
Guidance No: DAB-40

Attribution of delays caused by the overhead line damage at Werrington Junction

1. Introduction

- 1.1. The Delay Attribution Board (the Board) received a request for guidance in connection with the Attribution of TRUST incident 601057
- 1.2. The Board received the joint request for guidance from Virgin Trains East Coast and Network Rail Infrastructure Ltd, London North East Route, (Network Rail) on the 31st August 2016.
- 1.3. The Board was asked the following:
 - 1.3.1. Guidance from the Board is sought for the resolution of an issue which despite lengthy discussion at many levels and all reports available a solution has not been agreed.
 - 1.3.2. The Board is asked to provide guidance as to the responsibility of the prime cause of the incident and its subsequent Delay Code allocation to either I1 (Overhead line defect) or M1 (Pantograph fault)

2. Information Received

- 2.1. The parties have discussed the issues relevant to this matter, in accordance with the agreed procedures for obtaining agreement in relation to a disputed attribution as set out in Part B of the Network Code. 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.

3. Factual Background to the incident

- 3.1. The parties provided the following agreed facts:
- 3.1.1. At 20:43:52 on the 20th August 2015, VTEC service 1E24 (17:00 Edinburgh Waverley to London King's Cross) travelling over the Up Fast line on the approach to Peterborough, reported an activation of the Automatic Dropper Device (ADD); bringing the train to a stand near Werrington Junction, 3½ miles north of Peterborough.
 - 3.1.2. During the incident OHLE sections 50 & 51 tripped and were unable to be reset by the Electrical Control Centre. The Mobile Operations Manager (MOM) and technical staff were deployed to the area to investigate.
 - 3.1.3. 1E24 was running with the driving van trailer – 82226 leading and locomotive 91114 on the rear. Locomotive 91114 was fitted with a second pantograph in a unique duplex configuration.
 - 3.1.4. Permission was given to the driver to examine the train. At 21:07 they reported that neither pantograph on locomotive 91114 could be raised.
 - 3.1.5. At 21:10, the driver of 1E24 declared the train as having failed. Following that report, a Thunderbird locomotive (1Z99) was despatched from London's King's Cross.
 - 3.1.6. At 00:03, of the following morning, technical staff confirmed that the OHLE was initially damaged at structure 126/27 and continued through to structure 128/08 – covering an area of 1.2 miles and seven headspans. Catenary and contact wires within the area remained intact.
 - 3.1.7. Network Rail published a recovery plan at 00:10 of the 21st August, in order to recover the slow lines before the morning peak (08:00). Regrettably the reparations took longer than planned. Access to the slow lines was given at noon of the 22nd August. Further possessions were taken to restore normal working by the morning of Sunday 23rd August 2015.
 - 3.1.8. A total of 13,073 delay minutes and 136 cancellations were recorded due to the incident.

