Significant Performance Incident Review

9H54 (345025) CBTC Failure

22/01/24

Attendees- names and roles redacted

Name	Role	Organisation
		MTR EL
		MTR EL
		MTR EL
		MTR EL
		MTR EL
		MTR EL
		MTR EL
		MTR EL
		MTR EL
		MTR EL

Attendees

Name	Role	Organisation
		MTR EL
		MTR EL
		Network Rail Western
		Network Rail Anglia
		Alstom
		RfL
		RfL
		RfLI
		RfLI
		RfLI

Attendees

Name	Role	Organisation
		RfL
		RfL

Points for Discussion

- Service management
  - Contingency Plans
  - Stranded Trains
  - Service gaps
  - Management of driver resources
- Communication
  - Conferences
  - Messaging
  - Passenger Information During Disruption
- Customer Feedback
  - Customer Messaging
  - Service level vs Contingency Plan
  - Key Customer Complaints
  - Communication to station staff
- Open Discussion

Incident Headlines & Performance Impact

- Wheels Stop – 07:30
- Wheels Start – 09:20
- Delay Minutes – 3104
- Cancellations – 259
- PPM Failures – 338

Incident Summary

- **07:25** – 9H54 reports from LSX that they have no speedo/speed hook but is able to take ATO. Driver is advised to do so and then call at next station (FDX) to report any further issues.

- **07:30** – Driver of 9H54 contacts TM1 to advise no speedo/hook available. Driver is transferred to DCM Central desk. Transferred to ISST who recommends a new SOM.

- **07:31** – 9Y55 (train in rear) has departed LSX and is now between stations (stranded).

- **07:33** – Station holds implemented WB between ABX – LSX (SWM?)

- **07:35** – Driver reports to DCM C that new SOM has not rectified the issue. Transferred to ISST for further assistance.

- **07:36** – ISST instructs a CBTC reset (following confirming method of communication).

- **07:42** – Minor delays ABX – PDX

- **07:44** – Driver of 9H54 calls back to report CBTC reset has not resolved the issue. Driver confirms that doors are open and is advised to close them and move forward in SA (Staff Accountable).

- **07:50** – Driver advises that SA is not available and they are unable to move forward. At this point, Driver of 9Y55 (stranded for 20 mins) calls to advise that on-board PA reported as inaudible by customers. Approx. 1000 customers on board and are seemingly unable to be kept informed.

- **07:51** – 9Y59 instructed to detrain at WHX and move out of the platform to allow stranded 9Y61 (15 mins) into the platform.

- **07:52** – Severe delays ABX-PDX. Trains begin to be removed into XPG from ABX in order to free up platforms and move trains EB.

- **07:53** – Driver of 9Y55 calls in again to report inaudible PAs to customers and an alarm is heard in the cab (possible CFA/PEA) highlighting a significant egress risk.

- **07:56** – CAT 1 incident declared by RfLI. Driver calls back to advise that fault remains and ISST suggests Recovery Mode to get the train moving.

Incident Summary

- **07:56** – Driver of 9H54 advises that they are unable to select SA (mode not available) therefore ISST suggests Recovery Mode. Driver also advised to detrain. Some comms issues evident.

- **08:00** NR western platforming trains where possible to avoid stranded trains

- **08:01** – Driver unable to enforce door release and requires ISST advise. DCM unable to transfer call to ISST (seemingly a handset problem) and therefore ISST has to leave desk (and ergo reference material) to join DCM at their desk. ABX-PDX part suspended.

- **08:02** – Driver wants to be talked through the enforce doors process however ISST unable to oblige as they are not at their desk. Driver reports door menu unavailable at this point and a PEA is also heard as activated.

- **08:04** – 9U39 moved from WHX A and 9Y59 from WHX B in order to create space for stranded trains.

- **08:10** – 9H54 driver reports that all customers are now exiting the train via a single door (self egress rather than a conscious decision). Driver still unable to achieve door release on the entire train.

- **08:13** – COS stations "Exit Only". ABX-PDX Part Suspended. WHX-SNF/PDX-HTW Severe Delays.

- **08:21** – 9H54 still detraining however advises that IRM is now present to assist.

- **08:29** – 9Y55 to take UAR move back to LSX however is unfamiliar as to the process. DCM unable to assist.

- **08:32** – 9Y58 advises DCM that they have MA but no ATO available and no speed hook. ISST advises new SOM.

- **08:33** – Units now held in all western platforms and 3 units at PAD HL therefore no more currently being accepted.

