Delay Attribution Board

Guidance No. DAB-16

1. Introduction

1.1. The Delay Attribution Board (Board) received a request for guidance in relation to the Attribution of an incident (TRUST reference 050076). The Board is asked to give guidance as to the correct interpretation of the Delay Attribution Guide to enable correct attribution of bird strike incidents (for delay attribution and Schedule 8 purposes). The bird strike in this instance was a peacock that was struck at rail level resulting in the shoe gear of the train becoming detached.

1.2. The Board received the joint request for guidance from London and South Eastern Railway (LSER) and Network Rail Infrastructure Ltd, Kent Route, (Network Rail) on 13th February 2008.

1.3. The incident is currently attributed to LSER as V8 / VHU7 as per Delay Attribution Guide section 4.4.2(c)

1.4. Specifically, the Board is asked the following:

1.4.1. Network Rail asks that the Board provide guidance on suitable attribution for the above scenario that is both in line with the Delay Attribution Guide and the principles of Schedule 8.

1.4.2. LSER asks that the Board find that the peacock is not a small bird, and therefore that DAG 4.4 acts to make this a Network Rail incident, or if not then

1.4.3. find that the logic of DAG 4.4.3 is inappropriate where it would require the TOC to mitigate in a manner that would make the system less safe and potentially exacerbate certain types of performance incident.

1.5. The Board considered this request for guidance at its meeting on the 18th March 2008.

1.6. This paper summarises the request for guidance received from LSER and Network Rail and the guidance provided by the Board.

2. Information Received

2.1. The parties have discussed the issues relevant to this matter, in accordance with the formal procedures for obtaining agreement in relation to a disputed attribution. However, they have been unable to reach a common position. The parties are, therefore, both agreed that the issues raised should be referred to the Board for guidance and have prepared a joint submission accordingly, incorporating their respective interpretations.

2.2. The parties provided the following factual background (condensed to relevant facts) to TRUST incident 050076 – 2B07 struck peacock Otford.

2.3. At 18:38 on the 30th May 2007 the ECO at Paddock Wood reported a current tripping at Otford on the down Maidstone line with 2B07 17.36 Blackfriars to Sevenoaks in section. The traction current was subsequently isolated. Driver reported striking something but initially it was not known what it was.

2.4. At 18:49 the signaller reported the UP line was blocked from 18:44 for the driver to examine the train / shoe gear.

2.5. At 18:54 the signaller reports a leading shoe on unit 465047 has been lost. Driver reports should be able to 'limp' to Sevenoaks so signaller trying for a recharge but it subsequently failed.

2.6. At 19:18 MOM reports from site that a bird [peacock] had been removed.

2.7. At 19:35 the MOM reports he has located the lost shoe but it is welded to the third rail but subsequently removed.

2.8. At 20:01 line reopened after 2B07 cleared.

2.9. There is no suggestion that either party had failed to mitigate the impact of the incidents, or that trains had incurred any form of avoidable delay not attributable to the situation described above.

3. LSER Position

3.1. LSER presented the following information regarding the Railway Group Standard regarding Shoe fracture requirements:

3.1.1. There are no specific requirements in Railway Group Standards to define the impacts at which a shoe should sever from the train, however design has been based upon the principle of a frangible joint at which a shoe will sacrificially part from the shoe beam and fall clear. The most recent standard on this issue has been GM/RT1001 (withdrawn) which states "10.10 The collector shoe shall be designed such that should it be impacted by a large enough force to cause failure then that failure should be designed to occur in a safe predetermined manner".

3.1.2. Seeking a specification for this we find that there is no clear value for the energy required to part a shoe by impact. Looking to research we find a Brecknell Willis paper by David Hartland, 1995, for the Institution of Mechanical Engineers, on "High Speed Third Rail Shoe gear" and related to the design of Shoe gear for TMST Eurostar trains.

3.1.3. In this paper at section 2.7 "Unusual Events" we find discussion of impacts and the need for a weak point in the shoegear structure – the frangible joint." This work leads to a range of 250-500J energy within which a shoe should break by impact. If the shoe fails to part within this range then the shoe gear is considered at risk of surviving impact with the contact equipment or other obstructions and could therefore if itself damaged or distorted do damage to the conductor rail equipment leading to a more significant incident.

