

11 Managing the Impact of Fleet Incidents on the Railway

11.1 Introduction

The majority of good practice identified in this document concerns reliability improvement and reducing the number of technical incidents. The purpose of this section, however, is to give guidance on how fleet incidents can be better managed when they do occur. This section has been developed jointly between fleet and operations - through a series of workshops and meetings - to document how a joint approach to fleet incident management can reduce incident times and improve performance.

Some incidents can cause major disruption to the system due to not only their nature, but also the time and location of the incident. The impact may be lessened by following some simple guidelines that innovative TOCs have developed and by planning for such occurrences. Whilst this section concentrates on fleet type incidents and rolling stock, the principles can be applied to almost all types of railway incidents. This means good planning, having the tools in place and carrying out comprehensive reviews.

It should be noted that the best practice featured in this section is irrelevant to control type and is designed to be compatible with all TOCs. The content is arranged to follow the “Plan, Do, Review” process.

11.2 Definitions

Primary delay: A Primary Delay is a delay to a train that results from an incident that directly delays the train concerned, irrespective of whether the train concerned was running to its schedule (schedule includes booked platform or line) at the time the incident occurred, i.e. the delay is not the result of another delay to the same or other train.

Secondary delay: Secondary, or as it is sometimes referred to as, Reactionary Delay, is a delay to a train that results from an incident that indirectly delays the train concerned, i.e. the delay is the result of a prior delay to the same or any other train.

11.3 Plan

Good practice in planning for the management of technical incidents consists of developing competent, well trained individuals who can come together to manage it as an incident team. The team is best supported by the following elements of good practice:

11.3.1 Roles and Responsibilities

It is important that all staff clearly know what their place is within the ‘incident management team’. They should know what their roles and responsibilities are in an incident and they should stick to them and have the confidence in others to do their part. They should be fully trained and assessed regularly. It may be helpful to produce a [RACI](#) for the incident management team so members know who is Responsible, Accountable, Consulted and Informed for each task they perform.

Incident Management can be quite an intimidating environment for the driver and is also a reactionary situation. This means that some drivers will be unfamiliar with certain incidents which can lead to panic which in turn leads to an increase in the overall incident time. It is critical to have good plans in

place which are regularly practiced and point the driver or controller in the correct direction to best deal with the incident.

Example: A number of train operators employ a “phone a friend” policy, where the driver is expected to contact Control for technical support in an incident within a few minutes. It is important that these “friends” have up to date knowledge of the traction and recent incident alerts. In order to make the “friend” on the end of the telephone as approachable and helpful as possible, Southern have recruited the expertise of a call centre trainer to develop clear protocol for the dialogue between the driver and the Technical expert (the “friend”) on the end of the line. Greater Anglia used conductor staff to train staff on phone manners.

Potential roles within the team are shown below:

Controllers	British Transport Police (BTP) liaison	Signaller	CCTV operators
Media managers (twitter, etc.)	Passenger Information System Controller	Fleet controller	“Phone a friend”
Tech Support	Planner	Electrification	

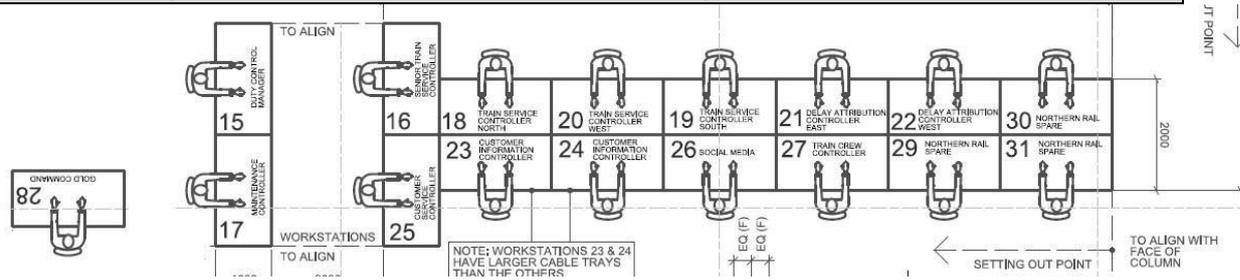
Example: LNW Route has found it beneficial to have a close liaison with BTP and specifically a “Police on Bikes” initiative has been implemented. In areas with high incidences of fatalities this close liaison limits the delay by having BTP on site sooner and also having a BTP Member who is familiar with railway operation reducing the chance of the location becoming a scene of crime with increased line closure time. Forward Facing CCTV has helped significantly in this respect. FFCCTV has also made a significant contribution to identifying the root cause of OHLE failures.

