PII

DERAILMENT
General Report

Reference Description: **Broken Axle - Derailment- South Morrill Yard, NE-MP 162- COEH 6962- L3, CNAOV-19**

Project History Number (PH#): **36-2010-012** Written by: PII

Incident Date: **02/19/2010**
Train ID: **CNAOV-19**
Car/Loco: **COEH 6962**
Subdivision: **Powder River**
Mile Post: **162**

Background On February 19, 2010, the Number-3 axle failed in coal gondola COEH 6962 while at the South Morrill yard in train CNAOV-19. The car, UMLER code J311, is rated at 286,000-pounds gross load on the rail. The failed wheel set was sent to Rail Sciences Inc, in Omaha, Nebraska, for further evaluation.

Conclusion The axle failed due to a forging burst on the center line of the axle which originated fatigue cracking perpendicular to the axle barrel, (Why Made Code 54).

Discussion The failed axle was a Grade "F" (Double normalized and tempered), designed for class "K" bearings, forged by Standard Steel in November, 2002. Wheels were mounted by American Allied Rwy. Equip. Company, in Washington, Illinois, in April, 2003. The wheels were reprofiled, and reconditioned bearings were applied by American Allied Rwy. Equip. Co. in January, 2008.

A visual inspection of the wheel set revealed that the fracture occurred approximately one quarter of the distance between the back wheel hubs, as shown in Figure 1. The two sections of the broken wheel set are shown in Photographs 1 and 2. Photograph 3, shows that the origin of the axle failure is a forging burst located on the center line of the axle. The forging burst originated the fatigue cracking, which grew around the void until approximately 60% of the axle was fractured, at which time the axle failed due to overload fracture.

This forging burst should be detectable by ultrasonic inspection as detailed in the AAR Wheels & Axles manual, sections 16 through 20. As shown in Photograph 4, this axle was stamped with a circle "T", indicating that it was ultrasonically inspected.

The wheel profiles for both the failed and mate wheels were captured using a LazerView digital gage. The profiles are shown below in Figures 2 and 3. No exception is taken with the wheel profiles.

Fracture Location

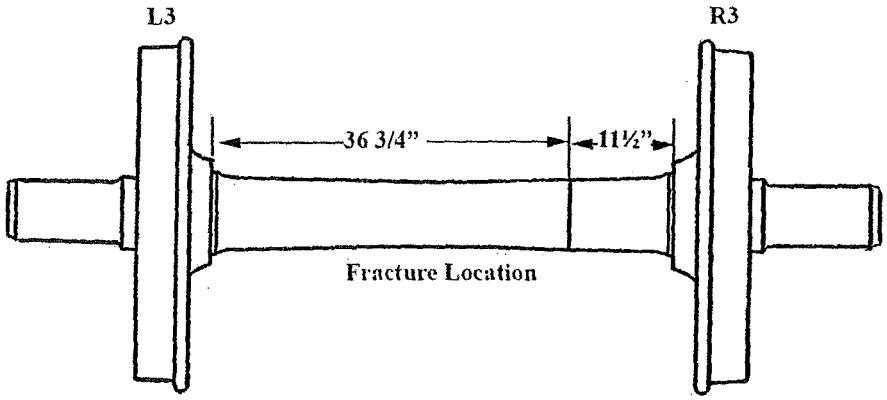


Figure 1: Drawing of wheel set showing the location of the axle defect.

