Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-104

Northeastern Illinois Regional Commuter Railroad (NIRC)
Elmwood Park, Illinois
November 23, 2005

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report made by the Secretary of Transportation/Federal Railroad Administration under 49 U.S.C. §20902 may be used in a civil action for damages resulting from a matter mentioned in the report.

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2005-104

1.Name of Railroad Operating Train #1: Northeast IL Regional Commuter Rail Corp. [NIRC]	1a. Alphabetic Code: NIRC	1b. Railroad Accident/Incident No.: NC016Y
2.Name of Railroad Operating Train #2: N/A	2a. Alphabetic Code: N/A	2b. Railroad Accident/Incident: N/A
3.Name of Railroad Responsible for Track Maintenance: Northeast IL Regional Commuter Rail Corp. [NIRC]	3a. Alphabetic Code: NIRC	3b. Railroad Accident/Incident No.: NC016Y
4. U.S. DOT_AAR Grade Crossing Identification Number: 372131E	5. Date of Accident/Incident: Month 11 / Day 23 / Year 2005	6. Time of Accident/Incident: 04:43:00 ☐ AM ☑ PM

7. Type of Accident/Indicent (single entry in code box): 1. Derailment; 2. Head on collision; 3. Rear end collision; 4. Side collision; 5. Raking collision; 6. Broken Train collision; 7. Hwy-rail crossing; 8. RR grade crossing; 9. Obstruction; 10. Explosion-detonation; 11. Fire/violent rupture; 12. Other impacts; 13. Other (describe in narrative): 07

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
0	0	0	0	CHICAGO UNION STATIO

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
ELMWOOD PARK	10.45	N/A	IL	COOK

17. Temperature (F) (specify if minus)	18. Visibility (single entry) 1. Dawn 2. Day 3.Dusk 4.Dark	Code	19. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5.Sleet 6.Snow	Code	20. Type of Track 1. Main 2. Yard 3. Siding 4. Industry	Code
42 F		4		2		1

21. Track Name/Number	22. FRA Track Class (1-9, X)	Code	23. Annual Track Density (gross tons in millions)	24. Time Table Direction 1. North 3. East	Code
MAIN TRACK NO. 1		4	130		4

OPERATING TRAIN #1

25. Type of Equipment Consist (single entry): 1. Freight train; 2. Passenger train; 3. Commuter train; 4. Work train; 5. Single car; 6. Cut of cars; 7. Yard/switching; 8. Light loco(s).; 9. Maint./inspect.car; A. Spec. MoW Equip.	Code	26. Was Equipment Attended? 1. Yes 2. No	Code	27. Train Number/Symbol
	3	1. Yes	1	NCS #107 W

28. Speed (recorded speed, if available) R - Recorded E - Estimated			Code	29. Trailing Tons (gross tonnage, excluding power units)
E - Estimated	70	MPH	E	N/A

30. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; c. Auto train stop; d. Cab; e. Traffic; f. Interlocking; g. Automatic block; h. Current of traffic; i. Time table/train orders; j.Track warrant control; k. Direct traffic control; l.Yard limits; m.Special instructions; n. Other than main track; o. Positive train control; p. Other (Specify in narrative)

Code(s)				
e	N/A	N/A	N/A	N/A

30a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter: 0

31. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	N/A	1	N/A
(2) Causing (if mechanical cause reported)	N/A	N/A	N/A

32. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.

Alcohol	Drugs
N/A	N/A

33. Was this consist transporting passengers? (Y/N): Y

34. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	1	0	0	0	0
(2) Total Derailed	0	0	0	0	0

35. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
11137	00	M303	N/A

Number of Crew Members

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
1	00	1	1

Length of Time on Duty

44. Engineer/Operator	45. Conductor
Hrs 4 Mi 18	Hrs 2 Mi 57

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	00	00	00
Nonfatal	N/A	3	12

49. EOT Device? 1. Yes 2. No	50. Was EOT Device Properly Armed? 1. Yes 2. No
2	N/A

51. Caboose Occupied by Crew? 1. Yes 2. No: 2

OPERATING TRAIN #2

52. Type of Equipment Consist (single entry): 1. Freight train; 2. Passenger train; 3. Commuter train; 4. Work train; 5. Single car; 6. Cut of cars; 7. Yard/switching; 8. Light loco(s).; 9. Maint./inspect.car; A. Spec. MoW Equip.	Code	53. Was Equipment Attended? 1. Yes 2. No	Code	54. Train Number/Symbol
	N/A	1. Yes	N/A	N/A

