

Local Investigation – Accident / Incident (level 3)

1. Assure reference #

2. Date & Time of Event: Saturday 5th May 2012, 03:43:05

3. Location Herons Quay station

4. Description of Event:

On the night of Friday/Saturday 4th/5th May trains were outstabled around the railway as part of the Olympic timetable testing. Two trains were outstabled at Herons Quay platforms 1 and 2.

Following an System Management Centre (SMC) re-boot at 3am (on 5th May) the train at platform 1, consisting of vehicles 78, 07 & 48, received a Ready To Depart (RTD) signal and moved off to South Quay where it stopped. No member of staff was on the train at this time.

FLRTs attended the train at South Quay and checked it over before travelling back to Herons Quay platform 1.

5. Summary of Investigation: *(Include details of how the investigation was approached, eg. persons interviewed, reports collated, inspections or tests carried out, records scrutinised. The investigation should give consideration to any wider implications of the event, such as the potential for other failures across the company/fleet. Attach copies of any statements, photographs and other supporting information, plus details of any other evidence held for future reference/audit).*

Following the incident, the following items of evidence were requested/acquired:

- Incident Report Forms (IRFs) from:
 - [REDACTED], Control Centre Duty Manager (CCDM)
- Memos from :
 - [REDACTED], Passenger Service Agent who outstabled the train, PSA1
 - [REDACTED] Passenger Service Agent who was babysitting trains at HEQ2, PSA 2
 - [REDACTED] Supervisor, BOS
 - [REDACTED] Control Centre Duty Manager, CCDM
- Emails from:
 - [REDACTED] Acting CCDM, ACCDM
 - [REDACTED], Control Centre Controller, CCC
 - [REDACTED], Control Centre Supervisor, CCS
 - [REDACTED], Control Room Technician, CRT
 - [REDACTED], First Line Response Technician, FLRT
- CCTV from Herons Quay station (02:45 to 03:50)
- CCTV from South Quay station (02:50 to 03:50)
- CCTV from Vehicles 78, 07 and 48 (00:40 to 03:50)
- Download of the radio communications relating to the incident.
- Copy of the incident entry from the Daily Operations Log
- Copy of the incident entry from the CCDM Log
- Scanned copy of the Controllers handwritten log for the day of the incident
- Copy of the Outstabling standard operating procedure, SOP/M-3.12
- Copy of the SMC Failure standard operating procedure, SOP/C-4.01
- Copy of the Red Optimus Traffic Notice that covered the outstabling requirements for the Olympic testing.

The incident recording from the vehicles involved was requested, but the information is written over after seven hours on the B92 fleet. Unfortunately the request was made too late to be able to capture the recording for the incident.

A session in the Simulator Room at Poplar was also carried out with a Control Centre Supervisor to replicate the commands given to the train at the time of the incident in order to see what is seen in the Control Centre. This also provided an opportunity to discuss the various methods of securing vehicles and how these are represented and confirmed to the CC staff and the implications on further train movements.

The background to the occurrence:

During the day of 4th May, SRS2, the active Schedule Regulation System (SRS) on the SMC server failed and then SRS1 failed to switchover/takeover, resulting in the SMC failing. A system hold was applied and an SMC re-boot carried out which resulted in SRS1 now becoming the active SMC server. As a result a full SMC re-

boot was required during engineering hours to enable both SRS to be operational. This was planned for the next engineering hours at 3am, instead of on the Saturday night engineering hours as usual. This was because it was felt too urgent to leave until the following night. There was then no need to repeat the re-boot during the Saturday engineering hours due to the short amount of time that had elapsed since the last re-boot.

Olympic timetable testing was scheduled for the weekend of 5th-6th May. In preparation for this 8 trains were outstabled at various locations on the railway, including platforms 1 & 2 at Herons Quay. PSA 1 was operating vehicle 78, 07, 48 as run 707 to the end of service. He was then informed that this train would be outstabled at HEQ1. As PSA1 had finished his duty, he left the station at this time. PSA2 was on the train at HEQ2 and was “babysitting” the train.

