



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

***Accident Investigation Report
HQ-2014-1014***

***Montana Rail Link (MRL)
Bonner, MT
November 13, 2014***

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 Montana Rail Link	1a. Alphabetic Code MRL	1b. Railroad Accident/Incident No. 2014163
2. Name of Railroad Operating Train #2 Montana Rail Link	2a. Alphabetic Code MRL	2b. Railroad Accident/Incident No. 2014163

GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance Montana Rail Link	1a. Alphabetic Code MRL	1b. Railroad Accident/Incident No. 2014163
2. U.S. DOT Grade Crossing Identification Number	3. Date of Accident/Incident 11/13/2014	4. Time of Accident/Incident 10:20 PM
5. Type of Accident/Incident Side Collision		
6. Cars Carrying HAZMAT 0	7. HAZMAT Cars Damaged/Derailed 0	8. Cars Releasing HAZMAT 0
		9. People Evacuated 0
10. Subdivision Third		
11. Nearest City/Town Bonner	12. Milepost (to nearest tenth) 114.200	13. State Abbr. MT
		14. County MISSOULA
15. Temperature (F) 8 °F	16. Visibility Dark	17. Weather Clear
18. Type of Track Main		
19. Track Name/Number Single Main Track	20. FRA Track Class Freight Trains-60, Passenger Trains-80	21. Annual Track Density (gross tons in millions) 57.6
		22. Time Table Direction West

OPERATING TRAIN #2

1. Type of Equipment Consist: Freight Train			2. Was Equipment Attended? Yes		3. Train Number/Symbol X-PWAWMI9-11A	
4. Speed (recorded speed, if available) R - Recorded E - Estimated		Code R	5. Trailing Tons (gross excluding power units) 2985		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	
20 MPH					Code 0	

6. Type of Territory

Signalization:
Signaled

Method of Operation/Authority for Movement:
Signal Indication

Supplemental/Adjunct Codes:
Q

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.	Alcohol	Drugs
(1) First Involved (derailed, struck, etc.)		SMW850172	43	no		0	0
(2) Causing (if mechanical, cause reported)		N/A	0		9. Was this consist transporting passengers?		No

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		e. Caboose
		b. Manual	c. Remote	d. Manual	e. Remote		a. Freight	b. Pass.	c. Freight	d. Pass.	
(1) Total in Train	3	0	0	0	0	(1) Total in Equipment Consist	0	0	108	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	11	0	0

12. Equipment Damage This Consist 300000		13. Track, Signal, Way & Structure Damage 0	
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14. Primary Cause Code
H221 - Automatic block or interlocking signal displaying a stop indication - failure to comply.*

15. Contributing Cause Code

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: 2	Mins: 5	Hrs: 2	Mins: 5
Casualties to:		22. Railroad Employees	23. Train Passengers	25. EOT Device?		26. Was EOT Device Properly Armed?	
Fatal		0	0	Yes		Yes	
Nonfatal		0	0	27. Caboose Occupied by Crew?			
				N/A			

28. Latitude 46.873889000		29. Longitude -113.893889000	
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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

