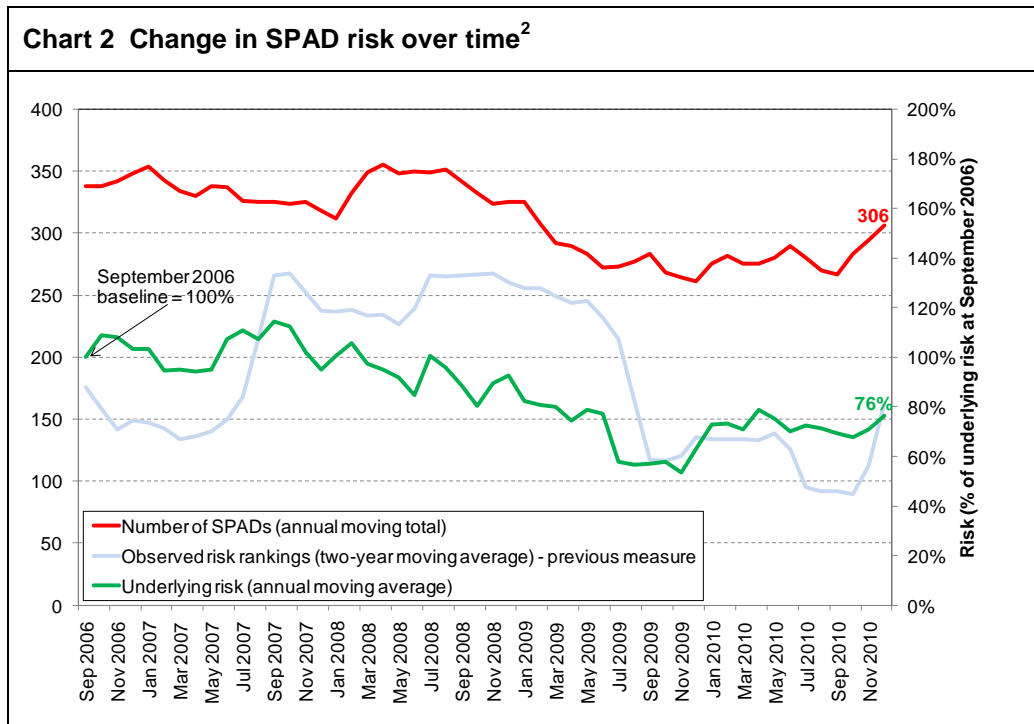
SPAD risk is calculated system-wide using a consistent and objective measure applied by the SPAD risk ranking tool (SRRT). The risk ranking score assigned to each SPAD is then used to track changes in SPAD risk over time.

In the past, SPAD risk has been calculated using March 2001 as the benchmark date. However, this predated the introduction of TPWS (completed at the end of 2003), as well as the elimination of Mk 1 rolling stock (substantially completed by the end of October 2005). The combination of both of these initiatives has had a positive effect on the level of SPAD risk. To discount these two factors from the calculations, and portray a more current indication of trends in risk, it was decided to fix a new benchmark date at September 2006.

RSSB also devised a new method of assessing trends in SPAD risk to assess whether a change in SPAD risk ranking results is representative of any underlying change in risk rather than just volatility in the data. The new metric, which is less vulnerable than the former measure to one high-risk SPAD, is based on the SPAD risk ranking tool (so will continue to reflect changes in both frequency and potential consequence) but it is a more robust method for identifying changes in the underlying risk.

¹ Against the September 2006 baseline figure.

Chart 2 shows the SPAD risk, using both the old and the new metrics for comparison. Please note that this is the last time that the old metric, based on the March 2001 baseline, will be shown on this chart



TPWS 'reset and continue'

There was one post-SPAD 'reset & continue' incident during Q3-2010/11.

- On 17 December, an ECS train passed WM825 signal on the down Willesden relief line at Sudbury Jn. (LNW Route) at danger by a total of 66 yards. The train was stopped by a TPWS intervention within this distance, but the driver reset the TPWS and continued forward without authority, subsequently stopping the train at its intended stopping point, ready to make a reversing movement from beyond the signal.

This SPAD has a risk ranking of 16 as the length of the overrun was short, the permissible speed was low (20mph) and the potential conflict being between two empty coaching stock trains.

SPAD performance by Railway Undertaking

Table 1 compares the performance of each Railway Undertaking, in terms of the numbers of SPADs per million train miles run, to the national rate. It highlights those which have achieved SPAD rates better than the appropriate national rate in respect of 'All SPADs' and '16+ SPADs', as well as those which have exceeded the national rate in either one, or both of these categories.

