NATIONAL TRANSPORTATION SAFETY BOARD

Office of Railroad, Pipeline and Hazardous Materials Investigations
Washington, DC

TRACK & ENGINEERING FACTUAL REPORT

DCA17FR013

Union Pacific Railroad, Derailment with Employee Fatality

Arlington, TX - September 22, 2017

Accident

NTSB Accident Number:	DCA17FR013
Date of Accident:	September 22, 2017
Time of Accident:	11:06 a.m. (CST)
Railroad Owner:	UPRR
Train Operator:	UPRR
Type of Train and No:	Y-GW51R-22 (Empty Boxcars)
Crew Members:	1 Engineer, 1 Conductor
Location of Accident:	Arlington, TX

Prepared by:

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Parties to the Investigation:

- Federal Railroad Administration (FRA)
- Union Pacific Railroad (UPRR)
- Sheet Metal Air Rail Transportation (SMART)

Track Description:

This portion of the UPRR, the Great Southwest North Subdivision, consists of 7.4 miles of industrial track and includes the Great Southwest North Yard (6 Flags Yard), which consist of 8 tracks. The yard in which the accident occurred, was located at approximately MP 0.65. The subdivision and yard are used for switching operations. The accident occurred on the west end of track 001, which is the south most track in the Great Southwest Yard. Track 001 is jointed track. The crossties were wood and measured 9"x 7"x 8'6" in dimensions. The rails were fastened to the crossties using spikes and the rail was predominately 110-25 lb. RE Illinois Steel (yr. 1937). The ballast was predominately 1/2-yard ballast.

UPRR inspects and maintains this track on the Great Southwest North Subdivision to Federal Railroad Administration (FRA) Track Safety Standards (TSS) for Excepted track, which allows for a maximum operating speed of 10 mph for freight trains. FRA Excepted track requires that no more than five cars that are required to be placarded by the Hazardous Materials Regulations be permitted to move on any train on this track and excludes passenger operations.

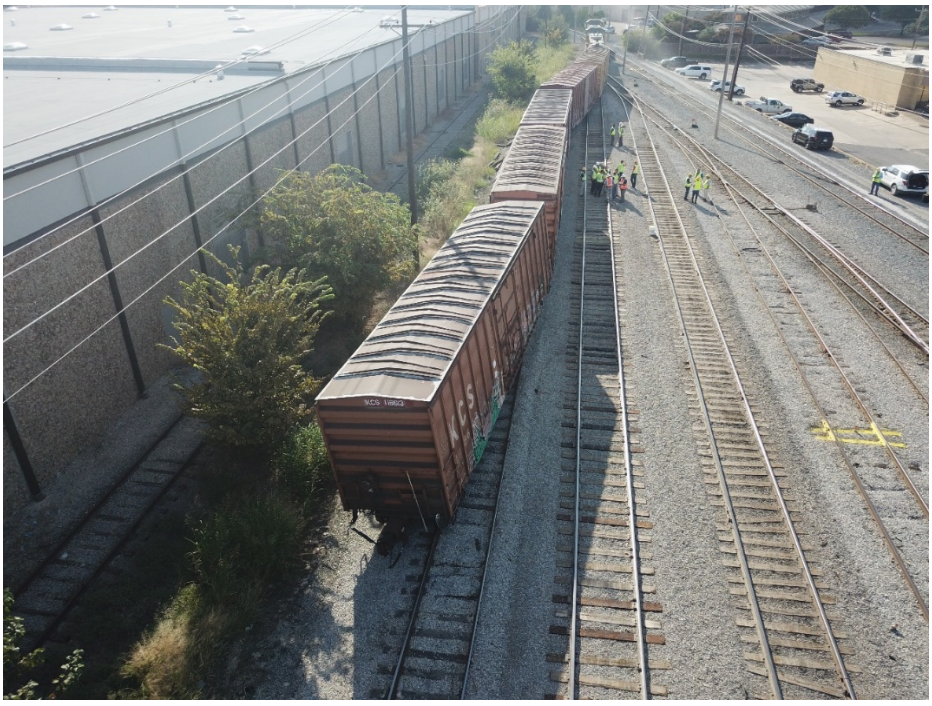

Figure 1. Aerial view of accident location.

Documentation of POD:

The investigation team determined that the POD (the location where the normal wheel and rail interface was disrupted) was approximately 60ft east of the west switch leading into Track 001. Investigators identified a flange mark originating at the center of a rail joint on the south rail traversing over the top of the rail head of the high rail in the curve. This flange mark was determined to be 24" in length. Corresponding wheel departure marks were identified across the top of the rail head of the low rail of the curve. Investigators also photo documented flange and tread marks from the derailed rail car wheels that were found on various track components. Evidence of the derailed car continued, in the ballast, east for 152ft from the POD to where the car came to rest.

Track note measurements taken in curve that the derailment occurred, revealed an average degree of curvature of 12 degree 6 minutes. The gage measured 57-5/8 inches under load at the point of derailment. The difference cross level was 1 5/8" (low to south rail). The rail joint where the wheel marks originated was loose and allowed a 1/8" gage side mismatch and 1/8" tread mismatch of the rail ends. A loaded measurement of the mismatch was taken using PTLF at 4000 psi. At that time, the mismatch measured 3/8".