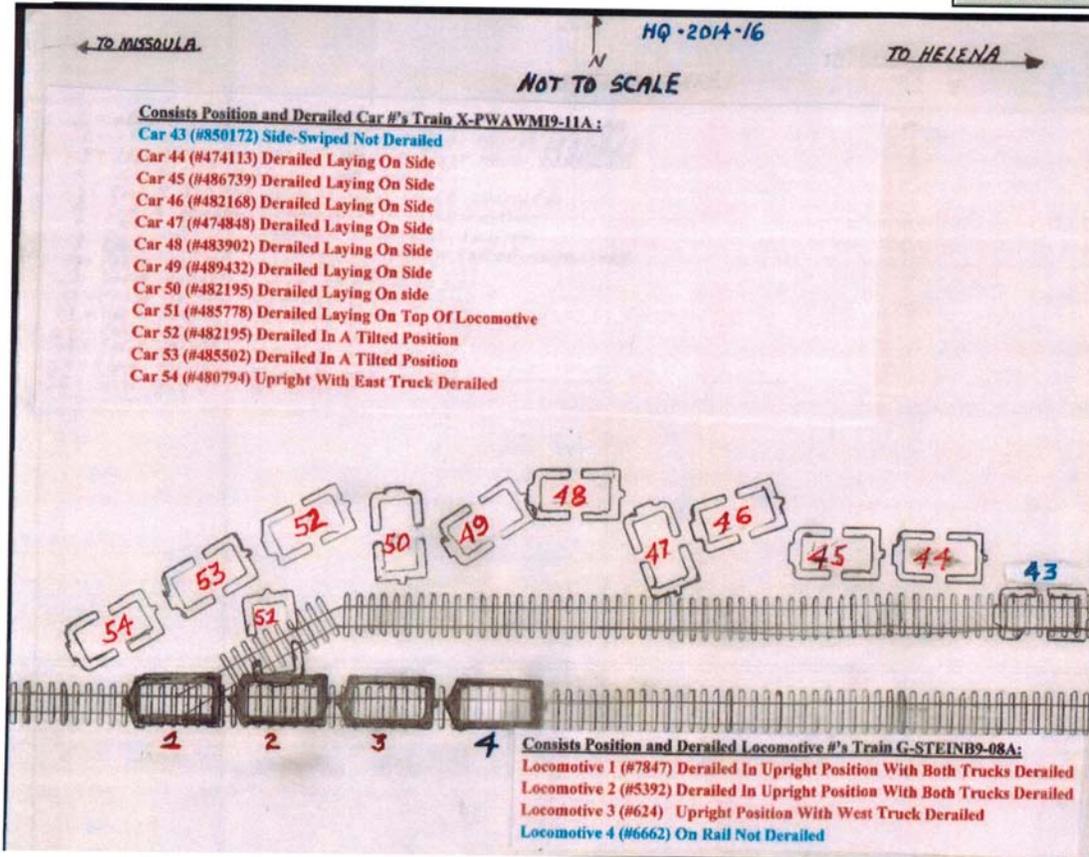
- A - Insulated rail vehicle
- B - Storm/lightning damage
- C - Vandalism
- D - No power/batteries dead
- E - Devices down for repair
- F - Devices out of service
- G - Warning time greater than 60 seconds attributed to accident-involved train stopping short of the crossing, but within track circuit 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-2014-16 Sketch

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

Delete Sketch



SYNOPSIS

On November 13, 2014, at approximately 10:20 PM (MST), westbound Montana Rail Link (MRL) Train G-STEINB9-08A failed to stop at a stop signal indication at the West Bonner, Montana Control Point (CP) resulting in an impact of their train with the side of eastbound MRL Train X-PWAWMI9-11A which was traveling eastward into the siding at Bonner. The westbound derailed 3 (three) of its 4 (four) head end locomotives causing significant damage to the leading unit and also damaging the second unit. The resulting collision caused a derailment of 11 (eleven) empty grain cars (consist positions 44 through 54) of the eastbound train.

The derailment site is located on MRL's 3rd Subdivision at MP 114.2, approximately seven miles east of Missoula, Montana and 207 miles east of Spokane, Washington. The method of operation in the vicinity of accident/incident site is by signal indication of a Traffic Control System, on a single main track, under the authority of the MRL train dispatcher located in Missoula, Montana.

Westbound G-STEINB9-08A was delivered to MRL in Laurel, Montana by the BNSF Railway Company (BNSF). Two MRL train crews operated the train over the MRL system from Laurel, Montana toward Missoula, Montana for delivery to BNSF at Spokane, Washington. The westbound freight train consisted of four locomotives located on the head end of the train. The train had 108 loaded grain cars and was approximately 6,692 feet in total train length with 15,348 trailing tons.

Eastbound X-PWAWMI9-11A was delivered to MRL in Spokane, Washington by BNSF. Two MRL crews operated the train over the MRL system from Spokane, Washington toward Helena, Montana for delivery to BNSF at Laurel, Montana. The eastbound freight train consisted of three locomotives located on the head end of the train. The train had 108 empty grain cars and was approximately 6,600 feet in total train length with 3,353 trailing tons.