55. Speed (recorded speed, if available) R - Recorded E - Estimated			Code
E - Estimated	N/A	MPH	N/A

57. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track

57a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable

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56. Trailing Tons *(gross tonnage, excluding power units)*	c. Auto train stop d. Cab e. Traffic f. Interlocking	i. Time table/train orders j.Track warrant control k. Direct traffic control l.Yard limits	o. Positive train control p. Other *(Specify in narrative)* Code(s)	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter
N/A			N/A N/A N/A N/A N/A	N/A

58. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	N/A	N/A	N/A
(2) Causing *(if mechanical cause reported)*	N/A	N/A	N/A

59. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.

Alcohol	Drugs
N/A	N/A

60. Was this consist transporting passengers? (Y/N) N/A

61. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

62. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
N/A	N/A	N/A	N/A

Number of Crew Members

67. Engineer/ Operators	68. Firemen	69. Conductors	70. Brakemen
N/A	N/A	N/A	N/A

Length of Time on Duty

71. Engineer/Operator	72. Conductor
Hrs N/A Mi N/A	Hrs N/A Mi N/A

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

76. EOT Device? 1. Yes 2. No — N/A

77. Was EOT Device Properly Armed? 1. Yes 2. No — N/A

78. Caboose Occupied by Crew? 1. Yes 2. No — N/A

Highway User Involved

79. Type — Code: A
C. Truck-Trailer. F. Bus J. Other Motor Vehicle
A. Auto D. Pick-Up Truck G. School Bus K. Pedestrian
B. Truck E. Van H. Motorcycle M. Other *(spec. in narrative)*

80. Vehicle Speed *(est. MPH at impact)*: 00

81. Direction *(geographical)* — Code: 3
1.North 2.South 3.East 4.West

82. Position — Code: 2
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing
4. Trapped

86a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? — Code: 4
1. Highway User 2. Rail Equipment 3. Both 4. Neither

Rail Equipment Involved

83. Equipment — Code: 1
1.Train *(units pulling)* 3.Train *(standing)* 6.Light Loco(s) *(moving)*
2.Train *(units pushing)* 4.Car(s) *(moving)* 7.Light(s) *(standing)*
5.Car(s) *(standing)* 8.Other *(specify in narrative)*

84. Position of Car Unit in Train: 1

85. Circumstance — Code: 1
1. Rail Equipment Struck Highway User
2. Rail Equipment Struck by Highway User

86b. Was there a hazardous materials release by — Code: 4
1. Highway User 2. Rail Equipment 3. Both 4. Neither

86c. State here the name and quantity of the hazardous materials released, if any.
NONE

87. Type of Crossing Warning — Code(s): 01 N/A N/A N/A N/A N/A N/A
1.Gates 2.Cantilever FLS 3.Standard FLS 4.Wig Wags 5.Hwy. traffic signals 6.Audible 7.Crossbucks 8.Stop signs 9.Watchman 10.Flagged by crew 11.Other *(spec. in narr.)* 12.None

88. Signaled Crossing Warning *(See instructions for codes)* — Code: 01

89. Whistle Ban — Code: 2
1. Yes
2. No
3. Unknown

90. Location of Warning — Code: 1
1. Both Sides
2. Side of Vehicle Approach
3. Opposite Side of Vehicle Approach

91. Crossing Warning Interconnected with Highway Signals — Code: 2
1. Yes
2. No
3. Unknown

92. Crossing Illuminated by Street Lights or Special Lights — Code: 1
1. Yes
2. No
3. Unknown

93. Driver's Age: 30

94. Driver's Gender — Code: 2
1. Male
2. Female

95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train — Code: 2
1. Yes 2. No 3. Unknown

96. Driver — Code: 4
1. Drove around or thru the Gate
2. Stopped and then Proceeded
3. Did not Stop
4. Stopped on Crossing
5. Other *(specify in narrative)*