Following the SMC re-boot at 3am it was noted in the Control Centre that the train that had been at HEQ1 was now at SOQ1. This movement was not noted immediately as the SMC overview screens in the Control Centre was offline during the re-boot. FLRTs were requested to attend SOQ1 to check there were no door faults on the train, and then returned the train to HEQ1 once it was established that there was no fault with the train.

Further information from each of the sources listed above is discussed below.

Incident Report Forms (IRFs)

Only one incident report form was received following this incident. This was from the Control Centre Duty Manager on duty at the time of the incident. Although information has been received from other staff involved in the incident this has been via email or memo, requested following the incident once the investigation had commenced.

Memos & Emails

A number of memos and emails were received from various staff involved in the incident in some way.

Memo from PSA1 describes the lead up to the incident. The train was in service between Woolwich Arsenal and Canning Town. The train would then be taken out of service at Canning Town, platform 4, before being run non-stop to HEQ1. PSA1 confirmed that he was not babysitting the train and would not therefore be checklisting them. PSA1 states that the train docked and he “secured vaya (sic) DCP and exited train vaya (sic) CAD” (CAD – Crew Access Door).

Memo from PSA2 states he was asked if he had completed checklisting on the train at HEQ1, to which he responds that he was not aware he was responsible for these vehicles in addition to those he was on at HEQ2. The memo also states that he did not receive an all-calls advising that he was responsible for all trains at HEQ. PSA2 also states that the train at HEQ1 departed towards SOQ1 when it got the Ready to Depart (RTD) indication. He then carried out checklisting on these vehicles when they were returned from SOQ1.

Memo from the Book-On Supervisor (BOS) on duty at the time states trains were allocated to staff for babysitting/checklisting on their arrival at work. BOS informed the Control Centre that only one member of staff would be at HEQ. The Controller replied he would make an all-calls to inform all staff to checklist all trains at the stations they were at. The BOS also states that there was confusion regarding whether or not there would be any TSOs babysitting trains on that night.

The memo from the Control Centre Duty Manager (CCDM) describes the arrangements for outstabling at HEQ using vehicles 78/07/48, that were operating as run 707, and also highlights that all outstabled trains would be cleaned for preparation for service. The CCDM confirms he overheard radio conversations regarding outstabling requirements with PSAs. The memo also states that “Details given by controllers are determined by a combination of the train run in/run out sheets, that form part of the service planning from one day to the next.” The CCDM states he does not recollect precisely what was said when the trains arrived at their outstabling locations. Details of the SMC reboot and why it was required are included, followed by a description of what was seen on the SMC screens once the re-boot was complete and screens operating again. A statement of why CCTV monitoring was not altered is also given, no changes were made to this as all stations had a member of staff present throughout the night. The CCDM then states that PSA2 was contacted to verify if he was on the train, when it became apparent that he was not aware that he was also responsible for the train at HEQ1. Recovery of the vehicles is then described.

Email from CCS confirms that vehicles 78/07/48 were outstabled at HEQ1 at 01:13hrs. However this email states “As far as I was aware there were train sitters on these vehicles.” The rest of the email backs up the

account from the CCC but also adds that the train now at SOQ1 was showing the doors were open. The email finishes by saying that he believed that PSA1 should have “put a inhibit on the DCP” and the “train sitter should have gone from platform to platform looking after these vehicles and carry out a checklist which wasn’t done” and states that “the duty manager had sorted this out earlier in the evening.”

The remaining memos and emails do not add any additional information to the investigation regarding the potential causes of the incident that occurred.

CCTV review

Although the CCTV was requested for all three vehicles, recordings were only available from vehicle 48. Vehicle 07 did not have anything recorded on the hard drive when it was removed and vehicle 78 does not have any recording hardware on board.

None of the views on the CCTV from vehicle 048 show a Door Control Panel (DCP) therefore it is not possible to determine if the train was inhibited at the point that the train was left at Heron Quays station. This would be indicated by a red light towards the top of the DCP if the train was inhibited.