Westbound G-STEINB9-08A was traveling at a recorded speed of 43 mph while approaching the collision/derailment site. When the westbound train crew realized that the main track at West Bonner was still blocked by an eastbound train heading into the siding, they applied an emergency brake application in an attempt to stop their train before colliding. The westbound train subsequently decreased in speed to a recorded speed of 29 mph before colliding with the eastbound.

Eastbound X-PWAWMI9-11A was traversing through the turnout and into the siding track, at the West Bonner CP, at a recorded speed of 20 mph when westbound G-STEINB9-08A impacted (side swiped) the 43rd car in its consist. After the collision the eastbound train crew contacted the MRL's Dispatching Center and informed the dispatcher of the collision and the ensuing derailment.

The westbound train crew received minor injuries and were transported to a local medical facility by ambulance. The train crew was released from the hospital after receiving treatment for facial cuts, lacerations and abrasions. The 3rd Subdivision is not an AMTRAK route. The railroad reported damages of \$1,300,000 in equipment damages, and \$200,000 in track, signal, way and structural damage; for a total reported damages of \$1,500,000 dollars.

At the time of the derailment it was dark and clear with a wind of 7 mph. The temperature was 8 degrees F.

The geographic and timetable directions are east to west. Timetable directions will be used throughout this report.

FRA was unable to determine any possible contributing factors to accident/incident.

The probable cause of the accident/incident was FRA Cause Code H-221 (Automatic block or interlocking signal displaying a stop indication - failure to comply).

NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT:

WESTBOUND TRAIN G-STEINB9-08A:

The crew of westbound train G-STEINB9-08A with leading locomotive BNSF 7847 consisted of an engineer and a conductor also known as an assistant engineer on MRL. The crew reported for duty at the MRL's terminal in Helena, Montana at 5:30 PM, on November 13, 2014 after having completed the required statutory off-duty period. The train was scheduled to travel from Helena to Missoula, a distance of approximately 120 track miles.

The crew had a copy of the train consist/profile and there were no hazardous material cars on the train. The crew participated in a job briefing prior to the start of work and also briefed as the trip progressed. No setouts or pickups were done en route and the engineer did not take any issues with the handling of the locomotives or the train. There were no exceptions noted to the safety devices on the controlling locomotive, BNSF 7847. The train had received a FRA Class I-initial terminal air brake inspection, in Venango, Nebraska, on November 8, 2014. The air brake inspection was conducted by qualified personnel (QP) of the Nebraska Kansas Colorado (NKC) Railway Company. The train was scheduled to receive a 1,500 mile extended haul air brake inspection upon its arrival in Missoula.

The train crew was in possession of their general track bulletins and no restrictions were noted for the location of the derailment. Interviews conducted by the Federal Railroad Administration (FRA) revealed the trip was uneventful prior to the derailment except for a meet of three trains at Blossburg.

As the train approached the derailment area, the engineer was seated at the controls of the leading locomotive on the right (north) side of the cab and the conductor was seated on the left (south) side of the cab.

Approaching the derailment site by rail from east to west beginning at approximately milepost 106.5 there is, in succession, 4,652 feet of signal preview distance for intermediate signal 107.3, then 2,229 feet of signal preview distance for intermediate signal 109.7, then 2,128 feet of signal preview distance for the westbound control signal at East Bonner (milepost 111.3), followed finally by 852 feet of signal preview distance for the westbound control signal at West Bonner, the point-of-collision (POC), milepost 114.2.

EASTBOUND TRAIN X-PWAWMI9-11A:

The crew of eastbound train X-PWAWMI9-11 with leading locomotive BNSF 743 consisted of an engineer and a conductor/assistant engineer. The crew had reported for duty at the MRL's terminal in Missoula, Montana at 8:15 PM, on November 13, 2014; after having completed the required statutory off-duty period. The train was scheduled to travel from Missoula to Helena, a distance of approximately 120 track miles. The crew completed the necessary paperwork (record keeping), then boarded their train and after setting out a couple of bad order cars and adding three fills they completed a FRA Class III air-brake test and departed Missoula with 108 empty grain cars, at 9:45 PM.