Wheel Profiles

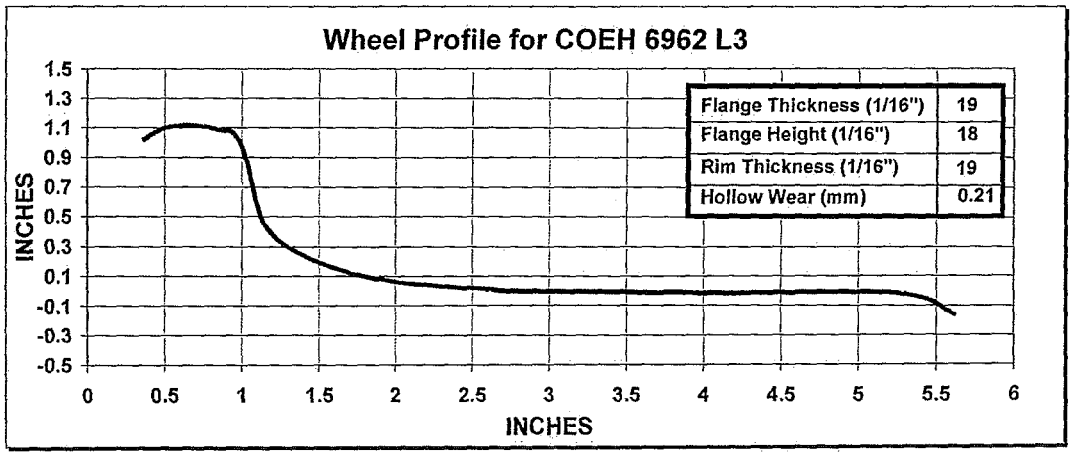


Figure 2: Wheel profile for the wheel in the L3 position.