Doing some very simple calculations;

Force = Mass x Acceleration

Energy = Force x Distance

In this case we have a peacock for which

http://animals.nationalgeographic.com/animals/birds/peacock.html

suggests a mass range of 4 to 6 kg, and a body length of 0.9-1.3m . For a train running at a line speed of 60mph this allows the acceleration to be determined.

Assume as follows;

- Peacock of length 1.3m and mass 4kg is accelerated to 60mph by impact, within its own length –
    - To travel 1.3m the train takes 0.048 sec at 60mph
    - The acceleration is to 27 m/s in 0.048 sec = 562.5 m/s/s
- The Force is therefore 562.5 m/s/s x 4 Kg = 2250 N
- The Energy is therefore 2250 N x 1.3 m = 2925 J

This energy is some 5+ times the recommended energy at which a shoe should part safely.

3.2. LSER believes that the DAG attributes on Bird Strikes on the basis of an allocation of responsibility based upon arguments on flight paths, yet in this case a bird of a species known not to indulge in extensive

flight has been struck whilst standing on a crossing. Had this been not a bird but an animal there would be no dispute, on the basis that the train had correctly and sacrificially dropped a shoe to protect the infrastructure and prevent a worse incident, and this would have been a Network Rail incident.

3.3. LSER contend first that the Peacock is not a small bird, is not subject to great mobility, and as such has greater commonality with the size and predictability conditions on large birds and should be covered by DAG 4.4. LSER note also that the range of weights within which a swan or goose may range reach below the 4kg stated for a peacock.

3.4. LSER contend second that if the peacock is not recognised by the Board as a large bird, then the provisions of DAG 4.4.3 "...mitigation for small birds...best lies with the operator - in the design, or protection of vulnerable equipment" are incorrect specifically in that if the shoe gear were to be capable of withstanding this incident without damage then it would be likely to do damage to the 3rd rail equipment after the incident, and non-compliant therefore with the content of standard GM/RT1001.

3.5. LSER believe the correct attribution of this incident should be X8 / XQMG as per reasons set out above.

4. Network Rail Position

4.1. DAG 4.4 states "*Where problem is with large birds (geese and or swans or birds of this size or larger)*" – it is believed that peacocks are smaller than swans and geese.

4.2. DAG 4.4.3 sets out the reasoning when attribution would sit with Network Rail *"...geese and swans is that they tend to have clearly defined flight paths and mitigation is better applied line side*". Pheasants do not have a clearly defined flight path and thus should not fall to NR to mitigate.

4.3. DAG 4.4.3 also sets out when attribution would sit with the TOC *"Pheasants and similarly sized birds are not classed as large birds..."* Peacocks are slightly larger than a pheasant and, more importantly, have a similar behaviour.

4.4. Additionally, and more poignantly for this case, DAG 4.4.3 states *"...mitigation for small birds...best lies with the operator - in the design, or protection of vulnerable equipment*". As stated in 5.3 above, we believe a peacock to be a small bird and the prime cause of delays were the shoe gear of the unit (vulnerable equipment) being knocked off.

4.5. Schedule 8 Paragraph 5.2 [of LSER's track access agreement] refers to the criteria of incidents being Network Rail responsibility where it is deemed Network Rail can mitigate the event. In the case of a bird, Network Rail can only mitigate if the bird has a defined flight path whereas 'small' birds can fly onto or up from the infrastructure. Small

birds striking vulnerable unit equipment is therefore best mitigated by the TOCS as set out under Paragraph 5.3 of Schedule 8.

4.6. Network Rail appreciates the view held by LSER, but maintains that attribution should be as per by the DAG which is very specific for bird strikes. If differentials were meant for attribution of bird strikes not in flight or where they struck the unit then the DAG should have them distinctly specified. All references to the DAG listed above support Network Rail's view.

4.7. Network Rail believe the current coding of V8 / VHU7 is therefore correct attribution for this incident as per the points 4.1 to 4.6 set out above.