97. Driver Passed Standing Highway Vehicle — Code: 2
1. Yes 2. No 3. Unknown

98. View of Track Obscured by *(primary obstruction)* — Code: 8
1. Permanent Structure
2. Standing Railroad Equipment
3. Passing Train
4. Topography
5. Vegetation
6. Highway Vehicle
7. Other *(specify in narrative)*
8. Not obstructed

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	00	12

99. Driver Was — Code: 2
1. Killed 2.Injured 3. Uninjured

100. Was Driver in the Vehicle? — Code: 1
1. Yes 2. No

102. Highway Vehicle Property Damage *(est. dollar damage)*: 100000

103. Total Number of Highway-Rail Crossing Users *(include driver)*: 456

104. Locomotive Auxiliary Lights? — Code: 1
1. Yes 2. No

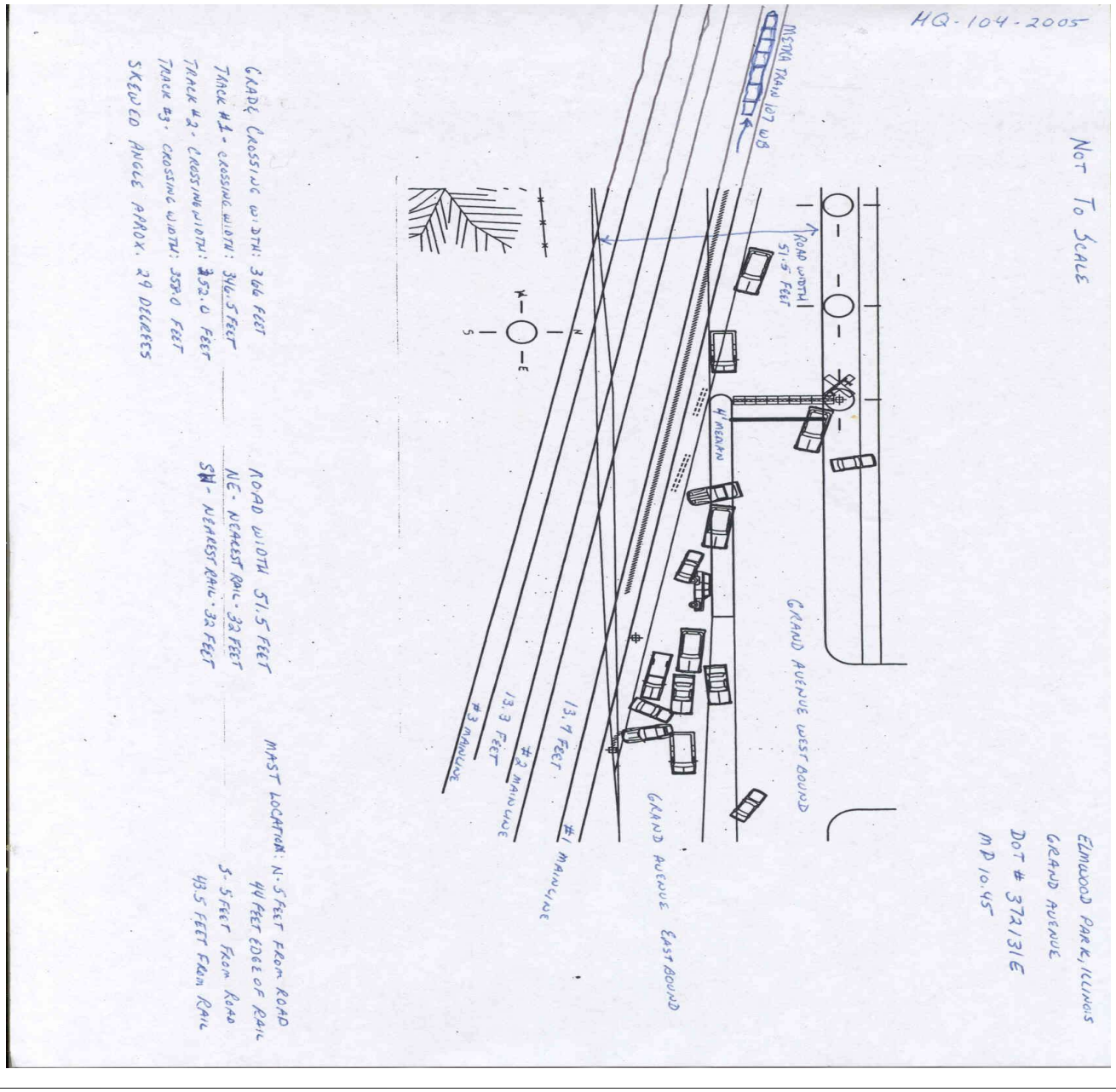
105. Locomotive Auxiliary Lights Operational? — Code: 1
1. Yes 2. No