- **08:34** – All customers now reported as off 9H54 and interlock achieved. Unit reboot advised as this will be swifter than a move in RM. ISST talks driver through the reboot.

- **08:38** – 9Y55 undertakes UAR move to LSX and arrives at 08:42 however doors do not release therefore customer egress themselves.

- **08:56** – Following multiple attempts to contact the ISST via the GSMR HH driver of 9H54 advises that they are in RM and are requesting permission to move. ISST rightly advises that they cannot give permission in this regard. Driver advised to contact TM.

- **09:20** – Faulty train OTM as 5H54 using point to point working. RBW used so that the train does not need to stop at every BMB.

Incident Summary

- **09:54** – 5H54 arrives at PDX
- **10:01** – 5Y62 fails to transition out of the COS on way to OOC. This blocks the forward route for 5H54 & 5Y66.
- **10:06** – Intermittent phone system failure in the RCC significantly impacting comms.
- **10:50** – 5H54 into OOC
- **12:11** – Severe delays across all EL routes
- **14:28** – Minor delays
- **15:00** – Good service.

Functional Overviews/Lessons Learned

Fleet Overview/Root Cause

- Hardware fault with connector to OCN

- Immediate cause – Crimp on connector repeater was not secure causing an intermittent fault.

- DMI not displaying speedo/hook/distance to event

- OCN faults had triggered on previous days on ORBITA outside the COS but did not follow known footprint. No significant action taken as a result.

- ORBITA alerts on the day were delayed.

- No amount of resets/reboots would have rectified the issue

Questions

- Fault was initially reported at LSX however was asked to attempt to continue by TM rather than being passed to DCM/ISST.
  - Why was this? Would it have made a difference? Not to the overall incident as the actions taken in terms of rectification would have been the same as those which occurred at Farringdon (new SOM/CBTC reset/reboot). It was also conceded that this was a "best endeavours" scenario by the TM to get the train moving swiftly
  - Did the TM pass the information to DCM/ISST after the train had successfully departed LSX? It is not thought that it was however this will be confirmed following RfLI investigation with the TM involved.
- Why was the handheld not utilised earlier in the incident? This is an action from a previous SPIR and measures are being taken to ensure that the HH terminal is utilised more by drivers. However it should be noted that problems do still arise with the HHT (registration errors etc.) which are being worked through by Alstom.
- There were significant gaps in the timeline in terms of actions being taken. Was this due to comms flow? Comms flows did play a part (action captured as a result) however secondary incidents did occur which exacerbated the incident such as the driver not having door control resulting in an entire train of customers being evacuated through a single door. This in itself took circa 36 mins.
- Why was the "fix or fail" process not followed? (following the first reset we had breached the threshold for "fail"). It was conceded that an element of "optimism bias" played a significant part here. It became apparent that recovery mode was going to be the only option if we wanted to move the train within the timeframe allowed in the "fix or fail" policy meaning a 10mph movement from Farringdon to Westbourne Park. As this would have taken a significant amount of time it was thought that the best option would be a reboot as, with the knowledge in the room at the time, this would restore all driving modes and allow the train to move of at full speed. This has to be done with an empty train and is when all customers exited the train via a single door as the driver did not have door control from the cab. By the time that we were ready for the reboot circa 60 mins had elapsed.
- Was the request made for 025 to return to OOC on Sunday (following the previous ORBITA alerts)?
  - If so, how?
  - Were MTR involved in the request?
  - Do all of the relevant parties have access to the fleet planning board? All currently under investigation and captured as an action for Fleet.
- Unit was released for service on Monday morning despite ORBITA OCN alerts. What was the review process prior to release? As above.
- Was any consideration given to an 18 car push? (is there a current process for this?). This was considered however thought to be far too time consuming to organise and there was no guarantee that the fault would not transfer to the good unit therefore was discounted.
- Why were customers egressed from 9H54 using only 1 door? It was conceded during the review that the customers were left to egress the train with little to no guidance as to how to do so (ie, no advice/instruction to use multiple doors and manually open the PSDs). Currently no process exists for this therefore this is to be picked up as an action.

Questions

- Could we have used live CCTV to monitor the incident? This refers to the on-board CCTV which is still not able to be accessed in the RCC due to a firewall issue. This has already been picked up as an action for IT to solve.

- Did the ISST utilise the S&D log? (Getting them access has been a huge piece of work). They did consult the S&D log however this did not tell them anything that was not already known from ORBITA and it would not have assisted in identifying the fault as hardware.

- Were there any ORBITA alerts on previous journeys relating to this fault? None.

