Office of Transport
Safety Investigations

CSIRS Outcome Report

Confidential Safety Information Reporting Scheme (CSIRS)
Trains in service with identified faults

The issue

The Office of Transport Safety Investigations (OTSI) received nine reports of alleged incidents where train sets have remained in service or entered service with identified defects that were not managed in accordance with minimum operating standards. These alleged incidents were:

1. Set H2 on 23 April 2024 operated with a locked axle alarm.
2. Set T18 on 21 April 2024 operated with a faulty Digital Train Radio System (DTRS).
3. Set T29 on 12 April 2024 operated with a faulty fog light.
4. A H set on 11 April 2024 remained in service while not allowing a trip gear reset from within the driver's cab.
5. Set T11 on 10 April 2024 continued to operate with a faulty ammeter.
6. A four car Outer Suburban CAR (OSCAR) on run 240A on 17 February 2024 left the maintenance centre with traction motors isolated.
7. Set H10 between 2-19 January 2024 was in service (from a maintenance centre) with automatic brake cylinder pressure readings greater than 100 kPa below required pressure readings.
8. Sets V14 & V24 on 2 November 2023 were released to enter into service (from a maintenance centre) with a defective Electro-Pneumatic (EP) brake and isolated regenerative brake.
9. Set V16 on 20 October 2023 was released to enter into service (from a maintenance centre) with a defective EP brake.

OTSI action

OTSI advised Sydney Trains of safety issues reported through our CSIRS process and requested an investigation into these nine matters.

Operator response

Sydney Trains provided the following responses to each of the 9 alleged incidents.

1. Set H2 on 23 April 2024 operated with a locked axle alarm.

The locked axle alarm on H2 was identified by Sydney Trains as an intermittent wheel slip slide protection mechanism fault caused by a defective wheel sensor. This presented as a locked axle alarm, even though there was no lock axle event. The defective wheel sensor was replaced and all wheel sensors on OSCARS are being replaced to reduce instances of this failure mode.

Sydney Trains stated the train operated in accordance with *OMET 350 OSCAR* and Engineering specification *SP R 92005 – Minimum Engineering requirements to Operate Passenger Trains.* This specification allows trains with 'E' defects to continue operating, provided they are repaired in accordance with *SP R 92006 – Maintenance Defects Repair Urgencies*. *SP R 92006* is authorised by the Engineering Manager and details the conditions for deferring and repairing minor defects. As an 'E' defect, the fault needed to be repaired at the next available opportunity and before 35 days.

2. Set T18 on 21 April 2024 operated with a faulty DTRS.

The driver reported the DTRS was not changing codes. The train returned to the depot as per regular timetable. Staff conducted a "go-no-go" test and a Network Audio Test (NAT) call. Sydney Trains reported that both tests were successful, so no further action was needed at the time. The train was booked in for repair on 26 April 2024, where the fault was repaired and closed, with no further faults being registered.

This issue with DTRS not changing codes had been an ongoing concern. On 30 January 2024, Sydney Trains released an information bulletin to train crew to remind them that they can manually update an area code on the DTRS. The bulletin also instructs that while trains need to be booked in for repair, they can still operate until they are worked into maintenance.

3. Set T29 on 12 April 2024 operated with a faulty fog light.

This fault was not found in the Sydney Trains' system. A search for faulty fog lights on other sets it was coupled to also found no report of faulty fog light.

There is a potential issue where faults identified by train crew are not being reported or recorded via the correct system and therefore remain unknown to maintenance until the train sets next scheduled inspection.

4. A H set on 11 April 2024 remained in service while not allowing a trip gear reset from within the driver's cab.

OSCAR Maintenance Centre's records indicated that H1 (suspected to be the set involved in this confidential report) had a trip gear fault with a similar fault description. No fault was detected during function testing by Rail Maintainers at the time, and the reported fault symptom has not reoccurred since the initial issue.

5. Set T11 on 10 April 2024 continued to operate with a faulty ammeter.

Sydney Trains reported two maintenance bookings scheduled on 4 April 2024 and 9 April 2024. Tests from these bookings found no faults, which suggested an intermittent fault may have been present. The fault was reported again on 10 April 2024 by a driver at 16:01.

The Fleet Controller verified the train's power functionality by employing the driver's test screen, ensuring the ammeter readings were accurate. As a result, the train was operating in compliance with the stipulations outlined in the Note from OMET 200 which states:

- If the driver has concerns about the accuracy of any gauges, contact Mechanical Control, and work as directed. If it is in service, then the train needs to be worked out of service before the second end change.