106. Locomotive Headlight Illuminated? — Code: 1
1. Yes 2. No

107. Locomotive Audible Warning Sounded? — Code: 1
1. Yes 2. No

108. DRAW A SKETCH OF ACCIDENT AREA INCLUDING ALL TRACKS, SIGNALS, SWITCHES, STRUCTURES, OBJECTS, ETC., INVOLVED.

HQ-104-2005 Accident Sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

Synopsis of the Accident
A westbound Northeastern Illinois Regional Commuter Rail Corporation (NIRC), also known as "Metra," commuter Train No. 107 collided with multiple automobiles at a highway-rail grade crossing on November 23, 2005, at 4:43 p.m., CST.
The collision occurred at Grand Avenue, milepost 10.45, in the Village of Elmwood Park, Illinois. Elmwood Park is on the Canadian Pacific Railway Company (CP), Elgin Subdivision. The track is owned and maintained by Metra.
Eighteen vehicles were involved in the initial collision and subsequent chain reaction. There were no fatalities, however, twelve vehicle occupants were injured, including three serious injuries. Three passengers on the train suffered minor injuries. There were no injuries to the train crew, local residents, or emergency responders.
Train No. 107 did not derail and no hazardous materials were involved. The collision caused $11,137 damage to the locomotive and the first two coaches. Drug and alcohol testing of the crew was not performed, as the accident did not qualify under Federal requirements.
At the time of the accident, the weather was cloudy and overcast with good visibility. The temperature was 42 F, and the wind was out of the northwest at 22 to 28 mph.
The collision occurred on the CP's Elgin Subdivision The timetable directions at this location are east and west over three main tracks. The Method of Operation is Traffic Control.

The probable cause was the motor vehicle drivers' failure to stop clear of the crossing. Additional factors were the drivers' inattentiveness to and disregard for both the active and passive warning devices, when the traffic became congested on eastbound Grand Avenue. It was the evening before Thanksgiving and the accident occurred at 4:43 p.m., during peak rush hour traffic.
Illinois Highway-Rail Grade Crossing and Safety State Statute: Article XII. Special Stops Required 5/11-1201. Obedience to signal indicating approach of train (d-5), states, "No person may drive any vehicle through a railroad crossing if there is insufficient space to drive completely through the crossing without stopping." However, no motor vehicle operators were cited by local law enforcement agencies as a result of this incident.

110. NARRATIVE

Circumstances Prior to the Accident
Train No. 107 originated in Chicago and was destined for Antioch, Illinois, via the CP, Elgin Subdivision. The CP dispatches this territory.
Train No. 107 consisted of one F40PH passenger locomotive (NIRC 120) pulling six bi-level passenger coaches. The last coach was a control cab car, which includes a passenger compartment and an engineer's compartment for operating the train in push-pull service. The train, including the locomotive, was 566 feet long and weighed 420 tons.
The crew consisted of a locomotive engineer, a conductor and an assistant conductor. The crew reported for duty earlier that morning in Antioch. The engineer went on duty at 6:17 a.m., the conductor at 5:58 a.m., and the assistant conductor at 6:27 a.m. All were fully rested in excess of that required by Federal statute. After making an uneventful trip from Antioch to Chicago, the crew was given a scheduled interim rest period in excess of four hours before returning to duty in the mid-afternoon. The engineer returned to duty at 3:25 p.m., the conductor and the assistant conductor at 3:55 p.m.
The train had received a Federal Railroad Administration (FRA) Class I air brake test prior to leaving Antioch. The crew also performed a FRA Class II air brake test prior to their departure from Chicago. The crew took no exceptions to either air test or the way the train handled while en route.
Canadian Pacific Railway, Soo Line, St. Paul Service Area, Chicago Service Area, Timetable No. 5, effective at 0001, Sunday, April 3, 2005, was in effect. Timetable Special Instructions state that the maximum authorized speeds are 70 mph for passenger service, 60 mph for extra passenger service, and 40 mph for all others.
Train No. 107 departed Chicago Union Station on time and operated without incident until the collision. The engineer was seated at the controls on the north side of the locomotive cab. He began sounding the locomotive horn for the multiple public grade crossings prior to Grand Avenue. The conductor and assistant conductor were both located in the fourth car of the six car consist. The train approached the collision site on Main Track No.1, in a 1-degree, 1 minute, right hand curve, at an estimated speed of 70 mph.