- Was CBTC reset and then reboot in line with the ISST processes? Yes

  – If so, why was there such a significant amount of time between the 2 actions? As discussed earlier in the pack, this was compounded by comms issues with the driver and the length of time it took to empty the train of customers.

- How early were Siemens reps in the ROC involved (particularly when the phones started to fail)? They were not involved until they were appraised of the telephony issues. This resulted in a "cluster reset" being undertaken without the knowledge of those in the room, leading them to believe that the fault had now become terminal. RfLI have already escalated this with Siemens through the maintenance contract that although this may be the correct action in terms of addressing the fault a reset must not be undertaken without the consent of the senior roles on the operating floor.

- Could we have utilised AR more during this incident? Unfortunately, due to the fact that trains were stacked station to station and the limited options in terms of areas where AR can be used, this was not possible. In addition, as the single UAR move that was undertaken did not perform in the way that was expected, LOC was low that further moves would be beneficial.

- Was ETCS Level 0 an option as opposed to RM? This was suggested however discounted as an option by the SIM on the grounds of safety. It appears that knowledge of this mode is perhaps not where it should be and therefore a briefing is required on this and other possible modes in the event of a failure.

- Was a tech from the depot dispatched to the failure? No. It was not clear whether one was considered (there are certain contractual obligations relating to this area) however it was stated during the review that it would not have been of any benefit.

- Were any resources dispatched in preparation for a train evacuation? RfLI Incident Response Managers were dispatched to site in preparation for the evacuation of the trapped 9Y55 however were not required for this purpose.

- How many musters were held throughout the incident? At least 3

- How many train service conferences were held throughout the incident? 2

- Why did we not operate a shuttle on the SE branch once we had removed some trains to XPG? This takes some time to set up (getting the units/drivers in the right place) and the hope was that we would have the train on the move swiftly enough that we would not need the branch shuttle. It was conceded that, with hindsight, this would have assisted customers travelling from the SE branch into central London with connections from Canary Wharf

- Could we have isolated the West/Anglia routes and run a steady service to HL stations whilst we sorted the COS? As above, it was not thought that this would be needed and given the impact that this would have on interworking/drivers it was not considered as viable due to the nature of the incident (not open ended such as a significant OLE failure). With hindsight, this could have been done however there is also the workload element on the signaller to consider.

Actions

Action	Owner - REDACTED	Due Date
Overall review of the comms flows within the Control and whether they are still fit for purpose – clarity as to who talks to who and when.		Update required by 06/02/24
Process for enforcing all doors on a train instead of evac through one specific door – - Platform staff use LCP to open PSDs. - Driver makes an announcement asking customers to egress themselves off train as PSD are already open.		Update required by 06/02/24
Refresher for UAR/Zorro moves for drivers due to the infrequent use of these and the unfamiliarity that occurs as a result.		Update required by 06/02/24
Ensure that the need to close doors prior to a CBTC reset is embedded in the ISST process (it did not occur on this occasion however this did not contribute to the incident)		06/02/24
Testing of UAR prior to Easter scripts for ELR 500 in order to establish if the doors not opening on this occasion was a unit issue or much wider spread		Update required by 06/02/24
Ensure AR testing in its entirety is included in the test scripts for ELR500 at Easter		**Complete** – These are included in the scripts
Rule Book waiver - Is there a process that ensure the rules are valid in situations were point to point working is implemented?		Update required by 06/02/24
SSDO to meet with Martyn Brennan to review how comms channels can be improved emanating from the Control room (Incident Management format)		Update required by 06/02/24
Review of how we clear PAD GW units back to OOC while in disruption		Update required by 06/02/24

Actions

Action	Owner - REDACTED	Due Date
Ensure the process for requesting units to be returned to OOC for critical faults/maintenance is currently fit for purpose and that all involved parties are briefed accordingly		Update required by 06/02/24
Build briefing pack concerning available train modes/associated speeds etc to ensure that during incidents of this type we are not always restricted to using recovery mode		Update required by 06/02/24
Understand why there was a significant time gap between the failed unit being ready to move (empty and in RM) and it being on the move		**Complete** – This was due to the requirement for the completion of the necessary paperwork (rulebook waiver/point to point working form with the driver) and clearing the affected section of trains prior to the move being allowed to take place. This was complicated further by the fact that the driver could not initially find the point to point working form in their equipment.
Process to be agreed between CE and Drivers which allows for CEC to take control of the on train announcements on the incident train in order to alleviate the workload of the Driver and allow them to concentrate on fault rectification with the ISST		**Currently in progress**. Initial consultation has begun with ASLEF however further work required. Update required following next consultation (date TBC)