Following identification of the fault, the Fleet Controller logged the issue and formulated a plan to return the train to Mortdale Maintenance Centre (MMC) for further investigation.

The Set arrived at depot later that day. At 21:30, a train technician attended and replaced a card. The Set was trialled on a run to Waterfall. A data download was retrieved on return and no further faults were recorded.

Sydney Trains maintains that the above five faults identified on trains in service were managed in accordance with relevant standards and procedures. However, fault 3 could not be found in the maintenance system so may not have been reported or recorded correctly.

6. A four car OSCAR on run 240A on 17 February 2024 left the maintenance centre with traction motors isolated.

The MOS (*OMET 350 OSCAR)* states, the ability to travel with failed traction inverters must be assessed against *TWP 351 OSCAR Minimum tractive effort requirements*. As the OSCAR set was going into service from a maintenance centre, all traction inverters needed to be operational.

Sydney Trains acknowledged that this train operated outside minimum operating standards and took the following action to prevent recurrence:

- The Certificate of Readiness (COR) process was reviewed to ensure a thorough review of open faults/defects prior to issuing a COR and was consulted with relevant parties.

Sydney Trains' advises the COR for OSCAR trains provides assurance these trains are safe and fully operational before they leave maintenance depots. This certificate confirms that all necessary inspections, tests, and maintenance activities have been completed in accordance with the Technical Maintenance Plan and relevant safety standards.

7. Set H10 between 2-19 January 2024 was in service (from a maintenance centre) with automatic brake cylinder pressure readings greater than 100 kPa below required pressure readings.

The fault with Set H10 was initially reported on 12 January 2024 as an auto brake fault. Sydney Trains identified a knowledge gap among depot staff where the fault was incorrectly coded as an 'E' priority defect (to be corrected at the next opportunity) instead of being coded as a 'D' priority defect (fix before leaving the depot). It was also identified that the set was prepared by multiple train crews between 12-22 January without the fault being raised again.

To prevent recurrence, Sydney Trains took the following actions:

- The Certificate of Readiness (COR) process was reviewed and consulted with relevant parties.
- A fault management e-learning module for Maintenance Shift Managers (MSMs) titled *Fleet Fault Management Standards & Best Practice* has been developed and will be rolled out."
- Train crew preparation was made a standing agenda item at the train crew/Fleet Working Group meetings to ensure issues like these are identified more readily.
- Responsibilities and accountabilities of the MSM was clearly articulated in accordance with the Maintenance Centre Supervision Handbook.
- Improved processes for reducing parts shortages were established with the creation of a Fleet Supply Chain.

8. Sets V14 & V24 on 2 November 2023 were released into service (from a maintenance centre) with a defective EP brake and isolated regenerative brake.

Maintenance records show that Sets V14 and V24 were booked in at Flemington Maintenance Centre (FMC) on 2 November 2023 with a reported fault that the train was "braking too well".

Sydney Trains advised maintenance staff undertook the following:

a. A review of Wayside Information System (WIMS) data for wheel temperatures which showed there was no signs of sticking brakes.

b. A review of the datalogger download showed no signs of braking issues with Electro-Pneumatic (EP) pressures corresponding to brake demand. The sets were sent into service because the reported fault on the booking was unclear. Both EP and Auto were operational throughout the consist meeting OMET 200 standards, which required all EP brakes to be operational.

c. Additionally, maintenance staff asked train crew to further explain the reported fault and as a precaution, requested further checks with the brake voltages in accordance with brake procedure PR R90542 upon return to depot.

d. As a result of the voltage tested completed on 4 November 2023, the EP voltages in car 8079 were found to be slightly higher than expected in initial EP brakes. This was repaired by adjusting the EP voltages (in accordance with PR R90542) on the same day. A regen test was also completed (in accordance with PR R900543).

Sydney Trains maintains that the train operated in accordance with relevant standards and procedures.

9. Set V16 on 20 October 2023 was released into service (from a maintenance centre) with a defective EP brake.

Maintenance records show that Set V16 was booked into Flemington Maintenance Centre (FMC) on 20 October 2023 with a report that it was applying more brake pressure than normal during initial brake applications.

Maintenance staff undertook the following:

a. The fault was confirmed in car 8078 by FMC on 20 October 2023, however it happened only when the brakes were applied from car 8078. When it was applied from other cars, brakes operated correctly.

This fault was logged as a Non-Block (NB) fault, and V16 was scheduled to leave FMC with car 8078 as a middle car in the 8 car consist with V23. However, the run was later cancelled because the driver reported brake pipe pressure leak off issues during train preparation. Subsequently V16 and V23 did not enter service until 30 October 2023 after the BP and EP issues had been fixed.