4 Operator's View

- 4.1** On the 8th January 2016, a meeting was held between VTEC Operations Director, Warrick Dent and Network Rail's Route Asset Director, Richard Owens, where, they agreed that a section of contact wire would be sent to Serco's Metallurgist department in Derby, for analysis.
- 4.1.1 Network Rail supplied the remit for the investigation and the wire.
- 4.1.2 Network Rail agreed at the meeting to accept Serco's findings unless they were found to be inconclusive at which point, a further third party report would be considered.
- 4.1.3 Serco's findings concluded that the pantograph had been snagged by the OHLE, snapping the pantograph chains as it did so – that the OHLE damage reported by Network Rail on the west side of the OHLE was from a previous incident prior to this incident.
- 4.1.4 A report from the Principal Metallurgist at Serco concluded that "the most likely scenario from the limited sections of chain/fourth-bar submitted was that the chains had suffered an incident of unusually high loading. Therefore, it may be the case that the pantograph had been struck or became hooked-up by the infrastructure."
- 4.1.5 Another report providing the findings of the pantograph head from 91114 unit as well as the registration arm said:- "it is the opinion that the fracture of the swivel casting combined with the numerous impact marks/drag/sliding marks on the aluminium support piece of the leading carbon indicate that the running wire clamp which is fitted to the swivel casting of the registration arm has likely got hooked under the pantograph leading carbon which has then been bent backwards/upwards causing the kink in the underside of the aluminium, the impact sliding/drag marks on the face and damage to the air pipe and horn mounting bolt. Once it comes into contact with the underside of the horn mounting position, the hooked up clamp can now slide no further. The sudden overload breaks the swivel casting as well as the outer chains around the pantograph knuckle pulling the pantograph head backwards"
- 4.1.6 Serco's 3rd report on the OHLE contact wire. It is of their learned opinion that: The damage consists of a scuff on the west side of the OL at t This damage consists of a scuff on the west side of the OHL at the top corner horn with a kink where the side of the OHL wire received a deep "gouge". This is known because these features are dark / discoloured due to environmental exposure and are darker than the corner running band which was bright and shiny with little tarnishing.
- 4.1.7 The OHL from 14m north to 6m south of registration arm 128/08 was twisted at some time in the past, because the original flat running band on the OHLE becomes darkened and discoloured due to atmospheric exposure; leading to the

development of a new running band on the corner between the east side of the OHL and the old running band.

- 4.1.8 During the dewirement incident in August 2015, it appeared that the OHLE traversed onto the horn of the pan-head causing the new corner running band to cut grooves in the horn. The reason for this is not known, even after studying video evidence from this and another cab which passed through the section only 10 minutes earlier. However, the “grooving” damage to the westward horn involved in the dewirement along with the signs of the pan head being hooked up on the infrastructure coupled with the breakage of the horse’s head casting and loss of this along with the clip all indicate a sudden “snatch”. This is best explained by the OHLE wire cutting the grooves seen in the westward horn which in turn holds the OHLE wire off-line approaching registration arm 128/08. The increasing lateral force eventually snags the wire causing the localised widening on the running band and dislodges the dropper clips from the OHLE; and the OHLE from the registration arm. With the OHLE wire on the horn and dislodged from the registration arm clip at 128/08, the pan head is in line with the registration arm, and thus the pan head collides with the registration arm, causing the damage seen to the pan head, apex frame pivot pin and registration arm. All other damage is then subsequent to this incident and is therefore deemed to be secondary.
- 4.1.9 VTEC considers any commercial split made would reduce the performance improvement opportunity, as the number of delay minutes being attributed would be reduced and therefore wouldn’t substantiate a business case.

4.2 Applicable Sections of the Guide

- 4.2.1 VTEC has used section 4.12.1.11 “Electrification” states, “Code I1 should be used for a failure of the overhead line equipment or the third rail equipment.” Section 4.12.4.1 “ Wires down and Other OHLE Problems” states that “Normally any OHLE associated problems should be coded I1 initially and attributed to Network Rail (IQ**) until better information is available.”
- 4.2.2 VTEC considered the following sections to be non-applicable to this incident. Section 4.12.4.2 – attributes responsibility for “Locomotive/EMU ADD activation due to Mechanical/Fleet Engineer cause”; reference has been made by Network Rail to suggest that the pantograph was suffering from metal fatigue. VTEC provided evidence to suggest the contrary.
- 4.2.3 Section 4.15.3 “Guidance Where No Fault Found (Technical Equipment)” only applies when both parties have agreed that all reasonable efforts had been made to investigate the cause of the delay. VTEC concluded that a fault had been identified with the OHLE.
- 4.2.4 Technical reports were submitted to support the claim that the pantograph was in full working order prior to the incident.

4.3 VTEC's position

4.3.1 VTEC's position is that it has provided sufficient evidence, including 5 external reports from independent industry experts to:-

- i) Rule out a technical fault with 91114 pantograph; as the cause of the dewirement on the 20th August 2015.
- ii) Positively identify the twisted contact wire just north of Werrington Junction as the actual cause.