The CCTV shows PSA 1 moving through the vehicle completing his duties. It seems likely that the train is taken out of service at around 01:05 based on the movement of the passengers from the train and none getting on, the location is confirmed as being Canning Town in the memo from PSA1. The last time that PSA1 is seen on the CCTV is when the train is stopped at Canning Town, at 01:05. At this point he is seen to board the train at the rear of the vehicle (vehicle 48 is the rear vehicle, view 1 shows the end door which is trailing at this point and the side doors closest to this) and walk through the train, before apparently opening the end door at the coupled end and moving into the next vehicle. This action also confirms that this is the point that the train is taken out of service as this action would be part of the out of service checks.

It is possible to see out of the windows of the train to see that the train non-stops from Canning Town to Heron Quays. At this point it is seen on view 4 at 01:12:34 that the door halos illuminate as the train has stopped. At 01:12:40 the door halos go out. This suggests that the train docked correctly at the station, resulting in the doors enabling (halos illuminate) the doors were then closed (halos go out). This does not confirm, or otherwise, that any other action was taken at that time.

Radio Communications

All radio recordings relating to the incident have been downloaded and reviewed. A Transcript of the conversations is included in the Appendices. These conversations confirm that the train was non-stopped to HEQ1 once the train was taken out of service. The Controller is also made aware that the PSA outstabling the train (PSA1), is not the PSA who will be babysitting the train.

An All Calls is made at around 01:26 which is transcribed as follows:

“Base to all babysitters. If you could please checklist your vehicles, but do not select shunt on any of the vehicles, just a visual checklist on all the vehicles. Obviously keep the lights on, on the vehicles, err, letting the cleaners on and off, and making sure that the crew access’s are shut afterwards. Many thanks, base out.”

A call from a PSA babysitting trains at Canary Wharf confirms that the outstabled trains received the RTD signal following the SMC re-boot. The conversation is then between the CCS and PSA2 (the babysitter at HEQ) relating to whether or not PSA2 was on the train when it departed HEQ1 and if he should have been babysitting this train in addition to the one he was on at HEQ2. The CCS then confirms with PSA2 that he had not checklisted the vehicles at HEQ1. In this conversation the CCS states “I did make an all calls saying the babysitters, you were responsible for checking all the vehicles for the platforms you were at, over.”

Review of Relevant Procedures

Both procedures referenced above have been reviewed to ensure that they were adhered to on the night. Procedure SOP/M-3.12 Outstabling is a short procedure that covers the responsibilities of all staff involved in outstabling trains. The Controller has three actions, namely;

- Inform the PSA that the train is to be outstabled and provide the location
- Once the train is at the location, instruct the PSA to “...power down the vehicle if required and to secure the vehicle.”
- Once the movement has been confirmed complete, log the status with the report from the PSA that the train is secured.

The Controllers log has been obtained for the night of the incident and there is no mention of the outstabled vehicles or their status. (Note logs from other CC staff have been requested but not yet reviewed to determine if this information is recorded elsewhere.)

Although the SOP does not specify the exact method of securing the vehicle, the process followed to re-enter the train into service suggests that the train should be secured using "All Panels Off". This is suggested by the CCC action in the SOP under 5.2 – Train Preparation and Entry. "The CCC enters: Vehicle Control Centre (VCC) Train Activate command and number of train concerned."

During the session in the Simulator Room various methods of securing a vehicle for outstabling were discussed. Throughout the review of the documentation above it is clear that PSA1 was required to close the doors once the train had docked at HEQ1, then select Inhibit from the DCP in order to secure the train. However on speaking to the Supervisor who replicated the incident in the Simulator Room he stated that he would always request PSAs go to All Panels Off in this situation. The investigation has not involved interviews with all Controllers, but it is fair to say that different Controllers may approach the same situation in different ways.

All Panels Off is carried out by placing the keys in the leading EDP, selecting emergency shunt and then removing the keys. This inhibits the train and will not allow any other train command from the SMC/VCC to be responded to as the train is not in a driving mode and able to respond to a command. When this method is used the SMC overview shows a red square around the train number indicating. When the train is secured in this way it is believed that the Control Centre cannot override this, the train has to be put back into a driving mode before it will communicate with the SMC/VCC.