The train crew of the eastbound X-PWAWMI9-11A had been informed by the dispatcher that there was a westbound train at Nimrod which they would meet at Bonner. After receiving the information of the upcoming meet they attempted to contact the crew of the westbound train twice via the radio; with no success. Upon arrival at West Bonner train X-PWAWMI9-11A proceeded, on signal indication, into the siding, at a recorded speed of 20 mph (the designated timetable speed through the turnout and on the siding track is 25 mph).

THE ACCIDENT:

WESTBOUND TRAIN G-STEINB9-08A:

As the train approached the derailment site traveling westward at a recorded speed of 43 mph, the engineer and the conductor should have observed "Clear" (Green) signals at intermediates 107.3 and 109.7, followed by an "Approach" (Yellow over Red) at East Bonner and finally, a "Stop" (Red) at West Bonner. The maximum authorized speed for freight trains at the collision/derailment location is 45 mph, as designated in the current MRL Timetable No.17, in effect as of 0001 Continental Mountain Time, Monday, May 14, 2012. During interviews with the FRA the engineer and the conductor stated they had observed "green signals all the way through." FRA's viewing of the video camera from leading Locomotive BNSF 7847 indicated that the crew statements were incorrect. Upon viewing the video FRA was able to determine that the westbound control signal at East Bonner displayed an "Approach" (Yellow over Red) aspect indicating to the westbound train crew that they needed to slow their train and be prepared to stop at the next signal (West Bonner CP). Thus, by failing to observe and comply with the approach indication at East Bonner CP (milepost 111.3) the crew was subsequently unable to stop their train for the "Stop" signal indication, at West Bonner CP (milepost 114.2) before colliding with the eastbound train which was heading into the siding. GCOR Rule 9.1.8 "Approach Signal Indication" requires that a train upon encountering an approach signal indication is to "proceed prepared to stop at the next signal. Trains exceeding 35 mph immediately reduce to that speed."

Upon realizing that the main track at West Bonner was still blocked by an eastbound train heading into the siding, the engineer applied an emergency brake application in an attempt to stop their train before colliding. The westbound train subsequently decreased in speed from 43 mph to a recorded speed of 29 mph before impacting (side swiping) the 43rd car of the eastbound train. Just prior to impact with the eastbound train the conductor exited the leading locomotive by jumping to the ground from the left (south) side of the locomotive. After the conductor had jumped from the leading locomotive the engineer moved to the conductor's side of the locomotive and prepared for the imminent impact by curling himself up underneath the conductor's position in the cab.

EASTBOUND TRAIN XPWAWMI9-11A:

As the crew of train X-PWAWMI9-11 was pulling into the siding they saw the headlight of the oncoming westbound train and remarked to each other that the westbound was traveling too fast and that it was going to collide with their train. At this time the engineer noted that his train counter, which he had reset at the clearance point of the turnout, was reading 2,862 feet and that the majority of his 6,600 foot train was still traversing from the single main track on to the siding. The crew called out "emergency" via their radio in anticipation of the ensuing collision.

After the collision, the eastbound train crew reported to the MRL dispatcher their train had struck at West Bonner, milepost 114.2. After coming to a stop, the conductor of the eastbound train walked back to evaluate the accident/incident situation and found grain cars lying on their side with one car laying on top of the westbound's second locomotive unit. In the ensuing moments, the conductor then located the crew of the westbound train aimlessly wandering around the accident scene; then the eastbound's engineer called the dispatcher and began to help coordinate directions for initial response personnel to the accident/incident scene. The westbound train crew having received minor injuries was transported to a local medical facility by ambulance.

In addition to MRL management and other MRL employees responding to the accident/incident units from the Missoula Rural Fire Department, Missoula County Health Department, Northwest Energy Corporation and Sprint Corporation responded as well. Northwest Energy Corporation responded because the resulting derailment had damaged power lines, in the area of the accident/incident, and interrupted power to local residences; Sprint responded to make sure it's buried fiber-optic cables had not been damaged by the derailment.

POST-ACCIDENT INVESTIGATION:

On November 14, 2014, FRA's Region 8 management assigned an S&TC inspector as investigator/inspector-in-charge (IIC). He was assisted by an MP&E inspector and an OP specialist for this accident/incident investigation. FRA has completed its investigation and the following analysis and conclusions as well as any possible contributing factors to the probable cause represents the findings of the FRA investigation.

