



***Federal Railroad Administration
Office of Railroad Safety
Accident and Analysis Branch***

***Accident Investigation Report
HQ-2015-1080***

***Northeast IL Regional Commuter Rail Corp.(METRA)(NIRC)
Chicago, IL
July 25, 2015***

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report, including this one, 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.

TRAIN SUMMARY

1. Name of Railroad Operating Train #1 Northeast IL Regional Commuter Rail Corp.(METRA)	1a. Alphabetic Code NIRC	1b. Railroad Accident/Incident No. HQ-2015-1080
2. Name of Railroad Operating Train #2 Northeast IL Regional Commuter Rail Corp.(METRA)	2a. Alphabetic Code NIRC	2b. Railroad Accident/Incident No. HQ-2015-1080

GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance Northeast IL Regional Commuter Rail Corp.(METRA)		1a. Alphabetic Code NIRC	1b. Railroad Accident/Incident No. HQ-2015-1080	
2. U.S. DOT Grade Crossing Identification Number		3. Date of Accident/Incident 7/25/2015	4. Time of Accident/Incident 8:53 PM	
5. Type of Accident/Incident Fire/Violent Rupture				
6. Cars Carrying HAZMAT 0	7. HAZMAT Cars Damaged/Derailed 0	8. Cars Releasing HAZMAT 0	9. People Evacuated 0	10. Subdivision University Park
11. Nearest City/Town Chicago		12. Milepost (to nearest tenth) M.P.6.2	13. State Abbr. IL	14. County COOK
15. Temperature (F) 79 °F	16. Visibility Dark	17. Weather Clear		18. Type of Track Main
19. Track Name/Number 3		20. FRA Track Class Freight Trains-40, Passenger Trains-60		21. Annual Track Density (gross tons in millions) 5350854
				22. Time Table Direction North

OPERATING TRAIN #1

1. Type of Equipment Consist: Passenger Train-Pulling		2. Was Equipment Attended? Yes		3. Train Number/Symbol 142							
4. Speed (recorded speed, if available) R - Recorded E - Estimated 10 MPH		Code R	5. Trailing Tons (gross excluding power units)		6a. Remotely Controlled Locomotive? 0 = Not a remotely controlled operation 1 = Remote control portable transmitter 2 = Remote control tower operation 3 = Remote control portable transmitter - more than one remote control transmitter						
					Code 0						
6. Type of Territory Signalization: <u>Signaled</u> Method of Operation/Authority for Movement: <u>Signal Indication</u> Supplemental/Adjunct Codes: <u>Q</u>											
7. Principal Car/Unit		a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	8. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.						
(1) First Involved (derailed, struck, etc.)		NIRC 1262	1	yes	Alcohol 0						
(2) Causing (if mechanical, cause reported)		NIRC 1262	1	no	Drugs 0						
					9. Was this consist transporting passengers? Yes						
10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)		a. Head End	Mid Train		Rear End	11. Cars (Include EMU, DMU, and Cab Car Locomotives.)	Loaded		Empty		
			b. Manual	c. Remote	d. Manual	e. Remote	a. Freight	b. Pass.	c. Freight	d. Pass.	e. Caboose
(1) Total in Train		1	0	0	0	0	(1) Total in Equipment Consist 0	2	0	2	0
(2) Total Derailed		0	0	0	0	0	(2) Total Derailed 0	0	0	0	0
12. Equipment Damage This Consist 290000			13. Track, Signal, Way & Structure Damage 19661								
14. Primary Cause Code H499 - Other main track authority causes (Provide detailed description in narrative)											
15. Contributing Cause Code H499 - Other main track authority causes (Provide detailed description in narrative)											
Number of Crew Members						Length of Time on Duty					
16. Engineers/Operators		17. Firemen		18. Conductors		19. Brakemen		20. Engineer/Operator		21. Conductor	
1		0		1		0		Hrs: 1 Mins: 33		Hrs: 1 Mins: 43	
Casualties to:		22. Railroad Employees		23. Train Passengers		24. Others		25. EOT Device?		26. Was EOT Device Properly Armed?	
Fatal		0		0		0		N/A		N/A	
Nonfatal		0		1		0		27. Caboose Occupied by Crew?		N/A	
28. Latitude 41.802094713				29. Longitude -87.587256431							

