

# National Transportation Safety Board

Office of Railroad, Pipeline and Hazardous Materials

Washington, DC 20594



RRD24MR002

## **OPERATIONS**

Group Chair's Factual Report

May 15, 2024

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## **A ACCIDENT**

NTSB Accident Number: RRD24MD002

Keys# 193394

Location: Chicago, IL

Date: November 16, 2023

Time: 10:30 am (local time)

Train 1: CTA 593 (Striking Train)

Train 2: S 500 Snow Fighter (Struck Train)

Fatalities: 0

Injuries: 16

## **B OPERATIONS GROUP**

Group Chair                      Michael Bachmeier  
NTSB  
NTSB Group Chair

Operations                        Shane Richardson  
NTSB  
Group Member

Group Member                  Rovaughn Graham  
CTA General Manager Safety  
Chicago, IL

Group Member                  Andre Allen  
Illinois Department of Transportation (IDOT)  
Atlanta, GA

Group Member                  Jeff Hulbert  
CTA Vice President of Safety  
Chicago, IL

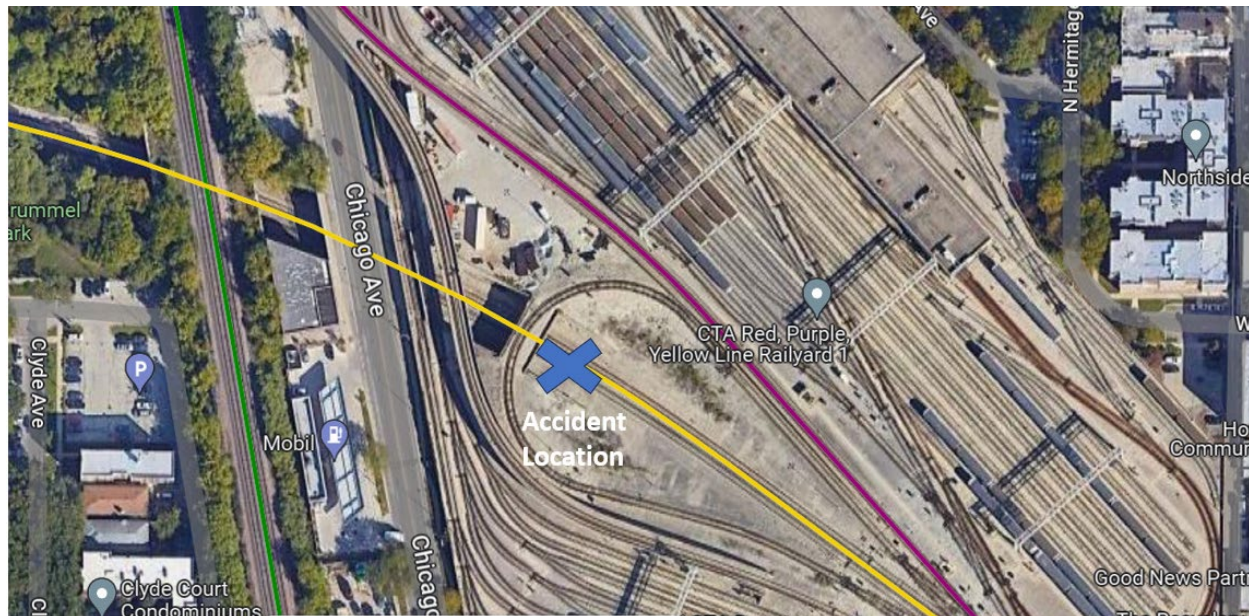
Group Member                  Mark Weems  
ATU Local 308  
Group Member

Group Member                  Cyrell McLemore  
Federal Transit Administration  
Group Member

## C SUMMARY

See Docket for full description of accident.<sup>1</sup>

## D DETAILS OF THE INVESTIGATION



**Figure 1:** Overhead view of Howard Yard (courtesy of Google Earth)

### 1.0 Description of CTA Operations

The Chicago Transit Authority (CTA) operates the second largest public transportation system in the United States, covering the City of Chicago and 35 surrounding suburbs. The agency provides 83% of public transit trips in the six county Chicago region, providing approximately 1.7 million rides on an average weekday.