Alternative methods of securing a vehicle include selecting Inhibit from the Leading EDP or the DCP. When these methods are used there is no indication to the Control Centre, the SMC overview remains unchanged and does not indicate a change of status. When the train is secured using these methods, if the SMC goes down for any reason, the VCC will take over. This uses a different way of allocating what trains should be doing to the SMC. In this case it detected that the train had been travelling south and allocated it a default line to Crossharbour. Once the SMC link went down, the VCC took over and a RTD command was received by the train. Because the doors were closed on the train and the Inhibit was not selected, the train moved off. It stopped at the next station but did not move any further as an input to the DCP was required (i.e. to close the doors) before the train could move off. If the Inhibit had been selected the train would not have moved off, as proven by the non-movement of the rest of the outstabled trains throughout the railway on that night.

During this discussion the effects of a VCC re-boot were also discussed. Should this occur all trains that were outstabled in the area of the VCC section that was re-booted would have to be re-entered by the Control Centre staff following the re-boot. If this is not done the trains are not recognised and will not operate. Trains can also time out following a VCC re-boot as they are not communicating. However a VCC reboot is not required on the frequency that an SMC reboot is. It is usually only carried out following a failure of the VCC and therefore not considered to be of concern with regards to isolating trains.

SOP/C-4.01 SMC Failure relates to the actions that should be taken in the event of a full or partial failure of the SMC. The procedure does not specify if it is applied specifically during automatic traffic hours, engineering hours or both, but the actions to be taken suggests that this is mostly geared towards automatic traffic hours. In this incident the SMC had failed during the previous day and the procedure had been followed to re-boot the SMC. This still left one SRS not working, requiring a full re-boot during engineering hours. This procedure does not cover a planned full re-boot of the SMC, a process that is scheduled to be completed every week at 3am on a Sunday morning. On this occasion the re-boot was carried out on the Saturday morning at 3am.

When the SMC goes down, whether due to a fault or during a re-boot the overview screen does not update as it is receiving no input. This results in the screen "freezing" and the overview will not update until it receives an input once the connection is restored. If one SRS is lost this is indicated on the screen, but updates will continue to be received, although may be disturbed as not all information is available. When a SRS goes down, the SOP is invoked and followed.

The procedure states that the CCS/CCC should inform and update PSAs via an all-calls of the SMC failure. Once the SMC has been restarted and schedule assigned the CCS/CCC should regulate the service, then make an all-calls instructing PSAs to depart on RTD. Although this incident was not regarded as a SMC failure, with PSAs and trains around the system there is an argument that the procedure should have been

adopted. It can be determined that the CRT informed the CCS & CCC that the re-boot was about to take place. However there is no mention made to the PSAs that this was about to occur. Following the radio call from the PSA at Canary Wharf the CCC made an all-calls to all babysitters that they should not depart on the RTD signal that they should have received.

Babysitting Responsibilities

The outstabling requirements are outlined in the Special Operations Bulletin 238, issued as part of the Red Optimus Olympic Testing schedules. This provides the information on what runs will make up the outstabled trains, but does not provide any information on the babysitting arrangements at each station, i.e. how many staff at each location, and what they are required to do during the night.

The memo from the BOS states that all babysitters were allocated the trains that they were to babysit/checklist on their arrival at work. The memo provides no information on exactly what the babysitter is required to carry out during the night, nor does it provide any clarity on the number of babysitters that will be at each outstabling location.

The BOS states that he contacted the Controller to inform him that there was only one PSA babysitting at HEQ. He was informed that an all-calls would be made informing staff to checklist all trains at their stations. It is assumed that this is the all-calls that is discussed above as no other all-calls were noted on this subject.

6. Findings: *(Description of what happened in the lead up to, during and immediate aftermath of the event, including details of consequences or potential consequences)*

In reviewing the information above the following has been established.

It cannot be conclusively proven whether or not the train was inhibited when it was outstabled at HEQ. The vehicle Incident Recorder (IR) would have had the information that would have proven the status of the inhibit at the time of the incident. If CCTV had been available for vehicle 78 and 07 then the views from these might have also shown at least one DCP which would have shown the inhibit status from the lights on the DCP. It was considered that the VCC log may hold this information, however following discussion with a Controller it was established that this information would not be recorded on this log. The CCTV for vehicle 48 proves that this vehicle was the trailing vehicle for its last journey into HEQ. PSA1 is seen commencing his out of service checks from this vehicle working through to the leading vehicle and would have been in this vehicle when it docked at HEQ. Therefore it is also not possible to see on CCTV what actions PSA1 took before he left the train after it had docked.