FRA FACTUAL RAILROAD ACCIDENT REPORT

OPERATING TRAIN #2

1. Type of Equipment Consist: Passenger Train-Pulling		2. Was Equipment Attended? Yes		3. Train Number/Symbol 342								
4. Speed (recorded speed, if available) R - Recorded E - Estimated 0 MPH		Code R	5. Trailing Tons (gross excluding power units)		6a. Remotely Controlled Locomotive? 0 = Not a remotely controlled operation 1 = Remote control portable transmitter 2 = Remote control tower operation 3 = Remote control portable transmitter - more than one remote control transmitter							
					Code 0							
6. Type of Territory Signalization: <u>Signaled</u> Method of Operation/Authority for Movement: _____ Supplemental/Adjunct Codes: _____												
7. Principal Car/Unit		a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	8. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.							
(1) First Involved (<i>derailed, struck, etc.</i>)		NIRC 1280	1	yes	Alcohol 0							
(2) Causing (<i>if mechanical, cause reported</i>)		NIRC 1280	1	yes	Drugs 0							
				9. Was this consist transporting passengers? Yes								
10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)		a. Head End	Mid Train		Rear End		11. Cars (Include EMU, DMU, and Cab Car Locomotives.)		Loaded		Empty	
			b. Manual	c. Remote	d. Manual	e. Remote	a. Freight	b. Pass.	c. Freight	d. Pass.	e. Caboose	
(1) Total in Train		1	0	0	0	0	(1) Total in Equipment Consist 0	2	0	2	0	
(2) Total Derailed		0	0	0	0	0	(2) Total Derailed 0	0	0	0	0	
12. Equipment Damage This Consist 0			13. Track, Signal, Way & Structure Damage 0									
14. Primary Cause Code H499 - Other main track authority causes (Provide detailed description in narrative)												
15. Contributing Cause Code H499 - Other main track authority causes (Provide detailed description in narrative)												
Number of Crew Members												
16. Engineers/Operators		17. Firemen		18. Conductors		19. Brakemen		20. Engineer/Operator		21. Conductor		
1		0		1		0		Hrs: 4 Mins: 40		Hrs: 2 Mins: 8		
Casualties to:		22. Railroad Employees		23. Train Passengers		24. Others		25. EOT Device? N/A		26. Was EOT Device Properly Armed? N/A		
Fatal		0		0		0						
Nonfatal		0		0		0		27. Caboose Occupied by Crew?		N/A		
28. Latitude 41.772063832			29. Longitude -87.592105865									

CROSSING INFORMATION

Highway User Involved		Rail Equipment Involved	
1. Type		5. Equipment	
2. Vehicle Speed (<i>est. mph at impact</i>)	3. Direction (<i>geographical</i>)	6. Position of Car Unit in Train	
4. Position of Involved Highway User		7. Circumstance	
8a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials?		8b. Was there a hazardous materials release by	
8c. State here the name and quantity of the hazardous material released, if any.			
9. Type of Crossing Warning 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (<i>spec. in narr.</i>) 3. Standard FLS 6. Audible 9. Watchman 12. None		10. Signaled Crossing Warning	11. Roadway Conditions
12. Location of Warning		13. Crossing Warning Interconnected with Highway Signals	14. Crossing Illuminated by Street Lights or Special Lights
15. Highway User's Age	16. Highway User's Gender	17. Highway User Went Behind or in Front of Train and Struck or was Struck by Second Train	18. Highway User
19. Driver Passed Standing Highway Vehicle		20. View of Track Obscured by (<i>primary obstruction</i>)	
Casualties to:	Killed	Injured	21. Driver was
23. Highway-Rail Crossing Users		24. Highway Vehicle Property Damage (<i>est. dollar damage</i>)	22. Was Driver in the Vehicle?
26. Locomotive Auxiliary Lights?		25. Total Number of Vehicle Occupants (<i>including driver</i>)	
28. Locomotive Headlight Illuminated?		27. Locomotive Auxiliary Lights Operational?	
		29. Locomotive Audible Warning Sounded?	