CTA's governing arm is the Chicago Transit Board, which consists of seven members, four appointed by the Mayor of Chicago and three by the Governor of

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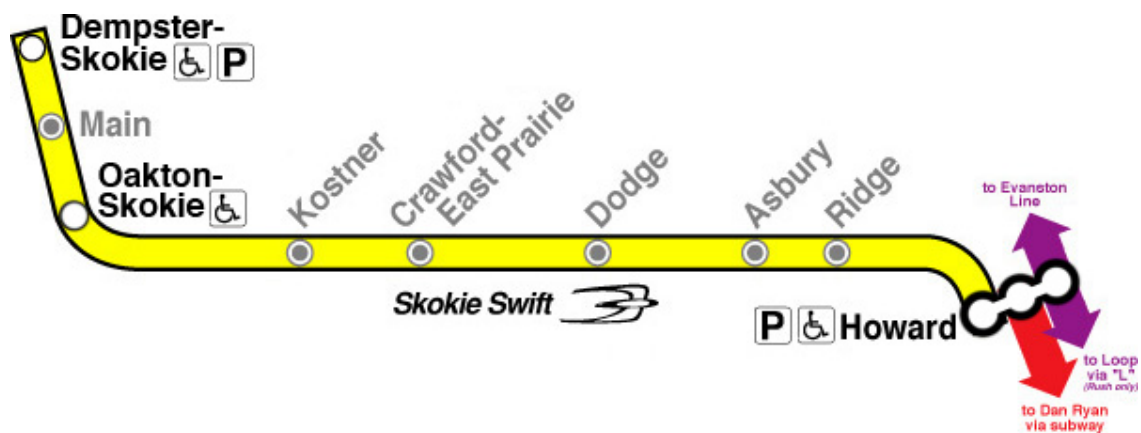
<sup>1</sup> The summary is located in the docket: [NTSB Docket - Docket Management System](#)

Illinois. The CTA is an independent governmental organization created by State of Illinois legislation in 1945. CTA began operations in 1947 after acquiring the properties of the Chicago Rapid Transit Company and the Chicago Surface Lines. In 1952, CTA became the sole operator of Chicago transit when it purchased the Chicago Motor Coach system. Scope of Transit Services

The CTA is the second largest public transportation system in North American. It is a multi-modal transit system that operates rail transit services. On the rapid transit system, CTA's 1,472 rail cars operate eight routes and 224.1 miles of track. CTA trains make about 2,318 trips each day and serve 145 stations.

### 1.1 CTA Yellow Line Overview

The Yellow Line route provides rapid transit train service between Dempster-Skokie (in Skokie, IL) and Howard (in Chicago) on multiple main tracks, with connecting service to downtown Chicago via Purple Line Express or Red Line.



**Figure 2:** Overview of the Yellow Line (courtesy of CTA)

## 2.0 Events prior to the accident

Train CTA 593 operates daily on the yellow line between Dempster-Skokie and Howard. Train CTA 593 consisted of 2 railcars with one Train Operator who came on duty in Howard yard at 7:16 am on November 16, 2023. This run shuttles passengers between Howard terminal and Dempster-Stokie terminal. The Train departed Dempster-Stokie at 10:21 a.m., the operator's 6<sup>th</sup> trip of the morning when the incident occurred.

The S-500 Snow fighter was performing training prior to the snow season on the yellow line. The crew of the S-500 Snow fighter reported to Dempster-Skokie at 7:00 am on November 16, 2023, and consisted of 6 employees.

## 3.0 Train Operator Information

<b>NAME</b>	<b>HIRE DATE</b>	<b>CRAFT</b>	<b>CERTIFICATION</b>	<b>LAST Train Observation</b>
Train Operator	08/13/2023	Train Operator	10/08/2023	08/07/2023

## 4.0 The Accident

On November 16, 2023, Train CTA 593 was moving south on main track SK-1 on the yellow line towards Howard station and collided with a stationary S-500 snow fighter that was stopped behind the signal (X32) at Howard at approximately 10:30 am.

The revenue train CTA 593 consisted of 1 Train Operator and 31 passengers. The S-500 snow fighter consisted of 6 employees on board at the time of the accident.