4.3.2 VTEC appreciate that DAB are not engineers and VTEC is not expecting the DAB to determine the technical cause. The view is that the overwhelming technical evidence clearly identified the cause of the incident. But for reasons which are unclear and have not been explained or justified by Network Rail, they fail to accept any of the findings.

5. Network Rail's View

5.1. This incident has been discussed at various levels between VTEC and Network Rail and to date no resolution has been found. The parties have been unable to agree:

- The prime cause of the incident;
- That an independent investigation had been carried out.

5.1.1 Network Rail's principal objective was to identify the cause of this incident; whereby the ADD was activated and overhead line equipment was tripped. The reliability of overhead line equipment is key to the delivery of Network Rail's CP5 performance and safety targets. Understanding the cause of overhead line incidents is key to driving further improvements. Network Rail agreed to send a section of contact wire for scientific examination in relation to this incident. Following the undertaking of the scientific examination and subsequent reports, there was no conclusive evidence that an overhead line component failure or obstruction on the overhead line equipment was the prime cause. The Network Rail engineers have listened to the observations from the VTEC fleet team and the Serco reporter, but cannot correlate the hypothesis proposed by VTEC with their own experience of how overhead line equipment behaves or the evidence available.

5.1.2 CCTV footage from previous trains and the affected train showed that the overhead line equipment and registration arm were intact; as the front of the train passed under the location of the fault. The DVT was at the front of the train with the locomotive with the pantograph at the rear of the train. The VTEC hypothesis is that at some point between the front of the train passing as recorded on the CCTV the overhead line equipment to be intact and the pantograph then reaching the registration arm, the registration arm is suggested to have failed. However, damage to the registration arm is not consistent with a failure of an overhead line component. Network Rail understands from one report that the chains on the unique duplex configured pantograph of locomotive 91114 were fatigued and that the previous chains fitted had a lifecycle of 4 months which is consistent with the age of the chains fitted at the time of this incident.

5.1.3 Engineers for both VTEC and Network Rail have submitted investigative reports and discussed the issues at length together and have been unable to come to a resolution. The Serco report commissioned by VTEC is not conclusive and presents a number of hypotheses.

5.2 Supporting evidence

5.2.1 Network Rail Incident Investigation Ref: 592911

5.2.2 It is common practice following an incident of this nature for Network Rail to conduct a local investigation with the objective of determining the facts of the incident, any immediate and underlying causes and making recommendations to prevent, or reduce the risk of recurrences.

5.2.3 It is paramount that such an investigation gathers all the available evidence in order to support any recommendation to identify root cause. Network Rail has assessed the following evidence in an attempt to establish root cause but has been unable to agree this with VTEC:

- Site attendance and post incident investigations
- Unattended Overhead Monitoring System (UOMS) data
- Ellipse workbank for the area
- Fault Management System (FMS) report 592911
- Overhead Line layout diagrams
- Up to date maintenance records

5.2.4 The Network Rail infrastructure involved in the initial incident was inspected by technical teams in an attempt to identify items that could snag the pantographs resulting in abnormal forces. This inspection found that there were no failed Overhead Line Components.

5.2.5 In the subsequent days following the incident the area was re-inspected from the initial point of damage to Tallington crossovers. When this type of incident occurs travel patrols are undertaken in an attempt to capturing all available evidence to help establish root cause and reduce the risk of recurrence. This travel patrol inspection did not identify any failed overhead line components.

5.2.6 Unattended Overhead Line Monitoring System (UOMS)

5.2.7 Network Rail and VTEC have worked in collaboration to fund and fit a train borne overhead line monitoring system to the Class 91 rolling stock. The UOMS data is used to help identify any abnormal forces that can point towards possible issues with the overhead line equipment.

5.2.8 Following this incident UOMS Newton force data was analysed by engineers resulting in no anomalies or concerns being identified.