10. Signaled Crossing Warning

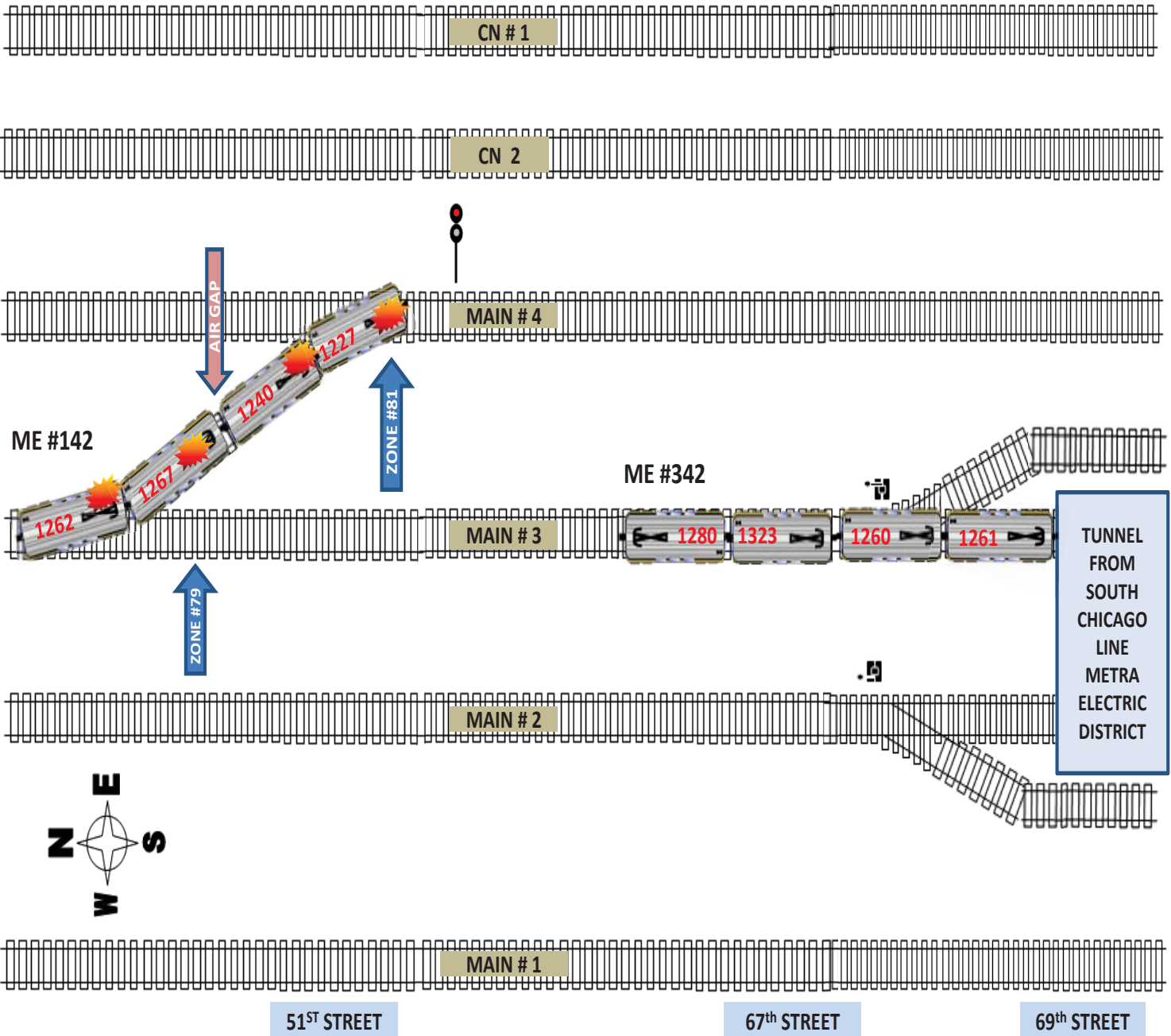
- 1 - Provided minimum 20-second warning
- 2 - Alleged warning time greater than 60 seconds
- 3 - Alleged warning time less than 20 seconds
- 4 - Alleged no warning
- 5 - Confirmed warning time greater than 60 seconds
- 6 - Confirmed warning time less than 20 seconds
- 7 - Confirmed no warning
- N/A - N/A

