A review of passenger train dispatch from stations
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Background
Members of the ATOC (Association of Train Operating Companies) former Train Operators Safety Group asked for research to be undertaken into train dispatch methods to see if the variety of dispatch methods represented a cause of increased risk and to establish which, if any, of the methods were safer or more effective. This research project was sponsored by the Operations Focus Group.

Aims
The research took account of the fact that train dispatch is safely completed in the vast majority of cases. Incidents do occur, however, and represent approximately 1.8 fatalities and weighted injuries (FWI) per year. This has to be taken in the context of the total system risk to the industry of 141.3 FWI per year (excluding suicides and suspected suicides) and thus represents just over 1% of that risk. This project has been undertaken to:

1. Provide a clear rationale for the rules and guidance on train dispatch of passenger trains
2. Assist duty holders in deciding how to improve the effectiveness and safety of passenger train dispatch.

Method
The research project explored GB train dispatch procedures for passenger trains, taking into account human factors and risk principles, with a view to confirming whether current arrangements are suitable and effective. For the purpose of this work, and in accordance with the Rule Book, train dispatch was defined as the activity which takes place from the moment a train is stationary at the platform, awaiting the boarding and alighting of passengers and the train crew (if applicable), until the train wheels have started to turn.

To address the research aims a review of industry data and standards was undertaken, and a questionnaire circulated among TOC safety representatives. This was supplemented by a series of site surveys, which included observations of a variety of train dispatch methods, and interviews with key personnel involved in the process. A task and error analysis was undertaken to obtain a detailed description of the task and the different ways in which
it might fail. This analysis was then validated by train drivers, guards and platform staff during a series of workshops. A risk analysis was undertaken, based on industry data sources, to understand the likelihood of different types of incident occurring with each variation of dispatch method.

Findings

There are multiple dispatch methods in use today. These methods can vary from station to station, even along the same route. In a minority of cases it is possible for a train driver to travel to a station and not be aware of the dispatch arrangements until he or she arrives. However the analysis undertaken as part of this research showed that the difference in risk between the methods is small, to the extent that a cost benefit analysis could not find a significant difference between the various dispatch methods. Furthermore, difficulties were encountered in confidently identifying costs associated with changing a dispatch method, particularly where infrastructure equipment is involved. These difficulties stem from the different types of station and how they relate to the various generations of signalling technology, together with the large costs involved in providing, fitting and commissioning new signalling equipment.

A significant finding has been that there can be improvements to the interpretation and understanding of the rules (as laid down in the Rule Book) surrounding dispatch. The report looked at the hardware involved in train dispatch (Right Away Indicators, Train Ready to Start equipment etc) and the human factors issues relating to such equipment. The dispatch of empty coaching stock (ECS) was also investigated, as were communication issues affecting station staff. Freight train dispatch was not included.

Conclusions

The dispatch procedures outlined in the Rule Book cover a wide variety of situations and, within these, there are additional local variations. There appears to be little significant difference in risk between the current arrangements at different locations. Therefore, the dispatch arrangements currently employed seem to be largely appropriate for the risks at each station.

The analysis showed that the costs of making large-scale or significant changes are likely to outweigh the benefits. Nevertheless, this research could be used to inform the content of the Rule Book, and the issues raised taken into account as part of longer-term structural and rolling stock changes, as organisational improvements take place on the GB rail network.
Overall, there are likely to be benefits from reducing the variety of train dispatch methods used. However, doing so with the current infrastructure could lead to poorer risk mitigation at some locations and significant cost exposure, especially where signalling systems would have to be changed. It is therefore more appropriate to consider this in the long-term, as other infrastructure changes are implemented.

**Recommendations**

Recommendations arising from this research (there are 26 in all) can be attributed to:

1. Training - perhaps the quickest ‘win’, as there are several recommendations within this area.
2. Hardware - several recommendations on hardware issues including clear labelling, location and consistency of layout for dispatch equipment.
3. Rule Book - clarification of several issues.

**Next Steps**

This research is being reviewed by the Operations Focus Group and then a presentation will be given to ATOC Safety Group Forum members. Depending on their conclusions, it is expected that up to three workstreams will then commence - covering improved training processes, improved reporting procedures to more effectively remedy any problems with equipment as they arise and a review of the relevant Railway Group Standards.

**Benefits**

The key benefit from this research is that the industry now has evidence that the existence of a number of train dispatch systems does not increase risk or delay and that any major programme of harmonisation could not be justified unless implemented as part of planned local or major resignalling schemes. As such this is research which does not create a rationale for major change - and its validity has to be recognised for that reason. However, value will be obtained, in terms of small but useful reductions in risk and improvements in punctuality, by clearing up some potential inconsistencies in the rules, and improving some training and reporting processes.
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