5.2.8 Pantograph Chains

5.2.9 The metallurgy report indicates that the core hardness was higher than previous examples of that type of chain and that the chains had suffered under normal loadings.

5.2.10 From examination it was apparent that both of the pantograph chains of locomotive 91114 had suffered from fatigue cracking of the links. Once these fatigue cracks had reached a certain size, failure had then proceeded by rapid ductile fracture.

5.3 Contested evidence

5.3.1 VTEC makes reference to an independent report commissioned by Network Rail. A section of contact wire, an A40 bracket from site and the registration arm were recovered by Network Rail from site and handed to VTEC to allow their supplier to undertake an analysis of the components. Network Rail does not support the opinion of the VTEC investigator, particularly reference to a detached dropper snagging the pantograph head. A dropper hanging foul below the contact wire is not substantial enough to have snagged the pantograph head.

5.4 Summary of Network Rail supporting evidence

5.4.1 The outer chains that control the pantograph head had suffered from substantial fatigue. The report by Current Collection Solutions indicates that the cross section area of the chain had failed in the region of greater than 70% and also identified anomalies in the hardness properties of the materials. We note that the previous chains fitted had a lifecycle of 4 months which is consistent with the age of the chains fitted at the time of this incident.

5.4.2 It has been suggested by the conclusions in the Current Collection Solutions report that the outer chains finally broke due to an abnormal load to the pantograph. Network Rail does not accept this position. Network Rail technical teams have verified the infrastructure from the point of the incident back to Tallington crossovers, 10km away following the direction of travel. Such patrolling would identify any potential snagging issues that could have resulted in abnormal loadings to the pantograph. No anomalies or defects were identified.

5.4.3 Post incident analysis was conducted utilising the UOMS instrumented class 91 pantograph data, with no anomalies or concerns confirming that no abnormal loadings were evidenced.

6 Locus of the Board

- 6.2 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 Conditions B2.4.3 and B6.1.3.
- 6.3 The Board noted that while it could offer guidance to the parties regarding how incidents of this nature should be attributed, this guidance was not binding on any party. If either of the Access Parties were dissatisfied with the guidance provided they could refer the matter to Access Dispute Adjudication (ADA).
- 6.4 If the issue were referred to ADA, then an Access Dispute Adjudication Panel would be formed to consider the dispute. In doing so, the ADA Panel would take account of the guidance provided by the Board but was not bound by it. The ADA 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 ADA Panel.
- 6.5 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”.

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

7 Consideration of the Issues

- 7.1 The Board at its meeting on **27th September 2016**, considered the request for guidance and took account of the following:
- 7.1.1 The facts provided by both Network Rail and Virgin Trains East Coast in connection with the incident disputed between the parties and their requests for guidance.
- 7.1.2 The information provided by the representatives in response to questions raised by the Board prior to the Board meeting (Set out in Appendix 1)
- 7.1.2 Additional information provided by the representatives of Network Rail and Virgin Trains East Coast at the Board meeting (Set out in Appendix 2)
- 7.1.3 The guidance provided by the Delay Attribution Guide.
- 7.2 In coming to its conclusion the Board regarded the following points as particularly relevant:
- 7.2.1 That Network Rail had not conducted its own technical investigation to ascertain a cause and therefore was not in a position to counter the Serco Report or to exonerate the OHLE.

7.2.2 The Serco Report should be considered as independent.

7.2.3 The Serco Report concludes the cause to be related to the OHLE.

8 Guidance of the Board

8.1 Based on the information presented the Board unanimously agreed the following:

8.1.2 That Network Rail was wholly responsible in terms of delay attribution for the delays caused by the dewirement at Werrington on the 20th August 2015.

8.1.3 That in line with the Delay Attribution Guide, the incident should be allocated Delay Code I1.

8.1.4 That for future incidents of this nature the appropriate investigations should be conducted and concluded with a clear and jointly agreed remit provided to aid identification of cause and allocation of responsibility.

