FORENSIC EVIDENCE AND RESEARCH DOCUMENTATION (MAPPING) FACTUAL REPORT

Lynchburg, Va.

DCA14FR008

NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF RESEARCH AND ENGINEERING
WASHINGTON, D.C.

FORENSIC EVIDENCE AND RESEARCH DOCUMENTATION (MAPPING) FACTUAL REPORT

A. CRASH INFORMATION

Location: Lynchburg, Virginia
Date: April 30, 2014
Vehicle: CSX train KO8227
NTSB #: DCA14FR008

B. CRASH SUMMARY

This accident involved the derailment of a crude oil unit train in Lynchburg, Va.

C. SUMMARY

A three-dimensional (3D) laser scanner was used to record the 3D data of two tank cars, CBTX74712, and CBTX741720, which were involved in the derailment. The inspection of the tank cars took place at a rail facility located near Gladstone, Va. The tank cars were examined and scanned using a FARO Focus 3D X330[1] laser scanner. The scanning activity was conducted post-recovery and may not represent the condition of the tank cars immediately after the accident. A total of 28 individual scans were performed during this investigation.

1. Tank Car CBTX 741712

The exterior of the tank car was documented with a total of 16 scans. Two of the 16 scans were performed from an elevated position to capture the data from the top of the tank car. Four scans were used to document a large gash in the side to the tank car. Images from the point cloud created by the scanner documenting the tank car are shown in Figure 1 and Figure 2. A close-up image of scan data documenting the large gash found on the left side of the tank car is shown in Figure 3.

[1] The FARO Focus X330 laser scanner has an advertised scan range of 330 meters. FARO quotes a systematic measurement error (one sigma) of ±2 mm (±0.079 in) at ranges of 10 m (33 ft) and 25 m (82 ft). FARO quotes a random error (one sigma) of less than ±2.2 mm (±0.087 in) in a fest-fit plane at ranges of 10 m (33 ft) and 25 m (82 ft), with a target reflectivity of either 10 % or 90 %. Additional uncertainty in dimensional data may result from the manual choice of points to represent a specific object from the entire 3D point cloud.

Figure 1: An image from the 3D laser scanner point cloud showing the left side of tank car CBTX 74712. The A-end of the car is shown on the right in the image. Prior to the accident the tank car was traveling B-end leading.

Figure 2: An image from the 3D laser scanner point cloud showing the right side of tank car CBTX 74712. The A-end of the car is shown on the left in the image. Prior to the accident the tank car was traveling B-end leading.