During the re-enactment, video recording devices were positioned to capture footage of the rail joint as the cars traversed the track at the POD. Upon reviewing this video footage, it appeared that the rail end mismatch was significantly greater than the previous measurement taken using the PTLF. An exact measurement could not be determined.

Figure 2. Photo showing wheel flange departure mark at rail joint.

Figure 3. Rail Joint where wheel flange marks originated (POD).

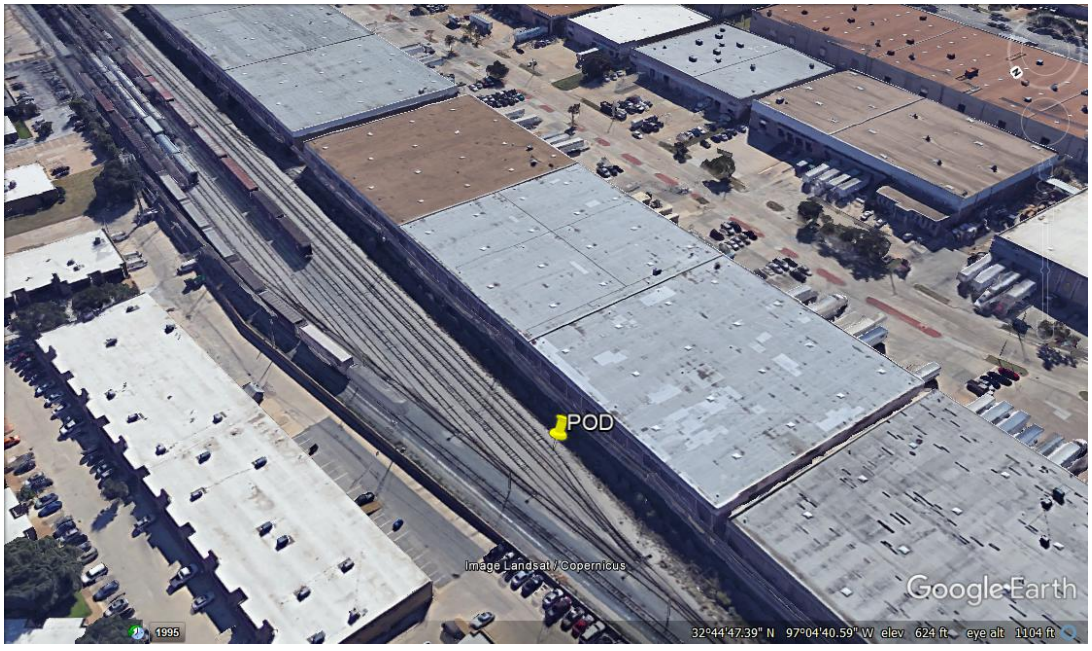

Figure 4. Aerial view of surrounding area via Google Earth

Damages Estimates:

UP is estimating $2,500 damages to the track structure.

Post-Accident Inspection/Testing of Track:

On September 23, 2017, members of the track and engineering group conducted a walking inspection of track 001 in the Great Southwest yard. The track is designated as FRA excepted track which requires only that the gage not exceed 58 ¼". FRA inspectors noted no defects from FRA TSS. FRA made the following general observations at the POD.

- Gage: 57 ½" Static / 57 5/8" underload
- Warp: 1 3/8" Static / 1 5/8" underload (High Side)
- 3/8" gage side mismatch loaded, using PTLF at 4000 psi
- Crosstie conditions meet requirements
- Rail fasteners were raised on gage side of south rail at the joint
- Ballast and drainage conditions were acceptable
- Curve wear was noted on the high rail in the accident curve
- Rail joint at POD had one bolt per rail end on the outermost bolt holes, one bolt on the inner bolt hole of the west rail end was broken.

In addition, conditions that would be considered defective if track 001 was designated as FRA class track 1 were also noted during the inspection. These items were recorded on: DTM FRA Form 6180.96 Report No. 146 (Dated 9/24/2017)

The section of rail where the derailment originated will be removed from the track and transported to UP's technical research laboratory in Omaha, NE. Lab results will be made available to NTSB and FRA for review.

Geometry Tests:

No Geometry testing has been conducted on track 001 of the Great Southwest Subdivision. FRA (TSS) does not require testing of excepted tracks.

Internal Rail Tests Data:

No rail testing has been conducted on track 001 of the Great Southwest Subdivision. FRA (TSS) does not require rail testing of excepted tracks.

Track Inspection Records:

FRA regulations found in 49 CFR 213 require that a rail carrier's track inspection records be prepared and signed on the day of the inspection for frequency of compliance with the FRA Track Safety Standards (TSS). FRA track inspection records are required to reflect actual field conditions and deviations from the FRA/TSS. UP has elected to operate as FRA Excepted track in the accident area requiring UP personnel to inspect the track at least once per month with 20 calendar day intervals.

As part of the investigation, UP's track inspection records were examined by this technical working group.

Track Inspection History:

Prior to the accident, the last inspection by UP's Track Inspector through the derailment area was conducted on August 30, 2017. One defect was recorded for track 001. The condition was recorded as 213.121.F1 at MP 0.80. Union Pacific management confirmed with the inspector that the condition recorded in the report was found and repaired approximately 100ft east of the POD.

Regulatory Track Inspection History:

Records of last regulatory track inspection by FRA was examined.