This guidance was approved by the Delay Attribution Board on 25 th October 2016	Richard Morris –Chairman
Signature:	

APPENDIX 1

Questions submitted by Board members and the respective responses from Network Rail and VTEC in advance of the meeting.

Question 1 - Why has the agreement, made between VTEC and Network Rail [to accept the findings of the Independent Report] not been honoured?

LNE - Network Rail identified two possible independents to review the evidence, but VTEC wanted to come to DAB.

VTEC – This question is at the heart of the dispute and VTEC cannot stress this enough; this is NOT a dispute over technical cause, but a dispute over *process*.

After VTEC’s and LNE’s technical experts could not agree on whether the OLE was damaged by the pantograph or vice versa, a way forward was agreed at Director level.

Taking our lead from the Guidance of the Board (see DAB-35, Section 7.3) it was agreed by both parties that the outcome would be decided by “Expert Determination”.

It was agreed in advance that the metallurgists at Serco were ably qualified to determine responsibility (pan or OLE) and both parties agreed, again in advance, to accept their findings. VTEC entered into this agreement in good faith and would have accepted the Serco findings if they had found against VTEC.

But Serco did not find against VTEC, instead they positively identified the OLE as the origin of the incident. However, instead of honouring the Director’s agreement, LNE are back-tracking and trying to cast doubt on the validity of the Serco report. In the absence of evidence to the contrary - note LNE have provided no evidence, technical reports or otherwise which concludes the pantograph was responsible – we can only conclude it is the sheer size and commercial impact of the incident which is preventing its acceptance by LNE.

VTEC certainly did not “want” to have to bring this dispute to the Board, but we have been left with no other option - the alternative being to enter into an unending cycle of taking increasingly aged evidence to a succession of independent experts (of which there must be a finite number and certainly none as expert and thorough as Serco have been), with LNE then refusing to accept the findings of one after in the vain hope that they will eventually find one that might agree with them.

Question 2 - Do Network Rail disagree with the CCS report conclusions? (It makes little sense to be quoting lines from this report in isolation and therefore losing their context if Network Rail disagree with the content)

LNE - The Network Rail engineers have listened to the observations from the VTEC fleet team and the Serco reporter, but cannot correlate the hypothesis proposed by VTEC with their own experience of how overhead line equipment behaves or the evidence available. The hypothesis presented by CCS does not explain why it would be this train on this day and not previous trains.

VTEC – In their section of the joint paper LNE have chosen to selectively quote both the Serco reports and CCS reports that refer to “rapid ductile fracturing” of the Pantograph chains, inferring that this was the cause, whilst ignoring the remainder of those same reports, which go on to explain that the same “rapid ductile fracturing” occurred as a

consequence of the chains being subjected to a sudden and massive overloading when the pantograph was snatched by the OLE.

Again, it must be pointed out, LNE agreed to abide by the findings of the Serco metallurgists, without any caveat to the effect of “but only if our own engineers agree”.

Question 3 - Have Network Rail employed further external investigations and reports if they feel the report supplied by Serco is inconclusive? If not, why not? Do you think this should have been done prior to bringing this incident to DAB?

LNE - Network Rail proposed an independent review panel of 4 electrification system experts to review the evidence, but this was not progressed as VTEC wished to come to DAB.

VTEC – In January LNE agreed to abide by the findings of the Serco report whatever the outcome. It was only if Serco report was **inconclusive** that further expert determination would be sought, with the action to identify another such expert in the field resting with LNE. Of course the Serco report was not inconclusive, so the action was not necessary. The proposal mentioned by LNE (above) is news to VTEC. It appeared only in a previous LNE draft of this paper to the Board, a version which was itself rejected in turn by Network Rail.

Question 4 - With reference to the extract below, could Network Rail clarify whether they believe it was the “fatigued” pantograph chains breaking that initially caused the incident?

Pantograph Chains

5.231 The metallurgy report indicates that the core hardness was higher than previous examples of that type of chain and that the chains had suffered under normal loadings.