Train movements are authorized by wayside and in-cab signal indications with an overlaid automatic train control system. The CTA 593 while moving south, was traveling at 54 mph when it received a stop command from the signal system because of the snow removal machine stopped on the track approximately 2,150 feet ahead. The operator of the CTA 593 train immediately initiated a full-service braking application to stop the train. Once the S-500 snow fighter was in view of the train operator, the operator initiated an emergency brake application. The train decelerated to about 22.7 mph before striking the S-500 snow fighter machine.



**Figure 3:** Signal the S-500 Snow fighter was stopped at.

## **5.0 Operations Group Visual Inspection of Accident Scene**

On Friday, November 17, 2023, the Operations group conducted an on-scene inspection of the accident site. The purpose of the site walk was to collect and document information related to the accident. While on scene it was determined that the incident location was on an uphill grade, in an area with leaf's covering the area, beneath the viaduct. Train 593 consisted of one married pair/ two car consist, cars 5599 (lead) and 5600 (trailing). The operators cab, lead car 5599, was caved in, with front truck derailed. The S-500 snow fighter was not derailed and had damage to the brush and rear cab, along with windshield ejected from frame.



NTSB also conducted site distance observations while on scene to determine when the operator of the revenue train could see the snow fighter machine and determined that the train operator had approximately 476 feet of site distance.



**Figure 4:** Site distance from Train Operator to Maintenance Equipment

## 6.0 Locomotive Event Recorder Download

### *Event Recorder*

- Operator was not in ATC bypass.
- There is a brief moment where max allowable speed goes from 55 mph to 0 mph then back to 55.

- Operator reacted within the 2 ½ seconds of the dip without penalty, which means operator acknowledged the 55-0-55 dip.
- 10:30:22.7 the maximum allowable speed off 55 mph goes to 0.
- 10:30:23.8 the operator applies maximum service brake by moving the master control handle to the maximum service brake position (The operator responded within 1.1 second of seeing the maximum allowable speed drop from 55 to 0).
- 10:30:41 the vehicle is placed into emergency.
- 10:30:45 the operator pushes the track button trying to get more brakes.
- At 10:30:50 a.m. time is when the impact between the 5599 and S-500 snow fighter occurred at approximately 22.6 mph.<sup>2</sup>

## **7.0 Audio Timeline from Yellow Line to Rail Control**

On November 18, 2023, NTSB and the Operations group reviewed the audio communications (phone and radio) from the date of the accident. A timeline of our findings is provided below.

07:59:59: (Phone) Rail Instructor K994 advises the Rail Controller they will be departing Skokie Yard after 0900 hours operating between Dempster and Howard.

10:14:09: (Radio) K994 transmitted to Rail Controller requesting to follow the next southbound train enroute to Howard Yellow Line. Rail Control advised Run #593 was

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<sup>2</sup> Please refer to the RE Event Recorder Factual for screenshots and more detail.

the only train in the area and currently at Oakton northbound. Rail Control asked K994 if they wanted to await until Run 593 leaves Dempster southbound. K994 declined, stated they would select out of Skokie Yard and proceed to Howard. Rail Control confirmed K994's request to leave the yard and proceed southbound to Howard.

10:22:08: (Radio) K994 transmitted to Rail Controller they are clear of Skokie Yard and on the line of road. Rail Controller advises run 593, Supervisor R587 and the Howard Tower Worker.

10:28:38: (Radio) K994 transmitted to Howard Tower advising they are on the approach and coming up the hill, approaching the signal.

Approximately 10:29:00: (Short Range Radio) Howard tower advises K994 that both pockets are occupied at Howard.

10:32:54: (Radio) Rail Control made 2 attempts to contact K994, to no avail.

10:33:04: (Radio) Rail Control calls Howard Tower, Tower Worker responds and reports the collision of 593 & S500. Rail Control makes another to call K994 to no avail.

10:34:00: (Radio) Rail Control made 2 attempts to contact K994 to no avail.

10:34:08: (Radio) A customer aboard the incident train calls the Controller (transferred from CFD) to report the collision and that she's aboard the train.

## 8.0 Inward/Outward facing camera review.

### *Outward Facing Video*

- 5599 comes around corner at greater than 27 mph, S-500 is stationary at base of incline, waiting for signal.
- An employee in safety vest is visible standing in front of rear, right window of S-500 just prior to impact.

### *Inward Facing Video*

- Operator tries to hit track brake button at 10:30:45 (video timestamp is based on the TCMS network).

