National Transportation Safety Board

Office of Railroad, Pipeline, and Hazardous Materials Investigations
Washington, D.C. 20594

Railroad Operations
Factual Report of Investigation

DCA16FR005
Union Pacific Railroad
Collision
Granger, Wyoming
March 14, 2016

Railroad Operations Factual

A. Accident

Location:	Granger, Wyoming, UPRR Milepost 844
Train #1:	Local Train - LCK 41-14 (UP 5155)
Train #2:	Inter Modal Train – KG1LAC-13 (UP 5718)
Railroad:	Union Pacific Railroad (UPRR)
Date:	March 14, 2016[1]
Time:	9:41 p.m.
Fatalities:	0
Injuries:	1
NTSB #:	DCA16FR005

B. Accident Summary

For a summary of the accident, refer to the *Accident Summary* report, within this docket.

C. Railroad Operation Group

Ted T. Turpin NTSB – Operations Group Chairman [redacted]	Larry Mozena SMART
Brian Fransen Safety Task Force – BLE&T	Ray Lindsey FRA
Ron Tindall, Jr. UPRR	John Mayser FRA – Operating Practices

[1] All times in this report will be mountain daylight time.

D. Accident Details

1.0 Narrative

Local Train - LCK 41-14 (UP 5155)
Inter Modal Train – KG1LAC-13 (UP 5718)

The UPRR had suspended the signal system between MP 865.7 to MP 843.9 from 8:00 a.m. March 13, 2016 to 4:00 p.m., March 14, 2016. Track Bulletin Form C, No. 10054, was issued to the operating employees explaining the process to operate their trains through the suspension. (See Appendix A)

The employees were instructed to stop at the red flags before entering the suspended territory unless receiving authority from the employee in charge to enter the limits. The track speed limit was normally 70 mph (reducing to 65 mph at MP 844.8). According to 49 CFR Part 236.0[2], trains operating in territory that is not equipped with a signal system must not exceed 59 mph for passenger equipment and 49 mph for all other trains. With the signals suspended this restriction applied.

At CP G844 the westbound signals were illuminated with a red aspects. The track beyond those signals to the west was "blocked"[3] on the dispatchers terminal and the signals could not be cleared for trains to enter the limits of the suspension. Since, the train dispatcher did not control these signals, all trains were authorized westbound to enter the suspension by the employee in charge located near the suspended limits and ignore these signals.

The eastbound signals defaulted to a red aspect, however, the train dispatcher could request the eastbound signals to display an indication for trains departing the suspended territory. The remote control switches within control point G844 were controlled by the train dispatcher so that the train dispatcher could line the switches and authorize trains to leave the suspended territory by signal indication at track speed. Operationally this was advantages. If the control point G844 had been suspended in both directions, trains departing the territory would have entered a signal system

[2] **49 CFR 236 Applicability, minimum requirements and penalties:** …(2) On and after January 17, 2012, where a passenger train is permitted to operate at a speed of 60 or more miles per hour, or a freight train is permitted to operate at a speed of 50 or more miles per hour, a block signal system complying with the provisions of this part shall be installed, unless an FRA approved PTC system meeting the requirements of this part for the subject speed and other operating conditions is installed.

[3] The train dispatcher can "block" a section of track. On their screen it will appear blue which indicates that the dispatcher can no longer operate the signals or switches until that section is unblocked. This is the normal process for the train dispatcher to provide protection for employees working on the track or signals.

(beyond MP 843.9) without a signal indication. Further, those trains would have been restricted to "restricted speed"[4] until the leading wheels passed the next governing signal.[5]

On the day of the accident, at about 9:16 p.m. the train dispatcher had a recorded radio conversation with the employee in charge at the signal suspension. Following is the conversation relating to authorizing train UP 5718:

> **Employee in Charge (EIC)**: Copy that, we've got that UP 5155 east going through the signal suspension now, any idea on what your next move is?
> **Train Dispatcher**: Well, I've got to wait for his track to open up, so that I can get him through 844. I'm not sure if I can get him through 844 first, or if we'll go west one to one there. I've got a UP 5718 westbound that will go one to one at 844 and then one to one at 847, over.
> **Employee in Charge**: Ok, we've got a UP 5718, uh, it's gonna be going one to one at 844 and one to one at 847, uh, well **we'll wait to hear back from you if we're gonna run him first, over. [emphasis added]**
> **Train Dispatcher**: Ok copy thank you, and then also I guess for planning purposes, eastbound I have a UP 7712 that will run east. We'll plan on going two to two in there, uh, main two all the way up to 844, over.
> **Employee in Charge**: Ok, uh, we'll have a 7712 east main two to main two at Hampton to 844, over.
> **Train Dispatcher**: Correct, over.
> **Employee in Charge**: Thank you, dispatcher.
> **Train Dispatcher**: Thank you, dispatcher out.