Explanation Code

- A - Insulated rail vehicle
- B - Storm/lightning damage
- C - Vandalism
- D - No power/batteries dead
- E - Devices down for repair
- F - Devices out of service
- G - Warning time greater than 60 seconds attributed to accident-involved train stopping short of the crossing, but within track circuit limits, while warning devices remain continuously active with no other in-motion train present
- H - Warning time greater than 60 seconds attributed to track circuit failure (e.g., insulated rail joint or rail bonding failure, track or ballast fouled)
- J - Warning time greater than 60 seconds attributed to other train/equipment within track circuit limits
- K - Warning time less than 20 seconds attributed to signals timing out before train's arrival at the crossing/island circuit
- L - Warning time less than 20 seconds attributed to train operating counter to track circuit design direction
- M - Warning time less than 20 seconds attributed to train speed in excess of track circuit's design speed
- N - Warning time less than 20 seconds attributed to signal system's failure to detect train approach
- O - Warning time less than 20 seconds attributed to violation of special train operating instructions
- P - No warning attributed to signal systems failure to detect the train
- R - Other cause(s). Explain in Narrative Description

SKETCHES

HQ-2015-1080 Drawing



NOT TO SCALE

HQ-2015-1080

SYNOPSIS

On July 25, 2015, at 8:53 p.m., CDT, a northbound Metra electric train stopped in the crossover at 51st Street, Milepost 6.20 on the Metra Electric District. The Engineer brought the train to a stop due to seeing a bright flash in his mirror. The flash was caused by a fallen catenary wire arcing against the roof of the passenger coaches. The roofs of all four passenger coaches were damaged and a small fire ignited on the roof of the fourth coach. The catenary wire had fallen due to a Metra South Chicago train knocking the wire out of the brackets.

There were no reported injuries to any employees; one passenger reported breathing issues and was treated by paramedics on the scene. Total reported damage was \$290,000 to equipment and \$19,661 to track and structure. At the time of the accident, it was dark and the temperature was 74 degrees F.

The probable cause of the incident was the Power Desk Operator's failure to communicate and establish a proper block, thus failing to provide proper safeguard to trains entering the area.

NARRATIVE

Circumstances Prior to the Accident

Method of Operations

Train movements are governed and authorized by signal indication. A traffic control system is in effect in this territory with the train dispatcher stationed in Chicago, Illinois. The train dispatcher sets routes at control points. Intermediate automatic block signals are located at intervals between a control point (CP).

Railroad operations in the accident area are conducted on four main tracks signaled for bi-directional movement. Metra System Timetable Number 3 indicates the main tracks run north and south. The southward main tracks are Main Track Number 1 and Main Track Number 2. The northward main tracks are Main Track Number 3 and Main Track Number 4. Maximum track speed in the incident area is 15 mph through diverging route.

ME 142

The crew of ME 142 included a locomotive engineer, conductor, and an assistant conductor. The Locomotive Engineer went on duty at 7:20 p.m., CDT, July 25, 2015, at University Park, Illinois. The Conductor and Assistant Conductor went on duty at 7:10 p.m., CDT, July 25, 2015, at University Park. This was the reporting terminal for the crew of ME 142. A review of the crew's hours of service records indicated that the employees had the required statutory off duty time, prior to starting their shift.

The train consisted of four highliner coach cars (NIRC 1262, NIRC 1267, NIRC 1240, and NIRC 1227) with 43 passengers on board the head two coach cars. Train ME 142 departed University Park, at 7:40 p.m. and was scheduled to operate to Metra's Randolph Street Station in Chicago. The train received a Class 2 air brake test and running brake test in University Park, on August 25, 2015, prior to departure.