ANALYSIS and CONCLUSIONS:

Analysis - FRA Post Accident Toxicology Testing:

The accident met the criteria for FRA Post Accident Toxicology Testing, as required under Title 49 CFR, Part 219 Subpart C. The crew of the offending westbound MRL Train G-STEINB9-08A was test under that authority. MRL management chose not to test the crew of the non-offending train X-PWAWMI9-11A. Conclusion: Test results were negative for both the engineer and conductor of westbound G-STEINB9-08A.

Analysis - Weather Conditions: The ambient temperature on November 13, 2014 was 8 degrees F, dark with clear visibility.

Conclusion: Weather condition had no bearing on the accident/incident and FRA does not consider weather as a possible contributing factor.

Analysis - Crew Fatigue: FRA obtained fatigue related information for the crew members of striking train G-STEINB9-08A for the 10 day work/rest periods preceding the derailment.

Conclusion: Upon analysis of that information FRA concluded that fatigue was not probable for any of the employees.

Analysis - Locomotive Data Recorder: FRA obtained data from the event recorder of locomotive BNSF 6662, for analysis. Due to the extensive damage to the leading

Analysis - Locomotive Data Recorder:FRA obtained data from the event recorder of locomotive BNSF 6662, for analysis. Due to the extensive damage to the leading locomotive, BNSF 7847, the data from it's data recorder was not retrievable. Consequently, data analysis was conducted on the information retrieved from locomotive, BNSF 6662.

Conclusion: Upon analysis of the data from BNSF 6662, FRA was able to conclude that the engineer of the westbound train G-STEINB9-08A put the train into an emergency brake application approximately twenty-eight to thirty seconds prior to impacting (side swiping) the 43rd car of eastbound X-PWAWMI9-11A, at a recorded speed of 29 mph.

Analysis - Crew's Operating Experience and Familiarization of Territory: FRA analyzed the experience level of the crew of offending train G-STEINB9-08A and their familiarization with the physical characteristic of their assigned territory; along with FRA's collision site observations and inspections.

Conclusion:The FRA determined through analysis and interviews that the crew had only been employed by MRL for 7 months; both crew members had a hire date of April 18, 2014. A portion of this time had been spent in certification processes and on other job assignments; both crew members had only recently been assigned to their current territory between Missoula and Helena. The conductor/assistant engineer stated that he had worked 30 out of the last 60 days on this territory and the engineer stated that he had worked 3 days out of the last 60 days on this territory. Both crew members of MRL Train G-STEINB9-09A stated to the FRA that even thou they had only been working on their assigned territory a short time that they felt they were familiar with the physical characteristic of this assigned territory. They also stated that they both had had previous railroad operating experience. The assistant/engineer/conductor stated that he had 18 years of previous experience, as a conductor, with the BNSF Railway. The operating engineer stated that he had 6 years of previous experience as a conductor and engineer, with the Union Pacific Railroad.

Analysis - On Board Video:The outward facing video from leading locomotive BNSF 7847 was viewed by FRA.

Conclusion: FRA was able to determine that the westbound control signal at East Bonner displayed an "Approach" (Yellow over Red) aspect indicating to the westbound train crew that they needed to slow their train and be prepared to stop at the next signal. FRA was also able to determine that the westbound train crew did not comply with the "Approach" signal at East Bonner, did not slow the train in accordance with proper train handling but continued at their previous speed.

POSSIBLE CONTRIBUTING FACTORS:

FRA was unable to determine any possible contributing factors to this accident/incident.

PROBABLE CAUSE:

The crew of westbound MRL Train G-STEINB9-08 failed to comply with the "Approach" (Yellow over Red) aspect displayed at the westbound control signal at East Bonner. This aspect indicated to the train crew that they must "Proceed prepared to stop at next signal. Trains exceeding 35 MPH immediately reduce to that speed." As a result of the train crew's failure to comply as outlined in GCOR rule 9.1.8, the train crew was subsequently unable to comply with the "Stop" (Red) aspect displayed at West Bonner before colliding with eastbound train X-PWAWMI9-11A.

FRA determined the probable cause of the accident was FRA Cause Code H-221, (Automatic block or interlocking signal displaying a stop indication-failure to comply).