During the postaccident interviews, the train dispatcher recalled telling the EIC the following:

> I said, I was unsure if I was going to be able to get that eastbounder **[this would have been the local 9155]** through first because I had someone working in the track that he needed to go to. I said I was not sure about the next move. Did not know if it was going to be that or if we were going to have a westbound that would go Main 1 to Main 1 at CP G844.

The train dispatcher also recalled the EIC response to this conversation.

> [the EIC] repeated back, okay, I'll wait to speak to you before we make that move. We then had a conversation about an unrelated train that was coming eastbound on Main 2 track further where the signal suspension was. Further west, and we said that he'd go Main 2, Main 2, all the way up to 844.

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[4] Rule 6.27 **Movement at Restricted Speed** When required to move at restricted speed, movement must be made at a speed that allows stopping within half the range of vision short of: train, engine, railroad car, men or equipment fouling the track, stop signal, or derail or switch lined improperly. When a train or engine is required to move at restricted speed, the crew must keep a lookout for broken rail and not exceed 20 MPH. Comply with these requirements until the leading wheels reach a point where movement at restricted speed is no longer required. General Code Of Operating Rules (GCOR), Seventh Edition, Effective April 1, 2015

[5] GCOR **9.10 Initiating Movement Between Signals.**

During postaccident interviews with the EIC, he recalled what the train dispatcher had said to him:

> She'll be bringing it, **[the eastbound local UP 5155]**, CP G002, OSL Main to long siding down to CP G844, and we had to hold it at 844 because she did not have a track to leave 844, because there was a train at Westvaco working on Main 2 that had to pull out westbound, out onto the Main, and show up eastbound back to CP G833, so she could not take the second Kemmerer **[UP 5155]** at 844.
>
> When she told me that, I called the second Kemmerer **[UP 5155]** on the radio, and asked them if they'd heard that, that she was going to hold them at 844. He says, absolutely, we are stopping now. And they stopped.
>
> She commenced to telling us that she was going to run two trains. One west and one east. Main 1 to Main 1 at CP G844, Main 1 to Main 1 CP G847 **[this would have been the westbound intermodal UP 5718]**, Main 2 to Main 2 at CP G864, and Main 2 to Main 2 at 847, up to CP G844 on Main 2. Okay?

According to the EIC, now that he understood that the UP5155 was going to wait and the westbound train UP 5718 was the first movement through the suspension, he contacted the signal department EIC and asked if their work would allow the westbound train to operate through the suspension. The signal EIC told the conductor EIC that they were clear of track 1 and it was okay to authorize the westbound train (UP 5718) through the suspension.

Approximately, 15 minutes[6] after the conversation with the train dispatcher quoted above and confirming that the signal EIC was in the clear, the EIC instructed the flagman at CP G844 to authorize train UP 5718 to proceed through the suspension. In turn, the flagman at CP G844 authorized train UP 5718 to continue without stopping by the red flag at MP 843.9 into the suspended territory on main track 1. The conductor pilot assumed the siding switch was lined for main track 1 because it was under control of the train dispatcher and the train dispatcher had given the original instructions. When asked if he needed to check the position of the switches during the postaccident interview, he responded, "No. Not that, I was told at any job briefing that the dispatcher had control of that switch…"

The last train movement through CP G844 was a train that had departed the long siding and entered main track 1. Since, the train dispatcher had not decided the order of the next train movements she had not changed the position of the switches.

When the crew on westbound train entered the limits at approximately 46 mph they noted that the switch for the long siding was lined so that their train would enter the long siding. The engineer immediately applied the emergency brakes and the train slowed to approximately 30 mph

[6] During his interview, the intermodal train engineer, UP 5718, said he overheard the initial conversation between the train dispatcher and the EIC concerning his train at CP G844 when he was near MP 825. Using the event recorder data with time and distance about 15 minutes later the flagman at CP G844 authorized train UP 5718 through the suspended limits.

and collided with the standing local train. The local train crew had left their stationary locomotive when they saw the pending collision. The westbound crew stayed in the locomotive cab to impact. The engineer sustained a broken arm and a laceration on his head. The conductor was unhurt.