The railroad timetable direction and geographic direction of the train was north.

ME 342

The crew of ME 342 included a Locomotive Engineer, Conductor, and Assistant Conductor. The Locomotive Engineer went on duty at 4:13 p.m., CDT, July 25, 2015, at Randolph Street Station in Chicago. The Conductor and Assistant Conductor went on duty at 6:45 p.m., CDT July 25, 2015, at Randolph Street Station in Chicago. This was the reporting terminal for the crew of ME 342. A review of the crews hour of service records indicated that the employees had the required statutory off duty time, prior to starting their shift.

The train consisted of four highliner coach cars (NIRC 1280, NIRC 1323, NIRC 1260, and NIRC 1261). Train ME 342 departed South Chicago, Illinois, at 8:09 p.m. and was scheduled to operate to Metra's 63rd Street Station in Chicago. The train received a Class 2 air brake test, and running brake test in South Chicago, on July 25, 2015, prior to departure.

The railroad timetable direction and geographic direction of the train was north.

Dispatcher

The dispatcher reported for duty at 2:00 p.m., CDT, July 25, 2015, at Metra CCF in Chicago. The assigned shift for this position is 2:00 p.m. – 10:00 p.m. Upon beginning his shift, the dispatcher received a job briefing from the outgoing dispatcher on duty. The dispatcher stated that prior to the incident, nothing out of the ordinary had occurred. A review of the dispatchers hour of service record indicated that the employee had the required statutory off duty time, prior to starting his shift.

Power Desk Operator

The Power Desk Operator reported for duty at 2:00 p.m., CDT, July 25, 2015, at Metra CCF in Chicago. The assigned shift for this position is 2:00 p.m. – 10:00 p.m. The Power Desk Operator has refused the FRA's request for interview.

The Accident

Northbound ME 342 was stopped at MP 8.33 on Main Track Number 3 with mechanical problems related to the catenary system coming out of the tunnel at 67th Street. At 8:25 p.m., the dispatcher contacted the Power Desk Operator to notify him that ME 342 had a temporary loss of power at 82nd Street on the South Chicago Subdivision.

At 8:36 p.m. the Power Desk Operator notified the DC maintenance supervisor of the issues Train ME 342 was incurring. He notified him that ME 342 was stranded coming out of the tunnel at 67th Street and informed the DC supervisor that he has sent an emergency close (reset of power) several times and it would not close. The Power Desk Operator then contacted the dispatcher to request a block from MP 8.68 – MP 8.42 to prohibit train movements through the area.

The Power Desk Operator shut down the DC power to breaker number 79 on Main Track Number 3 from MP 8.68 – MP 5.90. At 8:38 p.m., the Power Desk Operator contacts the DC maintenance supervisor and informs him that the crew of ME 342 is reporting damage to the pantograph and overhead wire. At this time, he reiterated that breaker number 79 would not close.

At 8:48 p.m., the Power Desk Operator informed the trainmaster that he tried to reset the power a number of times and the crew of ME 342 had inspected the train and reported damage to the wire. At 8:53 p.m., ME 142 operated past a proceed indication at 51st (MP 6.20) and proceeded through the crossover from Main Track Number 4 to Main Track Number 3 traversing from energized DC breaker zone number 81 to de-energized DC breaker zone number 79.

DC breaker zone number 79 experienced a short circuit due to the ME 342 downed wire incident. This caused excessive heat in the wire at the air gap (power section break in the overhead wires) in the crossover, the wire burnt and dropped on ME 142, causing it to arc and burn. As ME 142 traversed the crossover, the Locomotive Engineer noticed a flash of light in his rearview mirror and brought the train to a stop in the crossover between Main Track Number 3 and Main Track Number 4.