5.232 From examination it was apparent that both of the pantograph chains of locomotive 91114 had suffered from fatigue cracking of the links. Once these fatigue cracks had reached a certain size, failure had then proceeded by rapid ductile fracture.

LNE - Network Rail do not know what the cause was. Network Rail are aware that the pantograph chains were fatigued. One hypothesis is that this led to the incident.

VTEC – To resolve this incident, we only needed to establish if a) the pantograph or b) the OLE failed *first* and the Serco report concluded it was the contact wire that first “*traverse[d] onto the horn of the pan-head ... cutting the grooves seen in the westward horn which in turn holds the OHL wire off-line approaching registration arm 128/08. The increasing lateral force eventually snags the wire causing the localised widening on the running band and dislodges the dropper clips from the OHL; and the OHL from the registration arm. With the OHL wire on the horn and dislodged from the registration arm clip at 128/08, the pan head is in line with the registration arm, and thus the pan head collides with the registration arm*”.

Once the pantograph is cleared of responsibility, the exact cause of the OLE failure does not need to be established in order for the incident to be re-coded “I1”.

Again, LNE have provided no evidence, technical reports or otherwise which would indicate the pantograph was responsible, whilst agreeing that there was a pre-existing issue with the OLE at Werrington.

Question 5 - It is evident from the conclusion on Page 23 that CCS believe the failure of the chains was the result of them experiencing an “unusually high loading” and that this “is consistent with the pantograph being struck or becoming hooked-up on the infrastructure”. On page 43 CCS provide 2 possible scenarios for the damage to the pantograph. They appear to be dis-regarding the first scenario in that they outer chains fractured. Could VTEC get confirmation from CCS that this is the case?

VTEC – CCS considered both scenarios before concluding that the pantograph was hooked by the OLE not the other way around. The below are the extracts from the report to give full context to the question;

Current Collection Report Dated 16th October 2015

Page 34 – Conclusion

“The most likely scenario from the limited sections of chain / fourth-bar was that the chains had suffered an incident of unusually high loading. This is consistent with the pantograph being struck or becoming hooked-up on the infrastructure, as the distortion associated with the West side chain / adjuster accompanied by bending of the fourth-bar attachment pins to both chains and shearing of the split - pins in the East side chains point to this as being the likely cause of failure, although the chains were already significantly weakened by fatigue”.

Page 43 – Pantograph Head

“The damage to the head had occurred on the leading carrier bending it in two directions backwards and upwards and as a result of this fracturing the carbon (Figures 41a and 41b).

If the two possible methods of failure are considered:

- 1. The outer chains fracture and as a result the upper arm will drop as in Figure 47; and*
- 2. The pantograph head ‘snags’ the infrastructure pulling the pantograph backwards until it is in the knuckle uppermost position as in Figure 49.*

If scenario 1 occurred the head would probably have been forced onto the upper arm of the number two pantograph then subsequently onto the vehicle roof. There is nothing in either of these locations, which could have damaged the pantograph head in such a manner.

If scenario 2 occurred, there are numerous items on the infrastructure, which if hanging foul of the contact wire, could have caused such damage. The cornered indent (Figure 42) and the copper contamination indicate that this may be a dropper clip.

That there were no signs of arcing on the head is significant, if scenario 1 had occurred the pan head would have dropped relatively slowly from the contact wire, drawing an arc. If scenario 2 occurred and the head was snagged and being pulled backwards at 116mph; at such a speed the arc would have extinguished immediately”.

It is important to note that the agreement was based on the Serco report, with the CCS reports were provided as corroboration at VTEC’s expense once LNE indicated that there were not honouring the Directors’ agreement.

Serco Inspection of OHL and Reports from Class 91 Dewirement Aug 2015 4/02/16

Question 6 – Have the parties agreed the content of this report as an “independent report”? Is the issue that Network Rail does not believe there is a clear conclusion of the events that caused the incident? Could the parties please clarify this?