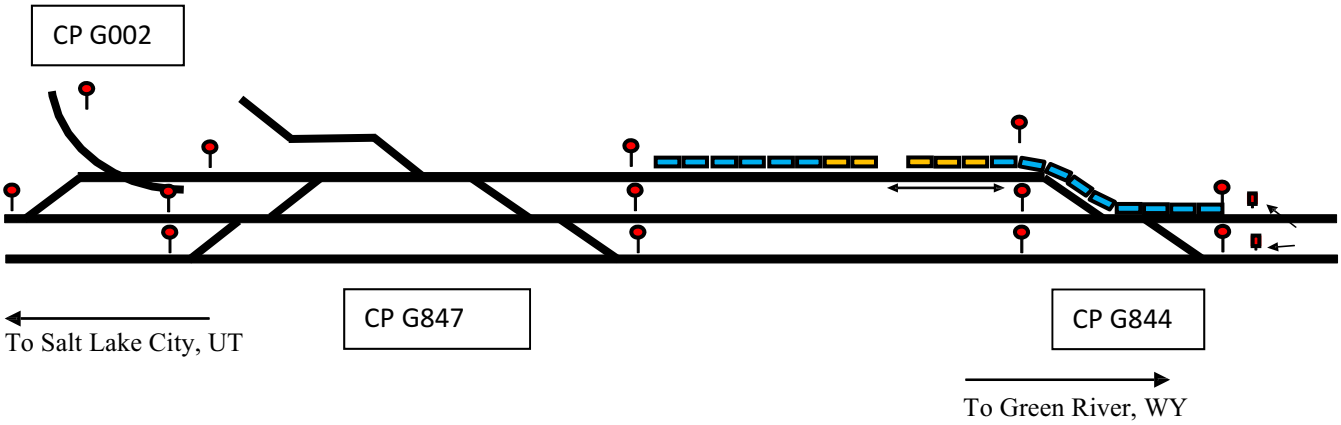

Figure 1. Diagram of track at accident site.

2.0 Operating Documents

The crews were governed by the following documents containing the operating rules and procedures:

- General Code Of Operating Rules, Seventh Edition, Effective April 1, 2015, Updated as of January 7, 2016.
- Union Pacific Special Instructions, Effective April 1, 2015, includes updates March 14, 2016.
- Union Pacific Railroad, Timetable No. 5, Evanston Subdivision, Effective December 7, 2015.
- Union Pacific Railroad, Safety Rules, Effective July 2, 2013, updated January 6, 2016.
- Track Warrants and Track Bulletins for UP 5155 East (LCK41-14)
- Track Warrants and Track Bulletins for UP 5718 West (KG1LAC-13)

3.0 Method of Operations

The UPRR was in the process of installing positive train control (PTC) between MP 865.7 and MP 843.9. In order to accomplish this the signals were suspended and absolute blocks were established. Each of the absolute blocks, which extended from a control point to the next control point, was overseen by a conductor pilot. The entire suspended section (made up of multiple absolute blocks) was managed by a conductor EIC. The EIC was given instructions from the train dispatcher of the route the train dispatcher wanted a train to take through the suspension. When the EIC received the instructions from the train dispatcher, the EIC would then communicate with the signal EIC to verify if the proposed train movement could be made. Once the signal EIC okayed the move with the EIC, the EIC in turn notified the appropriate conductor pilot to authorize the trains to enter the suspension and instruct the train crew on the designated route. If the switches were in manual operation, the conductor pilots would line the switch for the appropriate route. If

the switches were in power operation, the train dispatcher would line the switches for the appropriate route. The conductor pilots would then verbally authorize the train crews to enter the suspended territory, instruct them on the route to take and remind them that the maximum authorized speed was 49 mph.

As mentioned earlier in this report, Track Bulletin Form C, No. 10054, was issued to the operating employees explaining the process to operate their trains through the suspension. The track bulletin also defined the limits and identified the signals that were suspended and those that were not. Within these instructions there was no requirement for these instructions and authorities to be written.

4.0 Crew Information

Crew information for the operating crews on the local train UP 5155, the intermodal train UP 5718 and the conductor pilots assigned to CP G002 and CP G847, can be found in the docket for this accident.

Mobile Phone Records **-** Records have been requested for the cell phones possessed by the operating employees involved in the accident at Granger, Wyoming. An addendum to the operating factual will be prepared when the NTSB receives the records.

Post-Accident Toxicological Testing **-** According to Title 49 Code of Federal Regulations (CFR) Part 219 (Subpart C- Post-Accident Toxicological Testing) all of the operating employees and the train dispatchers were required to submit specimens for post-accident toxicological testing. All test results were negative for illicit drugs and alcohol.