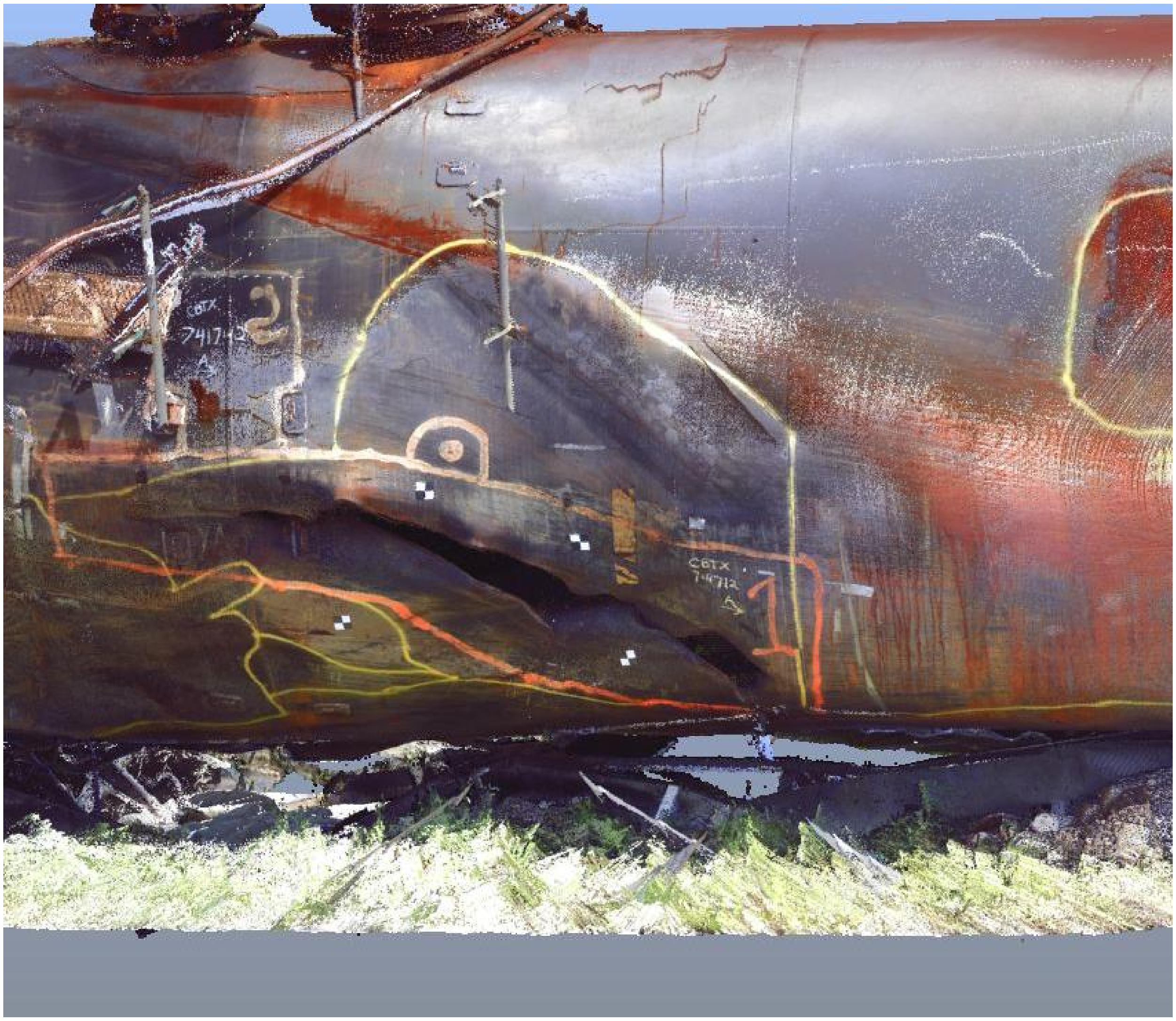

Figure 3: An image from the 3D laser scanner point cloud showing a close-up of the gash in the found on the left side of tank car CBTX 74712. Prior to the accident the tank car was traveling B-end leading.

2. Tank Car CBTX 741720

The exterior of the tank car was documented with a total of 16 scans. Four of the 16 scans were performed from an elevated position to capture the data from the top of the car. Four scans were used to document damage to the right side bolster on the A-end of the car. Images from the point cloud created by the scanner documenting the tank car are shown in Figure 4 and Figure 5. A close up of the damaged left side bolster on the A-end of the car is shown in Figure 6.

Figure 4: An image from the 3D laser scanner point cloud showing the left side of tank car CBTX 74720. The A-end of the car is shown on the right in the image. Prior to the accident the tank car was traveling B-end leading.

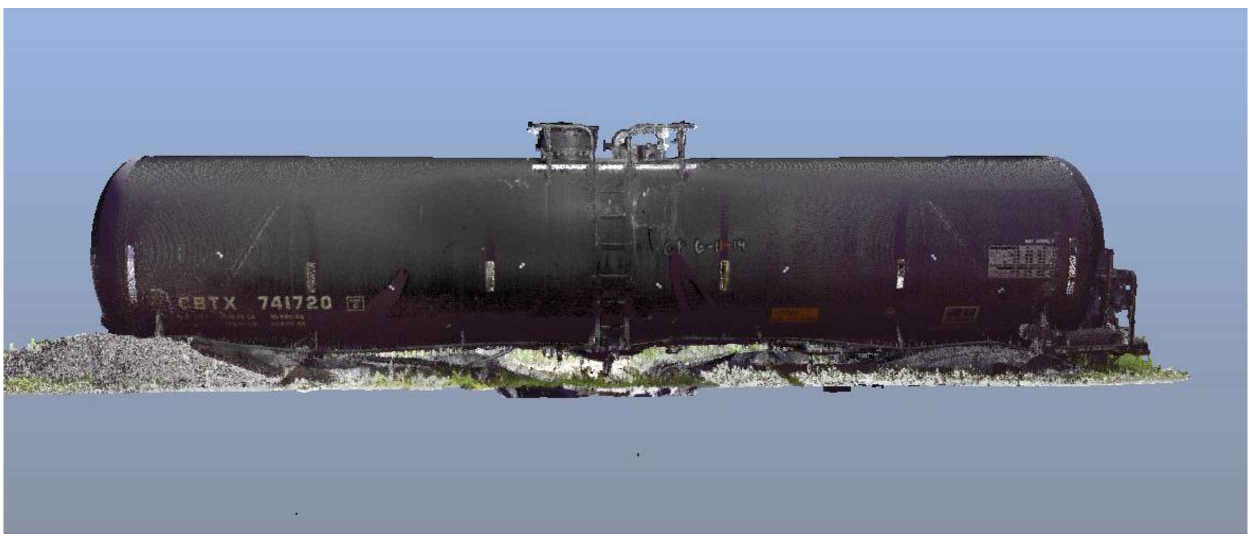

Figure 5: An image from the 3D laser scanner point cloud showing the right side of tank car CBTX 74720. The A-end of the car is shown on the left in the image. Prior to the accident the tank car was traveling B-end leading.

Figure 6: An image from the 3D laser scanner point cloud showing a close-up image of the A-end of car CBTX 74720 and the damage to left side bolster. Prior to the accident the tank car was traveling B-end leading.

END OF INFORMATION

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