LNE - The issue is that Network Rail do not believe the CCS report as offered a clear conclusion that Network Rail can reconcile with its understanding of how overhead line components behave and the evidence available. Network Rail notes that CCS offer a number of hypotheses, but these are exactly that, hypotheses.

VTEC – *NB. The question is about the Serco report, which was agreed in advance as being the independent source of expert determination. LNE are answering the question by talking about the CCS report which was provided at VTEC’s expense, as were all the reports, simply to corroborate the Serco report.*

Regarding the Serco report, the January minutes provided by LNE (appended to the report) are proof that both parties agreed that Serco specifically (named in the agreement) was a qualified independent expert. The parameters and scope of the report were specified by LNE (also appended to the report) and the materials were provided by both LNE and VTEC. In every regard this was an independent report agreed to by both parties.

Regarding LNE’s insistence that the incident cannot be re-coded until an exact cause is determined, this is not the case. We need not determine every detail of why the OLE failed, only that it did. The Serco report concluded that the OLE first traversed and then hooked and snatched the pantograph – the pantograph did not fall apart first and then damage the OLE. The exact reasons for this are for LNE to establish, but are not required for the incident to be re-coded to I1.

Question 6a – Supplementary question for Network Rail depending on the response on Question 6:-If the report is being accepted as correct and independent, then Network Rail do not appear to have responded on the point about there being damage to the OHL wire prior to the incident. Could Network Rail please provide a response to this?

LNE - Network Rail consider that the damage was not detrimental to the safe operation of the pantograph / contact wire interface. Multiple electric trains had travelled through that section over very many weeks and months without incident.

VTEC – Again, to resolve the incident the Serco report only needed to establish if the OLE failed before or after the pantograph. It concluded that the OLE had a pre-existing fault and failed first.

The actual circumstances that caused the OLE to first traverse and then hook and snatch the pantograph need not be established for the incident to be re-coded to LNE. Had the pantograph been found to have failed first, and Serco concluded that the chains had failed first rather than there being clear evidence of the chains having been deformed by sudden overloading as was the case, then VTEC would have accepted the incident in full.

To answer LNE’s argument that multiple electric trains had passed the section without mishap, VTEC could equally argue that the train had run for thousands of miles without mishap. In any incident of infrastructure failure, someone’s train has to be the first to be impacted.

Finally, in answer to a question regarding how we know the chains were from the correct pantograph, given this locomotive is fitted with a duplex pantograph – the other pantograph was undamaged but could not be raised as the remains of the damaged pantograph had come to rest on top of it.

APPENDIX 2

Additional information provided by Network Rail and VTEC during questioning by Board members at the meeting.

The remit for the Serco investigation was written by Network Rail and stipulated to identify the sequence of events and damage caused but not to make conclusions – although it was accepted that for Serco not to come to a conclusion was atypical.

Network Rail agreed with the Serco report up to the point of the original remit, but therefore, not the conclusions

Network Rail advised they had not asked for any views or assistance from other Route teams within the organisation to aid their internal investigations.

VTEC had requested Serco to investigate the damage to the pantograph separately but it was logical that Serco align the two investigations.

Ultimately the Serco conclusion was that the pantograph had been snatched by the OHLE.

Network Rail accepted the point made by the Board that they had conducted no technical investigation of their own and effectively had no counter argument to the Serco report or were able to exonerate the OHLE as cause

The investigations conducted and reports received were as follows, in chronological order:

- In-house engineers by VTEC
- Pantograph chains by Serco
- Pantograph head by Serco
- CCS Report
- OHLE wire by Serco

It is believed the CCS report was shared with Serco to aid investigations and conclusion

The Parties concurred that if a further independent investigation and report was commissioned it would be unlikely that any different would result from what Serco have concluded given the time elapsed and the information available

The pantographs on the train were standard pantographs with the same profile on both the leading and trailing pantograph.