Example: Southern, Virgin Trains East Coast (VTEC) and Northern have noted benefits from having a Network Rail presence within Control. Southern have utilized an integrated approach, with NR staff sitting with TOC staff. VTEC and Northern are co-located with NR, sitting separately however in the same room.

It is important when designing roles and responsibilities that staff are protected during an incident from distractions so they can perform their specific role in an incident without disruption. In an incident, team members should be able to quickly and easily communicate – explained in section 11.3.2.

Example: Southern and Northern benefit from having a strategic seating plan. It demonstrates a clear line of authority with the Service Delivery Managers at the head of the tree (in both cases separated from the main “spine” of the control to prevent frequent interference and micromanagement). The rest of this main spine positions staff next to relevant personnel for

handling an incident. The layout and the added benefit of sound ergonomics in the room ensures that in a disruption communication is easier. Northern's layout is illustrated below.



Important roles that an incident team needs to have:

- **Passenger management.** It is critical to keep passengers informed of disruption and updated on any progress. This will ensure passengers remain calm and instances of uncontrolled evacuation are avoided and the delay prolonged.
- Excessive passenger loadings on train may influence the way an incident is managed and recovered. On some types of train excessive passenger loadings may inhibit access to cupboards and equipment which is located in public areas.
- Excessive passenger loadings on platforms may influence the way in which an incident is managed due to the restricted access to the underneath of the train and its equipment.
- It is important to maintain a consistent approach when managing periods of perturbation, particularly when communicating to customers. Inconsistency can lead to a lack of confidence in the TOC's ability to manage incidents.
- Social media should be used to its maximum potential. The use of platforms such as Twitter and Facebook to distribute details of incidents, particularly via photographs, can improve the response from customers, resulting in fewer social media complaints and increased customer acceptance of the present situation.
- Throughout the duration of an incident and its management, the impact on customers should be considered as a priority.
- **Events planning.** Every TOC should ensure that Control Centre staff making decisions on managing incidents have access to information that provides details of events that may cause passenger loadings to be outside normal levels, for example the Olympics or other such sporting events. This may change the way in which an incident is managed.

Driver availability is also crucial to delivering any plan. This can make a pronounced impact on achieving any plan, particularly at night when fewer drivers are available.

11.3.2 Clear Lines of Communication

In an incident, clear lines of communication should be established. A good communications infrastructure should be put into place utilising modern technology such as Emails, phones and other electronic forms. The use of legacy technologies such as fax machines and paperwork should be avoided.

Web conferencing may also be a useful tool where incident management team members are not colocated. Web conferencing allows conference callers to share and jointly interact with information, some essential features to consider when sourcing a web conference package are:

- Recording
- Outlook integration
- Simultaneous user capacity
- Mobile device compatibility
- Licence price/availability
- Document/media sharing
- Desktop sharing

Example: There are many packages available online, but a good example of a free one is <https://www.anymeeting.com/adw/Free-Web-Conferencing.aspx>.

Example: Southern have a visualisation area formed of whiteboards relevant to each department including a route diagram board. These allow members of the team to be aware of all current activities in addition to their own. The board is updated as and when new information is available prior to weekly updates.

Southern also utilise a Fleet Incident Management flowchart, detailing all process from incident conception through to review. This document describes all the necessary actions/tools that are required at each stage of the management process.

Example: Virgin Trains West Coast (VTWC) and Alstom have positioned a visualisation board within the control that illustrates weekly maintenance plans. This board is updated as incidents occur or other alterations are required. Every member of the team is aware of updates on technical or non-technical issues as and when they arise, thus ensuring sufficient information is presented at all times in order to avoid miscommunication. The clarity of the board allows control staff to quickly assess the availability of units in the event of a set swap becoming necessary or other such service alterations.