No cleaners are seen on the CCTV for vehicle 48, without the CCTV for the other vehicles it cannot be proven that no cleaners were on the entire train. Cleaners are seen on the CCTV for vehicle 48 following the return of the vehicle to HEQ1. It can be seen through the windows of the train that cleaners are working on the train on the adjacent platform. This suggests that there were no cleaners on the train at HEQ1 prior to the train moving to South Quay, eliminating them from possibly interfering with the DCP when they were working on the train.

Without this positive confirmation of the inhibit status it is not possible to say for certain if PSA1 had inhibited the train before leaving it at HEQ. However in reviewing all the information available throughout the investigation, the only way that the train could have left HEQ following the loss of the SMC during the reboot, was for the train to have not been inhibited. Had the inhibit been applied then the train would not have left HEQ1, as seen with the rest of the outstabled trains. Therefore the investigation concludes that it is most likely that PSA1 did not inhibit the train before leaving it outstabled at HEQ1.

Had the train at HEQ1 been checklisted prior to the incident then it might have been possible that PSA2 would have identified that the train was not inhibited and corrected this error. Although staff were informed that they were babysitting trains and what locations they would be, it does not appear to have been made clear how many trains they were responsible for at each location. Although the BOS states that he informed the Control Centre that there was only one PSA babysitting at HEQ, it is not clear that PSA2 was informed of this. An all-calls was made to all babysitters regarding checklisting, but the message does not clearly state that PSAs should checklist all trains at the stations that they were at, or that there was a possibility that they were responsible for more than one train.

Although the SMC is re-booted regularly on a Saturday morning at 3am during engineering hours, there is no standard operating procedure that covers this. SOP/C-4.01 SMC Failure does not specify when it applies, but the actions to be taken relate more to automatic traffic hours than to engineering hours. It is not clear if the

SOP mentioned above should be followed for the scheduled re-boot of the SMC. However, given the actions that are listed in the SOP it would seem sensible that prior to carrying out a scheduled re-boot when there are outstabled vehicles that all staff on these trains are informed of the re-boot occurring and what this might cause the train to do i.e. receive an RTD chime. The SOP also states that the CCS/CCC should log the status of the outstabled trains and confirmation that they are secured. A copy of all the handwritten logs from the Control Centre for the time of the incident were obtained to verify that this log had been made. None of these logs show any record of the outstabled vehicles. The radio communications also do not include any conversations between the CCS/CCC where the train is confirmed as secure.

The method of securing the train in this instance may also have contributed to the incident occurring. Should an inhibit be applied to the train then it would not be able to move off should it receive a command from the SMC or VCC. However when an inhibit is applied on the train itself there is no indication to the Controller that this is in place. In addition to this, it is clear that using the inhibit to secure the train is not failsafe. It relies on the PSA who outstables the train to ensure that the inhibit is on. If this is not done it is possible for the train to move off.

This is a significant issue as if a train moves off in an unplanned/unauthorised move then it would be possible for it to enter an engineering possession. If this is a live possession, this could result in the train moving through the possession without warning endangering life. Should the train enter an isolated possession it is likely that the area would be livened up. Although there would also be signalling protection in place which would prevent the train from entering the area, the train would start braking at this point and would almost certainly breach the electrical isolation. For this reason the methods of securing the train should be reviewed in the future, particularly with the shortened engineering hours during the Olympics and the greater number of staff that are likely to be working on the railway during this time.

There are also differences between the Controllers that are on duty regarding the methods that they would expect be used to secure outstabled trains. Although this assertion is only taken from a small sample of three Controllers, this needs to be addressed as confusion regarding methods of securing the trains can only contribute to the possibility of a future occurrence.

7. Causes

7.1 Immediate Cause(s): *(eg. Unsafe conditions or acts)*

Although it cannot be conclusively proven, the immediate cause is most likely to be the failure of the PSA to properly secure the vehicle when it was outstabled at HEQ1.

