

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

December 9, 2020



5 of 8 – Effective incident investigations to uncover NTS root causes to a safety incident

Occupational psychologist and director at the [OPC](#), Dr Stephen Fletcher, has written the 5th in the series of 8 articles about Non-Technical Skills (NTS). This article specifically explores NTS in relation to safety incident investigations. Previous articles have looked at the most important NTS for some safety critical roles; train driver, conductor and train dispatchers. Further articles in the series aim to cover some key NTS for a number of other safety critical roles and how NTS shortfalls can be precursors of future safety incidents.

Rail investigations

Our rail investigations following a safety critical incident have a key role to play in helping us to

understand what happened and what the underlying root causes might have been. Once we have identified those root causes, we can put changes in place to help reduce the chances of a similar incident occurring in the future. The underlying causes and hence our recommendations could be at a number of different levels including systems, organisational, team, and/or individual. In the case of very serious incidents these investigations can be very detailed and in-depth and at times could result in a public inquiry too.

Quality investigations can help lead to quality evidence and effective solutions

It is very important when we undertake our investigations that they are as thorough as possible, but more importantly they are probing to help us uncover the underlying root causes. The outputs from our investigation will only be as good as the investigation itself. So, a key question is how effective are our investigations?

OPC review of our rail investigations

For over 19 years, OPC psychologists have undertaken more than 500 in-depth incident investigations with safety critical employees who have had an incident, where the employee has played an important role in the incident. These employees have included train drivers, station staff, train conductors, signallers, controllers, track workers and other operational personnel. We use psychological techniques of questioning and probing to help uncover some of the underlying Non-Technical Skills (NTS) shortfalls that may have contributed to the employee being unsafe, and the incident.

OPC investigations are often undertaken after the organisation has completed its own inquiry. When we compare notes, it is sometimes the case that the organisation has been able to identify the technical skill failings e.g. driver X failed to check the signal on leaving the station. However, their investigation may not always pull out the underlying NTS root causes that may have led to the technical skill failing. What we can sometimes see is the organisation implementing a technical solution with the employee that just resolves the symptom of the incident, and not the underlying and more generic NTS failing. So, in our example the driver may be given a development plan to check the signal on leaving a station to avoid another start away SPaD. However, what we aren't addressing is the underlying NTS of 'checking' that the driver may still need to apply to all other aspects of his/her work. This can mean the driver is very vulnerable to other types of safety incidents that may be due to the same NTS shortfall of 'checking'. What we should be doing is helping the driver take the learning from the incident and apply that learning generically across all aspects of his/her work to improve their safety performance.

We see this need to get to generic learning happening at an industry level too. When we have a public inquiry following a major rail incident e.g. the Ladbroke Grove, Clapham and Southall disasters, the inquiry team may try to take the specific learning and apply it 'across the board' in our industry.

How good are your organisation's investigations at uncovering the underlying NTS root causes?

In a recent OPC Webinar, we asked 86 delegates for their views and opinions about their own organisation's investigations. The results from half of the delegates with over 70 individual word

descriptions, were interesting and polarised.

For those who felt their organisation did a good job at incident investigations, they used words such as:



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For those who felt their organisation's investigations needed some improvement, they used words such as:

For a number of years, OPC psychologists have been training rail managers and investigators in how to enhance and improve their incident investigations to help get to the underlying root causes, including but not limited to NTS. Factors that we think are important in thorough incident investigations are:

- Building rapport with the individuals involved to encourage openness and authenticity
- Questioning and probing effectively
- Exploring the incident events in real depth
- Undertaking a cognitive walk through with the employee to find out step-by-step what he or she was thinking, doing and feeling – covering all NTS aspects and not just a technical skills analysis
- Collecting data and evidence from other incidents that the employee may have been involved in
- Identifying, from the evidence, the root causes that are individually focused and around NTS shortfalls
- Helping the employee to improve and enhance his/her safety performance through an all-encompassing and bespoke NTS development plan
- Ensuring all incident investigators are effectively trained

Dr Stephen Fletcher summarised by saying: “We have trained both experienced and inexperienced investigators and we have had positive feedback from both. We have also seen first-hand the impact incident investigation training has had in improving an organisation’s investigations to help uncover the underlying root causes, particularly around NTS. Individuals have felt less blamed and more supported to develop their Non-Technical Skills; investigations have been more thorough and effective at finding and isolating the NTS root causes and whole driver teams have had an opportunity to learn from a well organised investigation – not to mention the potential for a reduction in safety incidents.”

If you’d like to know more about NTS or the OPC’s incident investigation training then contact us at admin@theopc.co.uk or call us on 01923 23 46 46.



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