Driver/Signaller relationship – many TOCS have trained drivers to standardise communications with signallers. This is checked on the driver simulators and voice recordings to ensure that correct protocols are used and colloquialisms are avoided. In addition to this, voice recordings are reviewed from control to ensure that the standard is being maintained. The standard should only focus on key areas which cause train delays, and in terms of communication between drivers and fleet it would be unnecessary to carry this out on train simulators and analysis of voice recording would not be required.

Example: GTR apply a similar standard to communication between drivers, fleet engineers and train managers in terms of language and terminology used.

11.3.3 Training and Competence

A training and competence regime should be developed for incident management team members. The training should cover not only their roles and responsibilities but also those of others in their teams, all staff members should be familiar with the company' procedures and the Rule Book. The

aim should be to get incident team members up to a level of [unconscious competence](#) in their role such that they can maintain a level of [situational awareness](#) in an event.

Examples of some online competence assessments are as follows:

<http://traindriver.net/> <http://www.assure-managementsystems.com/>

http://www.rgsonline.co.uk/Railway_Group_Standards/Traffic%20Operation%20and%20Management/RSSB%20Good%20Practice%20Guides/RS702%20Iss%201.pdf

In high pressure scenarios with complicated tasks, it is virtually inevitable that mistakes will happen. Decision support tools and [Checklists](#)¹ for incident management can help reduce the likelihood of these mistakes. Extensive work has been performed by the fleet community examining decision support tools and good practice is detailed in Appendix I

Fleet engineers in Control Centres will be covered by the TOC Competency Management System (CMS) and assessed as per the TOC Standards. They should have sufficient opportunities to spend time out on depots and on the route, in order to maintain their competence and refresh their fault finding skills and fleet knowledge. There are a number of ways this can be achieved. An example would be to use spare days, planned refresh days or use of other competent staff to cover the office role. Any new staff into the role would undertake a Training Needs Analysis and be passed Competent prior to undertaking the role. There must be a process in place to ensure CMS is kept up to date.

RDG's Good Practice Guide (GPG005) on Controller Recruitment - Training and Competence exists to encourage consistent application of established good practice across TOCs in the development of competent personnel in Control Centres. It sets out to achieve the following three objectives:

- Act as a good practice guide that TOCs can base their controller CMS on or compare their existing CMS against.
- Provide good practice suggestions on which recruitment assessments can be based.

Example: Virgin Trains East Coast use exact imitations of control desks and role-play of past incidents involving all members of the incident management team to develop team working and new staff training.

Example: Southern have deployed an extranet to guide technical staff through decision trees during the 'phone a friend' process. The tool also helps keep track of time, provides quick links to the "Defective On Train Equipment (DOTE)" and recovery procedures. The system can also be audited. Systems such as this can enable staff with less technical experience to talk on-train staff through required processes during an incident.

The most effective decision trees are designed so that the most likely scenarios are eliminated first. It is vital that the decision trees are updated as soon as incidents happen so that new information is learned.

¹ [Atul Gawande](#): The Checklist Manifesto

Example: Southern's Three Bridges ROC features a simulator to enable the rigorous training of new members of staff in a real-life scenario using the same equipment on the control floor. This ensures that, upon occurrence of an incident, staff are fully capable of and equipped to handle the situation quickly, effectively and professionally.

Example: South West Trains have introduced a Checklist approach focusing on lead measures called the Right Time Railway Assurance Check. The principal is to identify no more than five activities within a person's job description which are critical to performance and ensure, through team working, that the individual delivers these. The approach has been standard practice in aviation since 1942 and is used by pilots to ensure planning is in place before a flight. Appendix H contains a sample checklist developed by SWT for Fleet Depot Staff.

Example: East Midlands Trains ensure technical support staff return to depot to undertake shop floor work to reinforce competencies on a regular basis. This enables fleet knowledge to be fresh in their minds and improves their ability to deal with faults during a phone a friend scenario.

