Australian Government
Australian Transport Safety Bureau

Australian Transport Safety Bureau
PO Box 967, Civic Square ACT 2608
Australia

1800 020 616

+61 2 6257 4150 from overseas

www.atsb.gov.au

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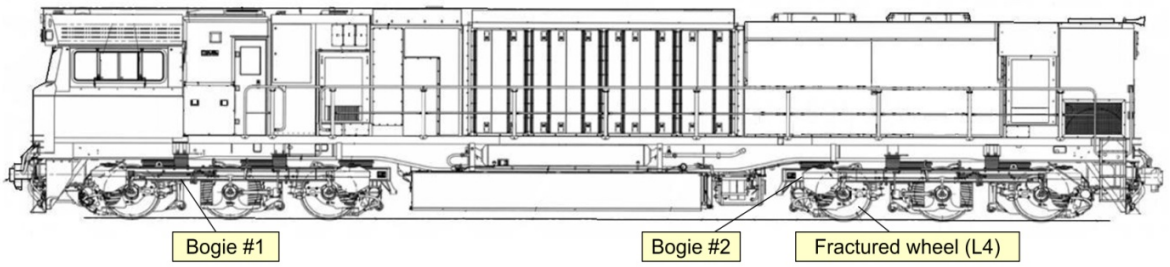
ATSB TRANSPORT SAFETY REPORT
Rail Investigation RO-2011-009
Preliminary

Rolling stock irregularity on train 5MP9
near Fisher, South Australia
28 May 2011

Figure 1: SCT Class locomotive showing the location of wheel failure L4 on SCT 008.



Abstract

At about 0145[1] on Saturday 28 May 2011, intermodal freight train 5MP9 was travelling from Melbourne to Perth when it experienced a catastrophic failure of a locomotive wheel at about the 849.700[2] track kilometre mark near Fisher, South Australia. There were no injuries. The locomotive did not derail but separated wheel fragments damaged the locomotive traction motor and associated components. The single-line track incurred four rail breaks and broken sleepers over a distance of about 1 km.

FACTUAL INFORMATION

The information contained in this preliminary report is derived from the initial investigation of the occurrence. Readers are cautioned that it is possible that new evidence may become available that alters the circumstances as depicted in the report.

Location

The track near the location of the wheel failure is situated on the Nullarbor Plain near Fisher, South Australia, and is about 350 km west of Tarcoola on the Trans Australian Railway. The track at this location is straight and constructed on a limestone rock and earth base surrounded by sparse bluebush and other low level vegetation. At the time of the incident the train was transitioning from a near level plane into a 1 in 300 ascending grade.

Train Crew

The train crew consisted of two sets of two drivers provided under contract to SCT Logistics (SCT) by Genesee and Wyoming Australia. The two crews were working rotating shifts with one crew driving while the other was resting. The resting crew were accommodated in a fully equipped crew van marshalled near the front of the train. The drivers operating the train at the time of the incident were appropriately qualified, assessed as competent and medically fit for duty.

Freight train 5MP9

Freight train 5MP9 was an intermodal freight train owned by SCT. It consisted of two locomotives, SCT 008 (leading) and SCT 006 (trailing) hauling,

1 The 24-hour clock is used in this report. Australian Central Standard Time (CST), UTC + 9.5 hours.

2 Distance in kilometres from the reference point located at Coonamia, South Australia.

a crew accommodation coach, one in-line locomotive refuelling wagon and 72 freight wagons. The total length of the train was 1787.3 m weighing a total of 6015 t.

Locomotive SCT 008

Locomotive SCT 008 was one of 15 SCT class (GT46C–ACe) locomotives built by Downer EDI Rail (DEDI) in Cardiff, New South Wales that entered service in May 2008. The SCT class (Figure 1) is a diesel electric locomotive producing 3207kW (4300HP), is equipped with two three-axle bogies, and is driven by six AC[3] traction motors.

The occurrence

SCT freight train 5MP9 originated in Melbourne Victoria, and travelled to Adelaide where wagons and loading were added to the consist. The train departed Adelaide at 1036 on Friday 27 May 2011 and travelled through Port Augusta at 1446 and Tarcoola at 2026. At 2144 the train stopped at Wynbring to allow opposing train 5PM5 to pass. Train 5MP9 departed Wynbring at 2201 and at 0104 the next day was diverted into the passing loop at Watson to enable freight train 5PS6 to cross their path. At 0118 train 5MP9 departed Watson and at about 0145 while travelling at 111 km/h near the 849.700 track km mark, the crew experienced a violent vibration. The driver made a brake application and 1 minute and 40 seconds later brought the train to a stop near the 851.500 km mark. Inspection by the train crew revealed that the left wheel (L4) on the leading axle in the second bogie (Figure 1) had failed catastrophically.

Post occurrence

When train 5MP9 came to stop, the driver contacted the Australian Rail Track Corporation (ARTC) train controller to advise that lead locomotive SCT 008 had experienced a catastrophic wheel failure and that about half the wheel had disintegrated (Figure 2). The crew advised that they would contact train control after a further inspection had been made of the track. An inspection by the train crew found the southern rail was broken in four separate locations with wheel impact marks and varying break gaps of between 25mm and 65mm. The train had passed over the broken rail sections without derailing.

Figure 2: SCT 008 fractured locomotive wheel L4.

Locomotive maintenance workers were despatched from Port Augusta to carry out temporary repairs, arriving on site about 10 hours after the incident. After being de-coupled from the train, locomotive SCT 006 was used to push locomotive SCT 008 at very low speed into the passing loop at Fisher. Locomotive SCT 006 was later re-coupled to the rest of the consist with the train departing from the 851.500 km mark at 1924 on Sunday 29 May 2011.

Track maintenance crews carried out repairs to damaged rail and sleepers with the track returned to normal service on Sunday 29 May 2011 after a delay of about 42 hours.

After locomotive SCT 008 had been secured in the Fisher passing loop, the damaged traction motor wheel/axle assembly was removed and replaced with a temporary axle/wheel set. On Thursday 2 June 2011 the locomotive was attached to SCT train 4PM9 where it travelled to Port Augusta for further repairs.

The investigation

The investigation is continuing and will include examination of the following:

- An analysis of the fractured locomotive wheel including metallurgical structure and heat treatments in accordance with material and manufacturing standards.
- Maintenance history of SCT 008's failed wheel.
- Maintenance and defect histories of SCT class locomotive wheels and reported anomalies.
- Examination of other reported locomotive wheel failures.

3. 3 phase alternating current.