As Grand Avenue came into view, the engineer saw six vehicles stopped in the eastbound lanes of the crossing. There were two vehicles directly on the track, two in front of those, and two behind them. All six vehicles were fouling Main Track No. 1. The engineer immediately initiated an emergency brake application and braced himself for the impending impact. He continued to sound the locomotive horn as the locomotive collided with the vehicles.

The Accident

Eighteen vehicles were involved in the initial collision and subsequent chain reaction. (Note: Initial reports indicated that seventeen vehicles were involved. However, one additional motorist, who had reportedly left the scene, turned in a police report two weeks later.) Six vehicles were destroyed by the impact and the remaining twelve vehicles had damage ranging from minor to extensive.

Elmwood Park Fire Station No. 1 is located less than 200 feet north of the collision site. When the collision occurred, the firefighters immediately responded to the scene and began assisting the injured motorists, some of whom were trapped in their vehicles. Twelve vehicle occupants received minor to serious injuries. There were no fatally injured motorists.

Train No. 107 traveled approximately 1,366 feet from the initial point of impact before stopping. The collision damaged the locomotive and the first two coaches. The 434 passengers were transferred from Train No. 107 to an eastbound Metra commuter train, operating in deadhead service, which was in the vicinity at the time of the incident. After the passengers were transferred, this train reversed direction and assumed the schedule of Train No. 107.

Post-Accident Investigation

The Grand Avenue highway-rail grade crossing is 54 feet wide and 366 feet long. The grade crossing intersects with the roadway at 29 degree angle, having the appearance of being almost parallel to the roadway. The roadway is intersected by three main tracks. The maximum authorized passenger speed is 70 mph. This road is used by about 29,000 vehicles each day. The maximum highway speed is 30 mph. There are heavy traffic volumes experienced during the morning and evening rush hours. From the west, the road is level and tangent for 6,764 feet to the collision site and for a considerable distance beyond. The grade in the accident area is practically level.

In addition to the active warning devices there are passive warning devices which include crossbucks and large illuminated signs displayed on overhead cantilevers to warn motorists about the special hazard caused by the unusual configuration of the crossing. The large yellow signs display a message which says, “LONG CROSSING - DO NOT STOP ON TRACKS.” The active warning devices, consist of cantilevers with flashing light signals displayed on both sides, standard flashing light signals, gates, and audible bells.

The collision was investigated by the FRA, National Transportation Safety Board, the Illinois Commerce Commission, Cook County Sheriff Police Department’s Reconstruction Team, and Metra. The parties cooperatively worked together to conduct a re-enactment of the crash and interview witnesses.

The signal bungalow at the crossing was secured against unauthorized entry prior to FRA’s arrival on the scene. The FRA Signal and Train Control Specialist and Inspector met with the Metra Signal Supervisor and assisted with testing the warning devices in the field. There was no indication of tampering or vandalism and the collision did not damage signal equipment.

FRA authorized the download of the event recorder (diagnostic logs) from the Safetran Event recorder. Metra, FRA, and the ICC, conducted joint event recorder download analysis of the system from Grand Avenue. By reviewing the SEA/R downloads, it was determined that there was 54.6 seconds of warning time. It was also determined that the sequence of events for the operation of the devices at Grand Avenue were consistent with the operational plans and warning system design parameters. The active warning devices were determined to be working as intended at the time of the incident.

Conclusion

The railroad was in compliance with their Operating Rules and all applicable Federal standards and regulations.

Probable Cause

the FRA has determined that the probable cause was the motor vehicle drivers’ failure to stop clear of the highway-rail grade crossing. Additional factors were the drivers’ inattentiveness to and disregard for both the active and passive warning devices.