Line of route fitters should ensure that they are fully equipped with the relevant tools and equipment. It should be remembered that the line of route fitter is primarily employed to get the vehicle moving at the earliest opportunity. Several incidents have been recorded where the line of route fitter has made an incident longer due to trying to fix the train when this approach to incident management was incorrect. The West Coast mainline has engaged in a work stream which allows the MOM to carry the equipment to site. This allows all personnel to work together by ensuring tools are on site quicker and rescue locos can get to site. The work stream is also looking to ensure drivers have flexibility to drive alternative rolling stock for short movements.

Example: In order to minimise incidents, East Midlands Trains employ a Defective On Train Equipment (DOTE) procedure. This allows for the expedient management of incidents as it sets out the rules for isolations and running rolling stock in a degraded mode, allowing the stock to continue without incurring or exacerbating a delay. This approach is employed by several other TOCS where the DOTE may be identified as something else.

11.3.4 Resources

In an incident, a number of resources should be available for staff to use.

Disruption during the middle of the day may allow 'peak period' units to be brought into service in lieu of displaced units. If substitute/displaced train crew are not available, this makes this contingency plan unviable. Timely recovery of the train plan is dependent on the availability of replacement train crew/vehicles and well managed manipulation of disrupted resources. The ease with which replacements can be provided is dependent on factors unique to each location in addition to time of day, weather conditions and other such issues.

The 'Cut and Run' procedure is then invoked. The objective of the Cut and Run policy is to safely, and as quickly as possible, return the running line to normal working in the event of a train failure. With safety considerations being of the highest priority, this will cause customers the least possible overall inconvenience and disruption. It will also assist in maintaining the highest possible performance level.

In some scenarios, using such a procedure may not be possible. This may be where numerous TOCs operate through a highly congested area. It is therefore advisable for planning to be made for the “worst case scenario”. Where multiple TOCs are likely to be affected, Network Rail should lead the development of the Cut and Run policy, bringing all affected parties together to develop contingency plans to follow upon the occurrence of an incident. Consideration should also be given to the inclusions of FOCs into such discussions as incidents regarding freight services can often cause significant delays or exacerbate those having already occurred.

Example: Northern face causing substantial delays if a unit fails on the approach to Manchester Piccadilly. Due to the layout of the approach to the station, limited opportunities are available for units to be routed around any stranded unit causing a significant accumulation of delays. The variation in rolling stock operated in the region (as much as 5 types) prevents the possibility of rescuing the failed unit with nearby stock.

Northern and First TransPennine Express have, over the past 2 ½ years, developed an extensive joint contingency plan to mitigate the impact of an incident. As of late July 2015, the document was in the process of introduction with issue aimed for August 2015. This document details, according to certain route sections, how services should run under categories including total blockage, reduced capacity and one line running. On top of this, specific instructions are given on how to handle any special circumstances.

An example is between Manchester Victoria and Milner Royd Junction whereby Biomass freight services to Drax power station are given priority during periods of reduced freight operation due to the nature of their cargo. These cannot be treated like traditional coal trains and must run sooner rather than later.

Thunderbird concept – a fleet of locomotives specifically equipped to rescue a TOC’s main fleet of trains.

Example: Virgin Trains (West Coast), London Midland, Cross Country and Chiltern have been working together to discuss contingency plans for the LNW Route. This has been led by Network Rail, taking a lead from the contingency used on the Anglia route.

The contingency plan not only details actions for partial/full line blockages (including actions for the am and pm peaks), but also roles and responsibilities of persons during an incident, such as Route Control Managers, Shift Signalling Managers and TOCs. Special instructions are also given regarding items including holding of trains at stations, light engine/empty coaching stock moves and engineering possessions. Communication details are also detailed regarding what should be relayed both internally and externally to customers including alternative transport arrangements.

A learning point is that there has, however, been limited consideration by NR of diagram complexity or fleet implementation.

The fleet is not normally used for traffic but is deployed at strategic locations to minimise the time that it takes for the loco to reach the failed unit. It can also cover for infrastructure failures where AC or DC electrification has failed (dropped wires etc.)