Collision is at 10:30:50.72, based on last frame of operator before video ends.

## 9.0 Review of QuikTrak<sup>3</sup>

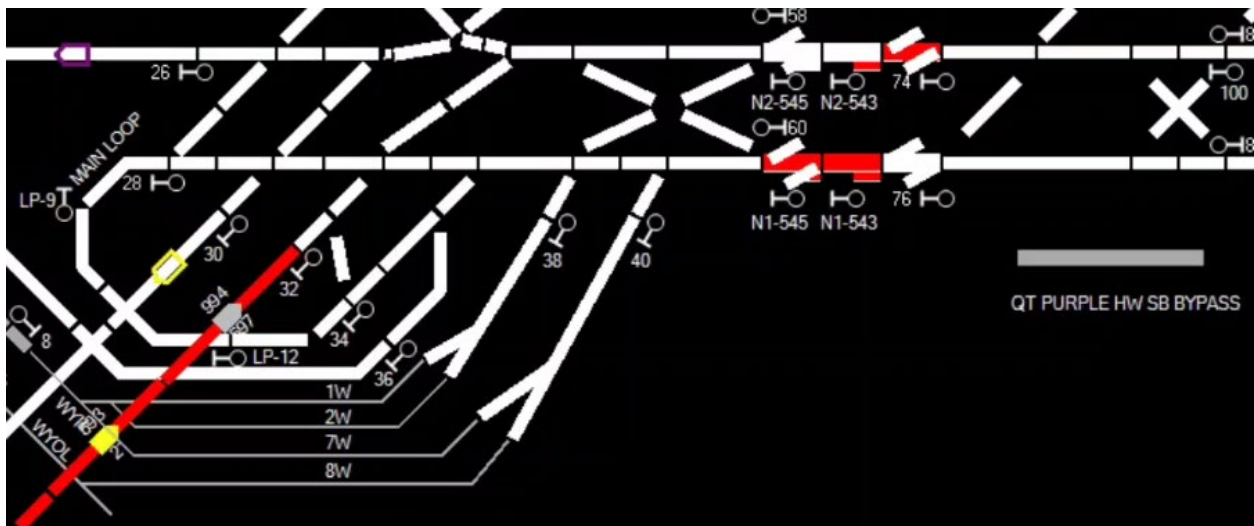
- QuikTrak is used by the Control Center, Tower Workers, and Supervisors to monitor the location of trains (and equipment) on the rail system.
- The playback starts around 10:14 AM
- In the top left, the recording shows Dempster/Skokie to Chicago to Howard.
- S-500 is on Yellow Line, going southbound to Howard, labeled 994
- Train 593 has just turned around from northbound back to southbound.
- 994 stops at X32 signal.

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<sup>3</sup> QuikTrak is a computer software system which tracks CTA trains and on-track equipment across their system and then feeds that information into an app to provide customers and passenger with service alerts/bulletins and arrival times.

- 593 approaches the stopped 994 and playback ends when the collision occurs, with 593 and 994 in sequential track sections.

QuikTrak is another verification that 994 consistently shunted from time it entered the line of road to the time of collision.



**Figure 6:** Screen shot of QuikTrak showing train 593 approaching the 994.

## 10.0 CTA Operating rules in effect

Operating rules that were in effect at the time of the accident include the following:

- **2023 CTA Safety Rule Book, effective March 2023**
- **2021 Rail System Rule Book, effective April 2021**
- **Bulletin 7135, effective November 2008 (Non-Revenue Train Movement)**
- **Bulletin 8137, effective June 2023 (Moving Railbourne Track Equipment)**
- **Bulletin 8187, effective September 2022 (Braking & Propulsion)**
- **Bulletin 8196, effective June 2023 (ATC Cab Signal System)**
- **Bulletin 8198, effective April 2016 (Manual Block Operation)**

## **11.0 Oversight**

### **11.1 CTA**

According to CTA, safety is a core value of the Chicago Transit Authority (CTA), and managing safety is a core business function of the Authority. CTA is committed to developing, implementing, maintaining, and continuously improving processes in order to ensure the safety of its customers, employees, and the public. This document is the Chicago Transit Authority Agency Safety Plan (ASP) for its Rail System.