This table is divided into three sections: All SPADs, 16+ SPADs and 20+ SPADs. The national SPAD rates for each risk ranking band are also shown, highlighted in yellow. Those RUs which have a SPAD rate which is lower than the national rate for both 'all SPADs' and for '16+ SPADs' are coloured green. Those with one such rate lower than the national rate, and one higher are coloured orange, whereas those with both rates higher than the national rate are coloured red. The '20+ SPAD' rates are not reflected in the colour coding, due to the small number of events per company.

² The SPAD Risk chart includes SPADs which come within the definition of 'On or affecting a running line'. This is a slightly different set of SPADs to those on NRMI reported on elsewhere. A definition of OORL may be found in the full report

The infrastructure companies' SPADs are not normalised as it would be inappropriate to do so in view of the limited number of miles accrued by these undertakings. Instead, raw SPAD numbers are given. Alstom's SPAD figures are also raw SPAD numbers, as the miles accrued are small.

Table 1 SPADs normalised by million train miles

Passenger national rate	Rate per MTM all						Rate per MTM 16+						Rate per MTM 20+								
	2004	2005	2006	2007	2008	2009	2010	2004	2005	2006	2007	2008	2009	2010	2004	2005	2006	2007	2008	2009	2010
	0.84	0.83	0.81	0.82	0.75	0.61	0.70	0.34	0.31	0.27	0.25	0.23	0.18	0.21	0.07	0.07	0.03	0.06	0.05	0.04	0.05
Passenger train operators	Rate per MTM all						Rate per MTM 16+						Rate per MTM 20+								
	2004	2005	2006	2007	2008	2009	2010	2004	2005	2006	2007	2008	2009	2010	2004	2005	2006	2007	2008	2009	2010
Arriva Trains Wales	0.86	1.19	1.16	0.58	0.99	0.48	0.91	0.47	0.24	0.22	0.29	0.28	0.07	0.21	0.00	0.00	0.00	0.07	0.07	0.00	0.00
c2c	1.25	1.49	0.26	0.00	0.49	0.47	0.00	0.50	0.50	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chiltern Railways	0.19	0.74	0.00	0.34	0.50	0.32	0.84	0.00	0.19	0.00	0.17	0.17	0.00	0.17	0.00	0.19	0.00	0.17	0.00	0.00	0.00
CrossCountry	0.56	0.45	0.28	0.50	0.32	0.65	0.51	0.34	0.28	0.11	0.11	0.16	0.20	0.25	0.00	0.06	0.00	0.00	0.00	0.10	0.10
East Coast	0.42	0.35	0.26	0.51	0.08	0.08	0.33	0.34	0.26	0.09	0.26	0.00	0.08	0.00	0.08	0.17	0.00	0.00	0.00	0.00	0.00
East Midlands Trains	0.95	0.92	0.76	0.27	1.04	0.22	0.36	0.41	0.31	0.30	0.00	0.32	0.00	0.07	0.00	0.15	0.15	0.00	0.08	0.00	0.00
Eurostar	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
First Capital Connect	0.74	0.48	0.74	0.87	0.74	0.98	0.92	0.12	0.21	0.14	0.20	0.14	0.33	0.26	0.00	0.00	0.00	0.13	0.00	0.07	0.07
First Great Western	0.54	0.36	0.55	0.94	0.69	0.52	0.68	0.27	0.12	0.24	0.27	0.27	0.11	0.23	0.12	0.00	0.00	0.04	0.08	0.00	0.11
First Hull Trains	1.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
First ScotRail	0.83	0.78	0.95	1.08	0.53	0.42	0.73	0.58	0.21	0.25	0.29	0.20	0.12	0.31	0.08	0.04	0.04	0.12	0.04	0.08	0.04
First Transpennine Express	0.24	0.25	1.15	0.55	0.31	0.69	0.29	0.12	0.12	0.46	0.00	0.21	0.49	0.29	0.00	0.00	0.12	0.00	0.10	0.10	0.10
Grand Central	0.00	0.00	0.00	0.00	0.00	2.90	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00
Heathrow Express	0.99	5.19	2.14	0.00	2.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
London Midland	0.00	0.00	0.00	4.41	0.74	0.76	0.55	0.00	0.00	0.00	1.89	0.16	0.07	0.00	0.00	0.00	0.00	0.63	0.08	0.00	0.00
London Overground	0.00	0.00	0.00	21.08	1.40	1.86	0.67	0.00	0.00	0.00	0.00	0.47	1.39	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.34
London Underground	3.34	2.82	2.73	2.33	1.71	2.40	1.23	0.00	0.47	0.91	0.47	0.29	0.53	0.00	0.00	0.00	0.45	0.00	0.29	0.00	0.00
Merseyrail	1.59	1.38	1.66	1.38	1.08	0.80	2.38	1.06	0.28	0.28	0.00	0.00	0.00	1.06	0.27	0.28	0.00	0.00	0.00	0.00	0.26