Example: VTEC have a set of strategically positioned thunderbird locomotives on their route. Due to the relatively linear nature of their operations, the location of these locomotives is perhaps more evident than for TOCs such as those South of London. They are positioned at Edinburgh, Newcastle, Doncaster and London Kings Cross. At 90 minutes apart, this means that a failed unit will be reached

within 45 minutes. These Class 67 thunderbirds are leased from and maintained by DB Schenker, however driven by VTEC staff. Upon the event of the retrieval of a failed unit, a “relay” takes place.

For example, a failed unit at Edinburgh will be taken by the Edinburgh loco to Newcastle where by the driver will take the Newcastle loco back to Edinburgh and the Newcastle driver shall take the loco and unit to Doncaster where a similar process will take place, repeated until the unit reaches Bounds Green depot. The Rolling Stock Controller is the responsible person for the deployment of these thunderbirds.

A consistent starting point for incident mitigation is vital for an efficient approach to managing the impact of fleet incidents. This could take a number of forms, however having an initial framework means that all involved know their responsibilities and changes only need be made according to the nature of the incident.

Example: Southern use a system whereby each section of the route is pictorially represented on a “slide”, featuring details of the incident management process for each of these areas. These are mounted in a transparent stand on which any writing can be included detailing anything from the nature of the incident to any changes in the management process. This has been found to yield a measurable improvement in the impact of an incident.

11.4 Do

A number of processes need to be implemented upon the occurrence of an incident. Several of these are detailed below. In addition, details on decision support tools can be found in Appendix I.

In order to use these processes most effectively, it is imperative to clearly identify the common goal with regards to managing the incident (e.g. moving the train or fixing the fault) so that an efficient critical path for managing the incident can be established). The Route Control Manager must ensure the plan is communicated effectively to all staff involved in managing the incident.

Where an incident may be managed in one of two ways depending on the outcome of an event (e.g. a technical examination) it is good practice to develop the two plans in parallel in order to minimise the overall length of the incident rather than starting with Plan A and then moving to Plan B at some point in the future.

- Promote practice of early advice of defects/ issues (“Report it first!”)
- Clear the line and use “Cut and Run”
- Assume “worst-case scenarios” in plans and take action accordingly.
- Mobilise or prime maintenance staff at earliest opportunity.
- Whilst maintenance staff are working to recover a unit to operation, control staff can be preparing for other eventualities such as rescue (e.g. via use of Thunderbirds).
- Balance long term objectives with short term ones. For example it may be better incurring a slightly longer delay today in order to return units to depot for maintenance, allowing a return to planned service tomorrow.
- Use of train location information

- Use of Remote Condition Monitoring (RCM).
- Emergency services may be required to assist in certain instances; where this is the case it must be remembered that the emergency services will give a priority to the passengers and the scene. This may prolong the incident and, therefore, increase the time for recovery of the network.
- “Huddles” – bringing the relevant personnel together to discuss incidents and the plan of action.

Example: Upon an incident occurring, Southern bring the control personnel together into a 5 minute “huddle”, covering details of the incident and what each person’s responsibilities will be to recover service.

11.4.1 Avoiding Incidents and Robust Maintenance

Ad-hoc maintenance requirements (e.g. unit defects, modifications, component changes) are prioritised according to their urgency. An internal contract ensures that the delivery of Fleet Engineering’s depot requirements align with the service delivery requirements of Operations. The contract for planned delivery will aim to maximise the notice period of any work to be undertaken and be agreed between Engineering and Operations, according to the diagrams available.

Example: A challenge for Northern Rail is their fleet of 8 3-car Class 158s. All are allocated to Neville Hill (Leeds) depot Monday – Friday and there is a requirement for seven units to be in passenger service with one unit in routine maintenance. With the exception of one unit, six end their working day at another location. The arriving unit is delivered on 5T93 2209 Leeds – Neville Hill 2220 (NL197 diagram). It is therefore necessary to plan sufficiently in advance such that any unit requiring maintenance is allocated to the correct diagram such that it returns on 5T93 on the correct date.