Brake tests were completed in accordance with brake procedure PR R90540 on 29 October 2023 with no further issues observed.

Sydney Trains maintains that Set V16 was operated in accordance with relevant procedures.

Other changes to maintenance processes

Technical Maintenance Plans (TMP)

In October 2023 the TMP for the OSCAR fleet moved from a 45 day intermediate inspection to 60 day and from a 90 day R inspection to 120 day, but the COR validity period of 60 days was not adjusted.

The TMP due dates have some tolerances, which allows the set to be scheduled for servicing plus or minus a few days either side of the maintenance due date. Previously with the intermediate inspection set to 45 days, there was 15 days tolerance in the 60 day COR expiry date.

With the COR date still set to 60 days there were several issues with late outs due to the OSCAR COR having reached its expiry before the adjusted 60 day intermediate inspection.

Since these changes to the TMP the COR expiry period changed from 60 calendar days to 60 days in service. Based on normal running, OSCAR sets are expected to be stabled out of service between scheduled maintenance inspections for up to 30 days.

This change addresses the misalignment and restores some flexibility to the COR expiry date to allow for maintenance tolerances.

Maintenance Centres

Sydney Trains advised during the past 18 months OSCAR fleet maintenance activities (Level 1 and Level 2) transitioned from OSCAR Maintenance Centre (Eveleigh) to Hornsby Maintenance Centre. The Home Depot changed from Eveleigh to Hornsby in September 2024, following extensive consultations with the train crew and other stakeholders.

Hornsby Maintenance Centre was upgraded to accommodate the change as part of the strategy to optimize the maintenance and stabling of trains in the northern region of the rail network.

Conclusion

Sydney Trains addressed the faults identified on the trains in service, following their established standards and procedures. However, incident 3 could not be found in the maintenance system which raises a potential issue of fault reports not being reported or recorded into the maintenance system correctly.

The two identified faults on trains entering service from a maintenance depot (8 and 9) were also addressed in accordance with Sydney Trains procedures.

Incidents 6 and 7 were occurrences where the system had broken down. These events occurred in January and February 2024, both involved OSCAR sets. Sydney Trains took several corrective actions to prevent recurrence, which were highlighted above.

A review of the Certificate of Readiness (COR) was triggered by the need to re-align it with the changes to the TMP that were instigated in October 2023, this also presented the opportunity to review it for its efficacy as an assurance process.

Sydney Trains advises the changes to the COR were consulted with train crew to ensure all parties understood the new process before rollout.

Additionally, Sydney Trains advised the supporting mechanisms that are equally required to be effective were actioned for improvement. These included adequate training of key personnel and clarification of accountabilities and responsibilities.

Other factors that may have hindered the ability to fix items in a timely manner, such as parts shortages was also actioned.

Lastly, the established Train crew/Fleet working group has regular meetings for addressing future instances of trains in service with identified faults.

Additional finding

Several equipment items when identified as faulty, e.g. EP Brakes, Wheel Slide protection, parking brake, can be classified as E defects, in accordance *SP R 92006 – Maintenance Defects Repair Urgencies* and repairable at the next opportunity but within 35 days.

However, the OMET 350 specifies, as an example, the EP brakes must all be operational when the train is entering service from the (home) maintenance centre, regardless of why the set was in the centre.

There is a possibility, depending on the standard is being applied, that a defective EP brake (classified as an E defect) and scheduled for repair within 35 days of identification may leave the home maintenance centre still defective if the repair is booked for a later date. The set would be technically compliant with *SP R 92006 – Maintenance Defects Repair Urgencies* but non-compliant to OMET 350.

While recognising the train can still be operated safely using the automatic brake, there are potential inconsistencies in the application of related standards.

Safety message

Systems for reporting, managing and correcting defects on trains should be clear and unambiguous to ensure timely identification and rectification of train faults in accordance with established standards.

An effective system must ensure all parties understand their roles and responsibilities are clear on the required standards and are competent to perform their duties.

Sydney Trains and other rail transport operators should review their management systems to ensure consistency and the ongoing effectiveness of their established controls during times of change.

The Confidential Safety Information Reporting Scheme (CSIRS) operates under the provisions of Section 46E of the Passenger Transport Act 1990. It is a voluntary, confidential and non-punitive scheme that enables employees in the public passenger transport sectors of the rail, bus and ferry industries to report safety matters.

OTSI provides feedback to each reporter on the investigation outcomes of a CSIRS report. In selected matters that have significant operational safety matters, OTSI also publishes a CSIRS Outcome Report. For more information on CSIRS, go to otsi.nsw.gov.au