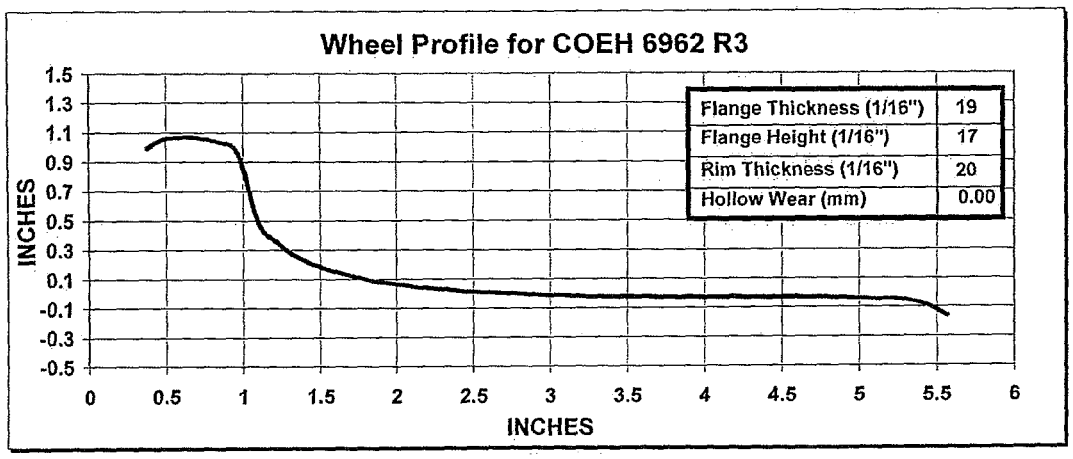
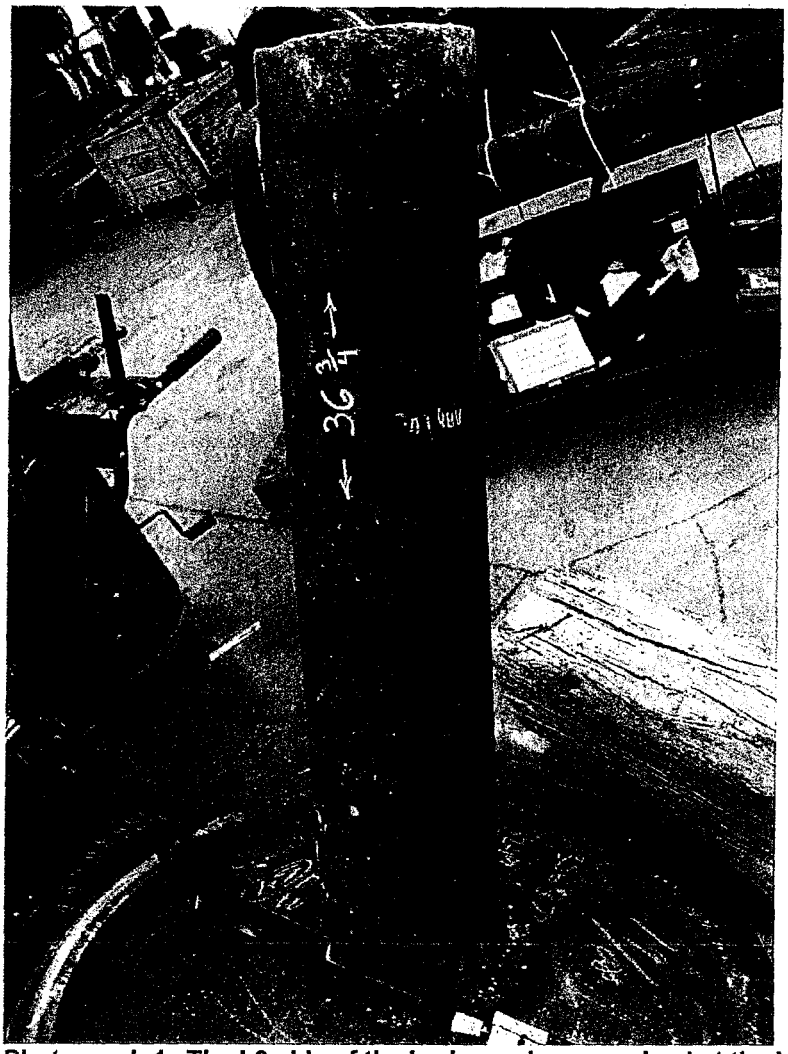
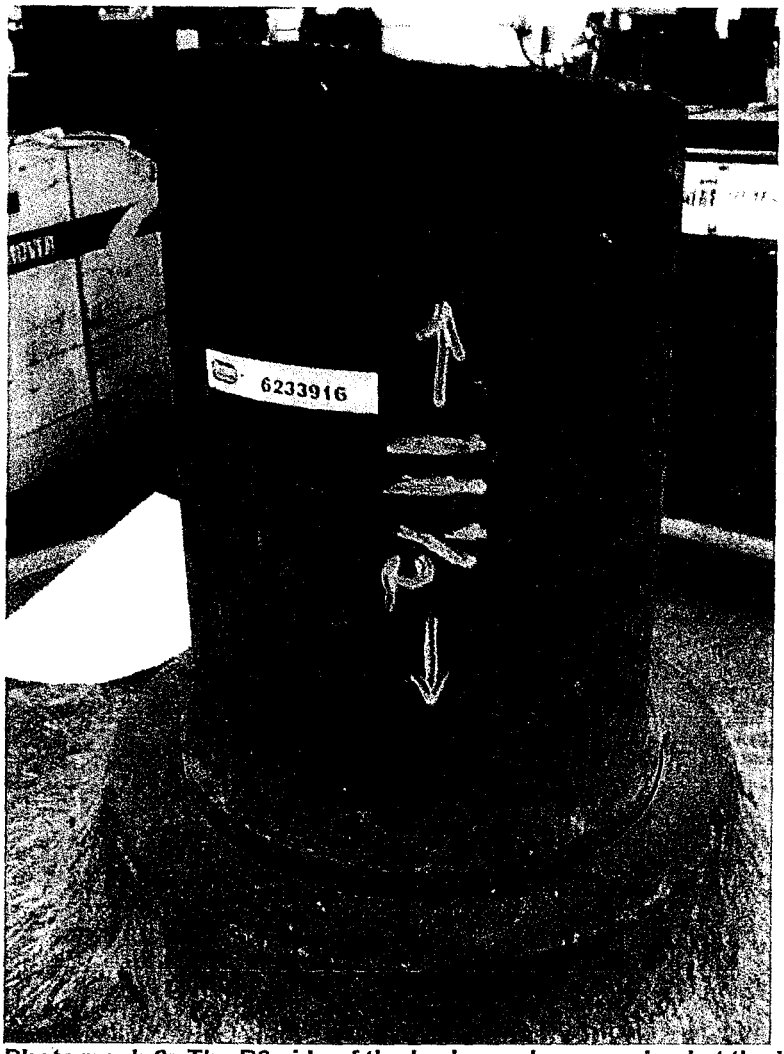


Figure 3: Wheel profile for the wheel in the R3 position.

Photographs



Photograph 1: The L3 side of the broken axle as received at the Laboratory.



Photograph 2: The R3 side of the broken axle as received at the Laboratory.

Photograph 3: View of the forging burst in the center of the axle on the R3 side.