Hours of Service and Rest Cycle **-** Title 49 CFR Part 228 – **Hours of Service of Railroad Employees,** requires that railroad operating employees not work over 12 hours in a given shift and must have a minimum of 10 hours off duty between shifts. The operating employees duty hours were within the requirements of the regulation.

Operational Testing - Title 49 CFR 217.9 contains specific requirements for the testing and observations of operating employees while they perform their duties. The UPRR maintains an operational testing program to monitor the performance and rules compliance of operating employees.

Conductor EIC

The 51-year old conductor EIC hired on the railroad 1/23/95. He had been certified as a conductor on 07/11/12 and recertified 05/07/14.

The conductor EIC had the following three (3) entries in his discipline record:

- 12/27/01 Run through a switch – 5 days training
- 02/30/01 Failed to secure equipment – Employee Option Conference
- 08/28/87 Run through a switch (No discipline)

Operational Testing **-** According to the conductor EIC's operational testing records, he had been observed 68 times complying appropriately with the operating rules with no exceptions noted.

Training - UPRR records showed that the conductor EIC had taken and completed training courses that covered various aspects of railroad operations. These records will be placed in the docket maintained by the NTSB.

Conductor Pilot CP844

The 31-year old conductor pilot hired on the railroad 11/01/04. He had been certified as a conductor on 07/11/12 and recertified 08/10/15.

The conductor pilot had the following two (2) entries in his discipline record:

- 11/08/10 Fouled track between equipment – 5 days training
- 07/20/10 Got on moving equipment – 5 days training

Operational Testing **-** According to the conductor pilot's operational testing records, he had been observed 147 times complying appropriately with the operating rules 144 times. Three events that were observed required coaching from a supervisor.[7]

Training - UPRR records showed that the conductor pilot had taken and completed training courses that covered various aspects of railroad operations These records will be placed in the docket maintained by the NTSB.

Work/Rest Cycle - The engineer had been off on the previous Saturday and Sunday. This was his regular job with a standard on duty time of 1:00 p.m. on Mondays. Two weeks prior, the railroad had changed the on duty time from 11:00 a.m. to 1:00 p.m. on Mondays and Wednesdays. He did not mention having an issue with fatigue during his interview.

Train Dispatcher - 2nd Shift

The 30-year old train dispatcher hired on the railroad 6/21/13. There were no entries in the train dispatchers discipline records.

Operational Testing **-** According to the train dispatcher's operational testing records, she had been observed 53 times. The only non-complying event occurred on 9//11/15 when she had failed to sign out at the end of her shift.

Training - UPRR records showed that the train dispatcher had taken and completed training courses that covered various aspects of railroad operations and train dispatching skills. These records will be placed in the docket maintained by the NTSB.

- END -

[7] These non-compliance circumstances are usually not egregious enough for discipline and the supervisor is allowed to coach the employee to correct the behavior.

Appendix A

TRACK BULLETIN FORM C
NUMBER: 10054 On (265) (260) (747) (750) MARCH 13 2016
Requested by - Date
soc - 03/13/16

1. EFFECTIVE 0800 HOURS MARCH 14, 2016 UNTIL 1600
2. HOURS MARCH 15, 2016 SIGNAL SYSTEM SUSPENDED FROM
3. MP 865.7 ON THE EVANSTON SUBDIVISION AND CP G002
4. MP 1.6 ON THE POCATELLO SUBDIVISION TO CP G844 MP
5. 843.9 ON THE EVANSTON SUBDIVISION.
6. FIRST SUSPENDED SIGNALS FOR MOVES ON TRACKS ARE
7 . AS FOLLOWS :
8. EASTWARD ON THE EVANSTON SUBDIVISION
9. NO 1 MAIN TRACK FOR MOVES AGAINST CURRENT OF
10. TRAFFIC MP 865.7
11. NO 2 MAIN TRACK INTERMEDIATE SIGNAL 8658 MP 865.7
12. EASTWARD ON THE POCATELLO SUBDIVISION
13. MAIN TRACK CP G002 MP 1.6
14. WESTWARD ON THE EVANSTON SUBDIVISION
15. NO 1 AND NO 2 MAIN TRACKS CP G844 MP 843.9
16. FIRST OPERATING SIGNALS FOR MOVES ON TRACKS ARE
17. AS FOLLOWS:
18. EASTWARD ON THE EVANSTON SUBDIVISION
19. ALL TRACKS CP G844 MP 843.9
20. WESTWARD ON THE EVANSTON SUBDIVISION
21. NO 1 MAIN TRACK INTERMEDIATE SIGNAL 8657 MP 865.7
22. NO 2 MAIN TRACK FOR MOVES AGAINST CURRENT OF
23. TRAFFIC MP 865.7
24. WESTWARD ON THE POCATELLO SUBDIVISION
25. MAIN AND SIDING TRACKS CP G002 MP 1.6
26. BE GOVERNED BY GCOR RULES 9.23 AND 9.23.1
27. MAXIMUM SPEED PER TIMETABLE AND GENERAL ORDER
28. INSTRUCTIONS NOT TO EXCEED 59 MPH FOR PASSENGER
29. TRAINS AND 49 MPH FOR ALL OTHER TRAINS.
30. ALL TRAINS MUST STOP BEFORE ENTERING THESE LIMITS
31. UNLESS AUTHORIZED TO PROCEED BY EMPLOYEE IN
32. CHARGE. NO FOLLOWING MOVEMENT ON THE SAME TRACK
33. WILL BE PERMITTED TO ENTER THESE LIMITS UNTIL A
34. PRECEDING MOVEMENT HAS CLEARED THE LIMITS OR
35. PASSED A FLAGMAN LOCATED AT THE NEXT INTERMEDIATE
36. POINT. FLAG PROTECTION AGAINST FOLLOWING TRAINS ON
37. THE SAME TRACK IS NOT REQUIRED. FLAGMAN SWITCH
38. TENDER LOCATED AT MP 865.7, MP 859.25, MP 853.0,

