

A series exploring Non-Technical Skills (NTS) and how they can benefit safety critical organisations

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2 of 8 - Exploring and understanding key Non-Technical Skills shortfalls that can lead to train driver safety incidents

For a number of years [OPC](#) psychologists have been working alongside International and UK rail clients developing a more in-depth understanding of NTS and how they can help improve safety.

Dr Stephen Fletcher, occupational psychologist and director at the OPC, has written the second in the series of 8 articles about NTS. It specifically explores NTS in relation to post incident assessments and how they may have contributed to a safety incident. Further articles in the series aim to explore how we can use NTS to help identify root causes of safety incidents as well as identifying NTS shortfalls through safety incident investigations; the individual application of NTS in various driver roles and using NTS within driver training.

Understanding the key Non-Technical Skills shortfalls that can lead to train driver safety incidents

For over 15 years [OPC](#) psychologists have undertaken in-depth post incident assessments (PIA) with hundreds of train drivers who have experienced safety of the line incidents. These incidents have included SPaDs, station overruns, stopped shorts, TPWS activations and interventions and failed to calls. Some of these drivers had multiple incidents. The aim of the PIA process is to investigate all the contributing factors to the incident and especially the NTS shortfalls that may have led to each driver's incident. The psychologist then prepares a bespoke development plan for the driver to address the NTS shortfalls helping to keep him/her safe, along with the train staff and passengers.

Research to uncover common NTS shortfalls through PIA's

OPC psychologists took the PIA findings for 100 drivers with the aim of determining if there were any common NTS shortfalls across this group of drivers. The analysis revealed a common set of NTS shortfalls across different drivers with different incidents. The results suggest there may be some key NTS shortfalls that many drivers could have been lacking at the time of their incidents, consequently contributing to those incidents happening. We identified six top NTS shortfalls:



*NTS headings taken from the 2012 RSSB research 'Research Programme. Operations and Management. Non-technical skills for rail: A list of skills and behavioural markers for drivers, with guidance notes.'
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A summary of the findings and relevant NTS

The highest ranked NTS shortfall across the PIA research was 'maintain concentration' with over 90% of driver's displaying this shortfall. This is a very common finding within our post incident assessments. Many experienced drivers can slip into autopilot where the powers of concentration can be diminished, especially when combined with over-familiarity of route, traction, or scheduled stops etc

The 2nd ranked NTS shortfall was 'checking' with nearly 80% of driver's displaying this shortfall. Many drivers' incidents might have been avoided if the driver had undertaken more thorough checking immediately prior to an incident e.g. checking the signal again, checking the train speed or the door release side. Consciously employing the NTS of checking is very important when there is a change to the driver's common routine, as familiarity without double-checking can lead to incidents.

The third highest NTS shortfall was 'anticipate risk'. Immediately prior to an incident some drivers were at an increased risk of a making an error. However, the risk was not recognised or if it was, it wasn't managed effectively. For example, a driver may have been driving a less familiar traction unit on a less familiar route with a stop at an irregular station - all key risks of unfamiliarity that could lead to an error.

The NTS shortfalls that ranked 4th was 'emotional management'. High emotions can significantly impair a driver's safety performance. These high emotions could be the result of an event immediately prior to the incident for example an argument with a fellow driver, or a longer-term issue such as a bereavement or the break-up of a relationship.

For just over a third of the drivers an NTS shortfall was the 'failure to be in the present'. Some drivers can think ahead too much, maybe considering future stops or thinking about getting the last train home themselves, rather than what is happening immediately in the cab.

The last of the top NTS shortfalls from the PIA research was that of 'time patience'. Some drivers dislike being late and so are affected by time delays. This can lead them to rushing or trying to make up time. In doing so they create additional risks for themselves potentially leading to an incident.

The research findings put to good use

These important research findings can be put to very good use by train and freight operators. Taking on board the learnings, we could consider implementing any or all of the following:

- Existing and trainee drivers can be trained in these key NTS shortfalls and how they can contribute to an incident
- Drivers can be provided with key pro-active NTS tools and techniques helping to keep them safer and incident free
- These key NTS could be given extra weight in a selection process for new drivers
- Incident investigators can be trained and primed to look out for these NTS shortfalls as potential contributing causes when undertaking an incident investigation

Dr Stephen Fletcher, psychologist and director at the OPC said: “These are important findings about key NTS identified through the analysis of a significant number of PIA’s. The suggested list of touch points from initial recruitment through to the management of exploring safety incidents are not the only opportunities we have to consider on how we might apply this learning for maximum benefit. There are likely to be some real advantages for safety critical organisations to use these research findings to help improve rail safety still further.”

If you would like to know more about this research or other work the OPC are doing around NTS then please do get in touch by email at admin@theopc.co.uk or call on 01923 23 46 46.

To read part 1 of the series [click here](#).



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