National Express East Anglia	1.08	1.02	1.06	0.91	1.09	0.95	0.45	0.22	0.31	0.35	0.25	0.40	0.25	0.05	0.00	0.05	0.05	0.10	0.10	0.10	0.05
Nexus	2.88	0.56	0.00	1.14	0.56	0.00	0.64	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Northern Rail	1.94	1.19	0.61	0.65	0.90	0.69	0.79	0.78	0.61	0.23	0.19	0.15	0.35	0.22	0.19	0.15	0.00	0.00	0.04	0.07	0.00
Serco Metrolink	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
South West Trains	0.62	0.89	1.26	1.18	1.00	0.51	1.05	0.21	0.28	0.65	0.49	0.36	0.08	0.36	0.04	0.04	0.08	0.08	0.16	0.00	0.04
Southeastern	1.13	1.36	1.49	1.48	1.14	0.88	1.16	0.31	0.63	0.32	0.47	0.31	0.21	0.42	0.05	0.10	0.00	0.11	0.00	0.10	0.05
Southern	0.84	0.74	0.57	1.13	0.63	0.82	0.79	0.42	0.26	0.26	0.31	0.19	0.18	0.09	0.10	0.16	0.05	0.10	0.00	0.00	0.05
Victoria Westlink Rail	12.66	10.20	7.85	0.00	0.00	0.00	0.00	12.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Virgin West Coast	0.49	0.50	0.43	0.21	0.36	0.09	0.31	0.16	0.36	0.14	0.14	0.24	0.00	0.13	0.16	0.07	0.00	0.07	0.00	0.00	0.04
West Coast Railway	0.00	12.84	5.99	10.06	0.00	0.00	3.81	0.00	0.00	0.00	5.03	0.00	0.00	0.00	0.00	0.00	0.00	5.03	0.00	0.00	0.00
Freight national rate	Rate per MTM all						Rate per MTM 16+						Rate per MTM 20+								
	2.33	1.89	2.01	1.70	2.25	1.76	2.14	0.59	0.55	0.54	0.27	0.43	0.45	0.58	0.08	0.03	0.17	0.06	0.12	0.10	0.07
Freight train operators	Rate per MTM all						Rate per MTM 16+						Rate per MTM 20+								
	2004	2005	2006	2007	2008	2009	2010	2004	2005	2006	2007	2008	2009	2010	2004	2005	2006	2007	2008	2009	2010
DB Schenker	2.51	2.24	2.29	2.08	2.74	2.09	2.60	0.56	0.62	0.57	0.26	0.51	0.56	0.72	0.08	0.04	0.26	0.10	0.17	0.07	0.07
Direct Rail Services	1.21	0.00	0.00	1.29	2.49	0.46	1.05	0.00	0.00	0.00	0.64	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Freightliner	2.01	1.37	1.58	1.00	1.70	1.70	1.85	0.83	0.53	0.32	0.20	0.38	0.50	0.41	0.12	0.00	0.00	0.00	0.09	0.20	0.10
GB Railfreight	2.07	0.77	2.72	2.45	1.65	1.48	1.46	0.00	0.00	2.04	0.61	0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Infrastructure companies	Number of category A SPADs						Number of 16+ category A SPADs						Number of 20+ category A SPADs								
	2004	2005	2006	2007	2008	2009	2010	2004	2005	2006	2007	2008	2009	2010	2004	2005	2006	2007	2008	2009	2010
Alstom	0	0	0	0	2	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Amey Rail	0	0	1	0	2	2	3	0	0	1	0	0	0	2	0	0	0	0	0	0	1
Babcock Rail	0	2	3	2	3	0	0	0	2	1	1	2	0	0	0	0	0	0	0	0	0
Balfour Beatty Rail	0	2	4	1	2	5	2	0	0	0	1	1	3	1	0	0	0	0	0	0	0
Canillion Rail	0	0	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Colas	3	2	4	4	1	3	1	2	1	3	1	0	0	0	0	0	1	0	0	0	0
Harsco Rail	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jarvis Rail	6	4	5	2	5	2	0	3	2	2	1	2	1	0	1	0	0	0	0	0	0
Mowlem Civil Engineering	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
Other	2	3	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Serco Rail Operations	0	1	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
VolkerRail	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0

In accommodating franchise changes, RSSB has measured relevant RUs' past performance, where possible (by considering the current RU's predecessors' SPADs), to provide a benchmark reference for future comparison. This estimation is considered to be realistic; it is based on SMIS data since January 1998.

Further information:

Please refer to www.opsweb.co.uk for further data. The site contains a spreadsheet containing every SPAD event since 1998, and is updated monthly.

All RSSB publications are freely downloadable from the RSSB website at www.rssb.co.uk.

If you would like to discuss any of the material contained in the SPAD report, please contact: Roger Badger, Safety Intelligence Analyst, roger.badger@rssb.co.uk