39. CP G847 MP 846.5, CP G844 MP 843.9 ON THE EVANSTON
40. SUBDIVISION AND CP G002 MP 1.6 ON THE POCATELLO
41. SUBDIVISION.
42. ALL TRAINS MUST STOP SHORT OF FLAGMEN UNLESS
43. AUTHORIZED TO PROCEED.

Ok 03/13/16 0945 Dispatcher: CHB

Appendix B

Source: General Code Of Operating Rules, Seventh Edition, Effective April 1, 2015, Updated as of January 7, 2016.

9.23 Suspension of Block System

When authorized, a track bulletin may suspend the block system or section of it.

Do not suspend the block system or section of it until all trains and control operators in the affected territory have been notified by track bulletin specifying the limits of the suspension.

Track bulletins issued to suspend the block system must not be delivered to trains entering the affected territory until the affected limits are clear of trains, or until the track bulletin has been transmitted or delivered to all trains within the limits.

9.23.1 Guidelines while Block System is Suspended

When the block system or sections of it are suspended, the following guidelines govern:

- Employees must follow rules that apply to non-signaled territory.
- Trains must receive a track bulletin prescribing speed restrictions that do not exceed 59 MPH for passenger trains or 49 MPH for other trains.
- Trains will disregard extinguished or illuminated block and interlocking signals except where:
    - Signals govern movements over railroad crossings at grade or drawbridges. or
    - Signals are connected with track side warning devices.

Trains must approach the block and interlocking signals excepted above and each end of the suspended limits prepared to stop. Trains that leave the limits move into block system territory must move at restricted speed until they reach the first signal in service beyond the limits. Signals that govern movement over railroad crossings at grade and drawbridges must be regarded as displaying a Stop indication, regardless of the aspect displayed, unless the track bulletin specifies that the signals are in service.

If the crew does not know that signals governing movement over railroad crossings at grade are in service, the crew must provide flag protection in each direction on conflicting routes before proceeding over the crossing. Crew members must not rely on time release or key controller operations as adequate protection while moving over the crossing, unless they are instructed otherwise.

- On multiple main tracks, a track bulletin will designate the track or tracks the block system is suspended on. A track bulletin that specifies the track to be used will be issued to each train.

- Where automatic crossings warning devices have been affected, action to be taken will be stated in the track bulletin.
- Dual control switches on the main track will be lined and locked for main track movement. Switches equipped with the selector levers will be locked in the HAND position. All other dual control switches will be spiked. All concerned will be notified. Until informed by the train dispatcher, trains must stop and inspect dual control switches, foul the circuit and make sure the switch is properly lined before passing over it.

A track bulletin must be issued that specifies which position dual control switches at the end of double track or multiple main tracks are to be left lined.

If a crew member receives notification from the train dispatcher of the position of dual control switches, leave those switches in that position after use.

- Spring switches that will be removed from service must be spiked and those concerned notified.
  If spring switches are left in service, trains making facing point movements must be prepared to stop, unless it is known that the switch is properly lined.
- When the block system has been returned to normal operation, a track bulletin must notify all train within the affected territory before any train can enter the limits and be governed by the block system.