7.2 Underlying / Root Cause(s) *(eg. Influencing factors, procedural weaknesses, management failings).*

The method of securing the vehicle used on this occasion was not failsafe and there was no way of verifying it was secure other than verbal confirmation from the PSA.

There is no evidence that confirmation was sought from the PSA that the train was secure prior to him leaving the train at HEQ1.

The PSA babysitting at HEQ was not aware that he was responsible for both trains at the station.

7.3 Other Areas of Concern *(Details of other issues/concerns highlighted during the investigation but did not actually cause the event, including any weaknesses in the incident response arrangements, aftercare of staff etc.)*

Had the Vehicle Incident Recorder been downloaded when the investigation commenced during the morning following the incident, the proof of whether or not the vehicle had been inhibited would have been available. Unfortunately it was believed that the IR information was only available for 2 hours so no attempt was made to retrieve it. It is possible to get this information from the recorder on the B92 rolling stock for up to 7 hours following an incident.

There is no SOP to cover the scheduled re-boot of the SMC, therefore there is no formal process to follow with regard to dealing with a re-boot with trains on the railway during engineering hours.

Babysitters need to be provided with clear and specific instructions regarding the location they are going to, how many trains they are responsible for at that location and what they are expected to do with these trains during this period.

A consistent method of securing outstabled trains needs to be agreed and briefed to all Controllers and PSAs to ensure that all trains are secured in the same way and the safety and performance risks are understood and mitigated for.

8. Actions/Recommendations

8.1 Initial Actions

Details of initial actions that are to be taken, or have been taken, to prevent a recurrence.	Action by	Deadline
1. Re-brief all controllers and PSAs of the current outstabling procedure to ensure all are aware of the current process to be followed.	GM Control Centre & Team Managers	Complete (via email brief to Controllers and a TN entry.)
2. PSA1 to be re-briefed on the importance of correctly securing outstabled trains.	Team Manager	Complete (via a TN entry)

8.2 Recommendations

Details of further recommendations to be taken to prevent recurrence. These should consider underlying and root causes in addition to the immediate causes.	Action by	Deadline
<p>3. Complete a review of the various methods of securing outstabled trains with relevant stakeholders, taking into account how the action can be verified, the implications for bringing trains back into service and the outcome if the vehicle is not properly secured.</p> <p>This action is now not required as the GM Control Centre & Rolling Stock have agreed independently that all outstabled trains shall be secured using All Panels Off. This is a requirement for the B2007 rolling stock and for consistency is sensible to apply across all rolling stock. Also this gives the Control Centre the indication on the SMC overview that they are secure and provides the secondary check to ensure a vehicle is secure.</p>	Lead: Operational Standards Manager (with Control Centre, S&A, Signalling & R/S as necessary)	Complete (as per note)
<p>4. Following agreement of the most appropriate method for securing outstabled trains, review procedure SOP/M-3.12 to ensure that a suitable level of detail is included regarding how trains should be secured.</p> <p>This action has been completed. The Rolling Stock Team has made the changes to the SOP, endorsed by the GM Control Centre. It was submitted to the June R&P Meeting and completion of the procedure will be managed via the R&P process.</p>	Operational Standards Manager	Complete (as per note)
5. Controllers to be re-briefed on the importance of logging all outstabled trains and confirmation that they have been secured, as per the requirements of SOP/M-3.12 (Once the amended SOP has been approved).	GM Control Centre	30/09/12 (to allow for the SOP to be approved)
6. Standard form to be developed for providing staff carrying out babysitting clear information on their responsibilities for the duty, including the number of trains in their responsibility.	Operational Standards Manager	30/09/12
7. Review SOP/C-4.01 or create a new SOP to cover the specific requirements of carrying out a scheduled SMC re-boot, including the need to confirm with any trains on the railway that a re-boot is imminent.	GM Control Centre	30/09/12
8. Provide information to all Service Delivery staff confirming the amount of time available following an incident that the information can be retrieved from the vehicle incident recorder.	HSQE Officer	31/08/12

9. Investigation carried out by:

Name	Title	Signature	Date
██████████	HSQE Officer		

10. Investigation accepted by (Departmental Director)

Name	Title	Signature	Date
██████████	Ops & CS Director		