Example: VTWC are limited to 6 units out of service to undergo maintenance. It takes careful planning and communication between the fleet engineers and control staff to ensure the whole team is aware of which units are scheduled for maintenance, where they need to be and when.

Deferred maintenance must be carefully managed with regular dialogue both internally within Engineering and externally with Planning and Control staff. The crucial link in this process is the Maintenance Controller who acts as an intermediary between Engineering and their operational colleagues in the control centre.

11.4.2 Dynamic Risk Assessment

Primary Delay

If the fault is catastrophic and brakes require isolating for movement, ensure that any movement fits within the Special Moves Plan (SMP) and ensure the Network Rail representative informs Network Rail Control. For instances where a controlled evacuation is required, all on site personnel must agree a plan and inform Network Rail; it is possible that emergency services will be required to assist. When planning for evacuation, where possible consider moving the unit (under assistance) if necessary to a

safe point i.e. siding, station or away from the main line and any rail traffic. As previously detailed, Cut and Run policies allow for the effected unit to be isolated in some incidents to minimise the disruption which the unit may cause to the overall network.

Emergency coupling – it is critical to ensure that the emergency coupler is pre-fitted/extended to failed unit prior to recovery. Some TOCS have emergency couplers strategically located across the network. Assisting a train from the front using a wrong direction move is normally faster than trying to assist in rear with a non-compatible unit. People often jump to use the emergency coupler rather than a wrong direction move.

It should also be remembered that not all emergency services will be familiar with the rules of the railway. It is critical to work with all emergency services to ensure communication between all parties is maintained and clear information is conveyed quickly, clearly and efficiently.

11.4.3 Monitoring of plans and possible changes

Ensure live monitoring of the initial recovery plan is in place, be in touch with the staff on site and make sure you make a primary contact. Confirm that Network Rail understand the safety implications involved in DOTE when dealing with a significant failure. When estimated times for movement are available, use communications systems to relay this information to all concerned and, when robust estimates are achievable, communicate this out to ground staff. A faster recovery will be achieved when a proactive stance is taken from the onset.

11.5 Review

After having experienced an incident, it is important to evaluate the management and processes used to reduce the impact and restore service to normal. This section provides good practice in methods of reviewing a technical incident with the aim of improving future response to similar incidents.

- Agree only a few timely actions from an incident review. ○ These should be leading, measurable and carried forward such that it can be proven that these actions have been learned from in future.
- Merge Technical and Operations reviews (focussing on the right area).
- Always use targeted, meaningful and (if possible) tailored feedback.
- Education: Explain why things are done! In particular to train crew (why engineers have given certain advice or control have cancelled a specific service.)
- Share the mission using a customer focus.

Example: Southern examine routes to identify areas of most disruption to understand which customers have been affected and why.

Example: Southern perform a “Hot Review” less than 6 hours after an incident has occurred.

Example: VTEC perform cross function mock ups of incidents, which involve all levels of staff from crew to senior management. These not only build confidence but allow cross functional teams to develop their relationships in a low stress environment.

Example: Within the South Western Railway control, Incident Learning Reviews (ILR) are utilised. This is a process employed by Network Rail used to review significant performance impacting incidents. ILR replaces the SPIR (Significant Performance Incident Review) process and is triggered by incidents of 1000 minute delay or more. It can, however, be used for any size incident where it is agreed there are lessons to learn or actions to capture.

An ILR template is completed as part of the review and aims to capture a maximum of 6 key learning points and 8 key actions. ILRs are submitted to NR centre and stored on a national database which is accessible to all.

The SWR track actions through an Alliance Action Tracker, reporting on open and overdue actions at both Performance Group (head of functions forum) and Performance Board (exec forum). All ILRs are approved by the most appropriate functional director, ensuring value is added in each instance.

11.5.1 Incident Review

Perform a final review and provide feedback to local operations managers and all staff involved in order to learn and share best practice. Create a knowledge pot which would compile contingency plans; eventually creating a “one stop advice shop” where ideas and experience can be shared. It is crucial to use all the tools available when reviewing incidents and where necessary implement recommendations made from such third parties as the Rail Accident Investigation Branch (RAIB).