According to CTA, the purpose of an Agency Safety Plan is to establish the means by which the CTA manages its safety program, which is through the implementation of a Safety Management System (SMS)

### **11.2 FTA**

An agency within the U.S. Department of Transportation (DOT), FTA is headed by an administrator appointed by the President of the United States. FTA is one of DOT's 10 modes of transportation and is run by a headquarters in Washington, D.C. as well as ten regional offices that assist transit agencies in all states and U.S. territories. The FTA has an Office of Safety in Washington D.C. that conducts triennial audits of a State Safety Oversight (SS) Organization's compliance with Federal requirements. The FTA Region 5 Office is located in Chicago, Illinois and attends SSO quarterly meetings and site visits at CTA as appropriate.

FTA is required to implement and maintain a national public transportation safety program to improve the safety of all public transportation systems that receive federal funding. The safety program includes:

1) The National Public Transportation Safety Plan, detailing safety performance criteria and minimum transit safety standards;

2) The Safety Certification Training Program, a safety training regime for personnel who conduct transit safety audits;

3) The Public Transportation Agency Safety Plan, a requirement for each transit agency to detail what it will do to ensure the safety of its system; and

4) The State Safety Oversight Program, which establishes independent state-based rail transit safety oversight agencies, with enforcement authority to compel the rail public transit agency to complete necessary safety actions

### **11.3 IDOT**

IDOT was designated to be the state's oversight on January 30, 2014. Effective July 1, 2016, IDOT assumed all SSOA responsibilities from the Regional Transit Authority with regards to oversight of CTA. On January 1, 2017, IDOT assumed all SSOA responsibilities from the St. Clair County Transit District with regards to

Metrolink. On August 29, 2018, IDOT became FTA-approved and certified SSO Program

IDOT's SSO program fulfills the Federal Transit Administration State Safety Oversight rule (49 CFR Part 674), which requires states to oversee the safety and security of rail fixed guideway systems through a designated oversight agency. This FTA rule implemented a provision in the Intermodal Surface Transportation Efficiency Act of 1991 (49 U.S.C. 5330). IDOT is also in compliance with federal rules required by the Moving Ahead for Progress in the 21st Century Act of 2012 and the revised State Safety Oversight rule codified as 49 CFR Part 674.

## **12.0 Interviews Conducted on Scene**

The investigation team conducted three interviews relating to this accident on November 18, 2023. The interviews were held at the Residence Inn in Chicago, IL and were conducted in the following order:

CTA 593 Train Operator

S-500 Employee Trainer 1

S-500 Employee Trainer 2

Please refer to the docket for the full interview's transcripts.<sup>4</sup>

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<sup>4</sup> The full interviews are located in the docket at this web address: [NTSB Docket - Docket Management System](#)



## **E TOXICOLOGY TESTING OF THE TRAIN CREW**

The Federal Transit Administration (FTA) drug and testing regulations require that safety sensitive employees involved in a public transportation vehicle accident involving the loss of human life submit tests for alcohol misuse and prohibited drug use as soon as practicable following the accident. Title 49 Code of Federal Regulations (CFR) Part 655 requires the testing of any other safety sensitive employee whose performance could have contributed to the accident, as determined by the employer at the scene using the best information available at the time of the decision.

In accordance with Title 49 CFR Part 655, post-accident toxicology testing for alcohol and other drugs was performed. See medical officers report for results.

**F      SUBMITTED BY AND CHIEF REVIEW**

Submitted by:  
Shane Richardson  
NTSB Operations  
/s/ May 2024

Approved by:  
Joe Gordon  
Branch Chief / RPH-120  
/s/ May 2024

## **G PARTIES TO THE INVESTIGATION - ACKNOWLEDGEMENT SIGNATURES**

The undersigned designated **Party to the Investigation** representatives attest that the information contained in this factual report for NTSB's accident investigation RRD24MR002 of the CTA Collision in Chicago, Illinois is a factually accurate representation of the information collected during the investigation, to the extent of their best knowledge and contribution in this investigation.

Jeff Hulbert, CTA

Date /s/ June 5, 2024

Andre Allen, IDOT

Date /s/ June 5, 2024

Mark Weems, ATU Local 308

Date /s/ June 5, 2024

Cyrell McLemore, FTA

Date /s/ June 5, 2024