The Power Desk Operator received an open indication for DC breaker number 81 and attempted to perform several manual resets to the line which caused the wire contacting the roof of the 4th coach, NIRC 1227 to arc and burn several times. At 8:56 p.m., the Power Desk Operator contacts the track maintenance supervisor, notifying him of a fire on train ME 142. The track maintenance supervisor instructed the Power Desk Operator to open any associated breakers to stop the flow of electricity to the affected area.

Analysis and Conclusions

Analysis - Post Accident Toxicological Tests

The initial investigation by Metra Management indicated this incident was the result of a mechanical issue related to the catenary and the pantographs on the coach cars; however, it was later determined human error was a factor in this accident. With the delay in determining possible human error, Metra did not conduct any Post-Accident Toxicology Testing on any employees involved.

Analysis - Signal System

The FRA did not conduct any post incident signal inspections between Metra Electric's 67th Street and 51st Street. Inspections conducted by Metra indicated the signal system was working as intended at the time of the incident.

Conclusion: The signal system was operating as intended.

Analysis – Train Crew Certification and Training

Analysis – Train Crew Certification and Training

ME 142

Locomotive Engineer certificate, hearing and vision testing, driver license checks, and other training were current and in compliance with Title 49 Code of Federal Regulations (CFR) Part 240. Conductor certificate, hearing and vision testing, driver license checks, and other training were current and in compliance with 49 CFR Part 242. All crewmembers had completed Emergency Preparedness training (E-PREP) in accordance with 49 CFR Part 239.

ME 342

Locomotive Engineer certificate, hearing and vision testing, driver license checks, and other training were current and in compliance with 49 CFR Part 240. Conductor certificate, hearing and vision testing, driver license checks, and other training were current and in compliance with 49 CFR Part 242. All crewmembers had completed E-PREP training in accordance with 49 CFR Part 239.

Conclusion: The train crew's monitoring rides and certifications were current and not a factor in the incident.

Analysis – Dispatcher and Power Desk Operator Training:

Dispatcher

A review of the dispatcher's training record and efficiency test records revealed all training was current and no previous exceptions were noted with the dispatchers on the job performance.

Power Desk Operator

A review of the Power Desk Operator's training record and efficiency test records revealed all training was current. A review of his efficiency test record revealed an exception noted on February 2, 2015. The Power Desk Operator was issued a letter of reprimand, for failing to provide proper safeguards, after receiving a double ended opening and notification that the wire should be inspected because of damage to the pantograph on a car. The Power Desk Operator has refused to provide Metra with a written statement concerning the July 25 accident. He has refused to speak with or be interviewed by the FRA concerning the incident.

Analysis - Fatigue

Fatigue Analysis

FRA uses an overall effectiveness rate of 77.5 percent as the baseline for fatigue analysis, which is equivalent to blood alcohol content (BAC) of 0.05. At or above this baseline, we do not consider fatigue as probable for any employee. Software sleep settings vary according to information obtained from each employee. If an employee does not provide sleep information, FRA uses the default software settings.

FRA obtained fatigue related information, including a 10-day work history, for two employees involved in this accident, including the Power Desk Operator and NIRC ME terminal dispatcher on duty at the time of the accident. FRA concluded fatigue was not probable for the Power Desk Operator or the dispatcher. Information for these two employees follows:

Fatigue Conclusions:

1. NIRC Power Desk Operator:

Sleep setting - Excellent

Overall effectiveness = 94.62% Lapse Index = 0.8

Reaction Time = 105% Chronic Sleep Debt = 5.98

Hours of Continuous Wakefulness = 14.50

Time of Day 2100

BAC Equivalent = < 0.05

Conclusion: Fatigue was not probable for this employee

2. NIRC ME Terminal Dispatcher

Sleep setting - Excellent

Overall effectiveness = 94.50% Lapse Index = 0.8

Reaction Time = 105% Chronic Sleep Debt = 5.44

Hours of Continuous Wakefulness = 14.92

Time of Day 2100

BAC Equivalent = < 0.05

Conclusion: Fatigue was not probable for this employee

Probable cause and contributing factors

The probable cause of the incident was the Power Desk Operator's failure to communicate and establish a proper block, thus failing to provide proper safeguard to trains entering the area.