4.8. Network Rail's view is that the incident is currently coded correctly.

5. Locus of the Board

5.1. The Board reviewed its locus in respect of providing guidance on this issue. The Board's locus to provide guidance is set out in the Network Code B2.4.3 and B6.1.3.

5.2. The Board noted that while it could offer guidance to the parties as to how incidents of this nature should be attributed, this guidance was not binding on any party. If one or both parties were dissatisfied with the guidance provided they could refer the matter to Access Disputes Committee (ADC).

5.3. If the issue were referred to ADC, then an ADC Panel would be formed to consider the dispute. In doing so, the ADC Panel would take account of the guidance provided by the Board but were not bound by it. The ADC Panel would then make a determination that was binding on the parties concerned. This document is therefore being prepared as the vehicle for providing the guidance and the reasons for how the Board arrived at its position both to the parties and, if necessary, to the relevant ADC Panel.

5.4. The Board agreed that it should seek to provide guidance that meets with the delay attribution vision:

"For all parties to work together to achieve the prime objective of delay attribution – to accurately identify the prime cause of delay to train services for improvement purposes"

5.5. The Board would need to consider if, in providing guidance, an amendment to the Delay Attribution Guide should be proposed, to improve clarity.

6. Consideration of the Issues

6.1. The Board at it's meeting on 18th March 2008 considered the request for guidance and took account of the following:

6.1.1. The paper submitted by LSER and Network Rail setting out the issue and their respective positions.

6.1.2. The oral presentations made by the parties to the Board.

6.1.3. The wording in the Delay Attribution Guide, in particular section 4.4 Animals on the line (see appendix 1).

6.2. In coming to its conclusion the Board regarded the following points as particularly relevant:

6.2.1. The parties do not dispute the facts of the incident.

6.2.2. LSER believe that the weight (mass) of birds may be important when deciding the correct attribution of incidents involving birds.

6.2.3. The parties believed that the DAG is ambiguous in its guidance for attribution of incidents resulting from bird-strikes.

6.2.4. DAG 4.4.2 (b) indicates that the size of birds is important when deciding the correct attribution of incidents involving birds.

6.2.5. DAG 4.4.3 introduces a principle that indicates that flight paths and size are important when deciding the correct attribution of incidents involving birds.

6.2.6. In general, if attribution of the incident were solely based on the guidance and circumstances given in DAG table 4.4.2 it was likely that the user would attribute to Delay Code X8 (Network Rail).

6.2.7. In general, if attribution of the incident were solely based on the guiding principles given in DAG 4.4.3 it was likely that the user would attribute to Delay Code V8 (Train Operator).

6.2.8. The answer to the question as to whether the bird was 'on the line' or not was helpful in understanding what the attribution should be.

6.2.9. Hypothetically speaking, if the bird had been an animal, for example a rabbit or a dog, there would be no doubt that attribution of the incident should be to Network Rail.

6.2.10. The Board noted that the customary weight of a peacock (4 – 6 Kg) fell within the range which is common for a goose (3 – 9 Kg).

7. Guidance of the Board

7.1. The Board agreed unanimously that the prime cause of the delay was the presence of a large bird (peacock) on the line.

7.2. In this case the Board agreed the incident was a 'circumstance originating from or affecting the Network (including its operation)..'

7.3. On this basis it was unanimously agreed by the Board that the incident should be attributed to Network Rail and coded X8.

7.4. The Board concluded that to avoid future uncertainty there is a need to consider amending the Delay Attribution Guide, particularly to clarify any confusion there may be within the provisions of DAG4.4.

7.5. In this regard the Board would constitute a sub-group of cross-industry representatives to consider and develop for the Board's consideration any necessary proposed changes to the DAG regarding animals on the line and bird strikes (in particular to the provisions of DAG4.4).

7.6. The Board believes that this guidance answers the two specific questions asked of it by the parties as set out in sections 1.4.1 and 1.4.2 above. Furthermore, in addressing LSER's specific question set out in section 1.4.2 in the way that it has, the Board considers that LSER's further specific question set out in section 1.4.3 no longer applies.

This guidance was approved by the Delay Attribution Board on 15th April 2008	John Rhodes (Chairman)
Signature: