# BROTHERHOOD OF LOCOMOTIVE ENGINEERS AND TRAINMEN

*A DIVISION OF THE RAIL CONFERENCE*
*INTERNATIONAL BROTHERHOOD OF TEAMSTERS*

## SAFETY TASK FORCE

**INDEPENDENCE, OHIO**

**BEFORE THE NATIONAL TRANSPORTATION SAFETY BOARD**

**NTSB Accident Number: RRD18FR006**

**Class: Regional**

**Proposed findings, probable cause, and safety recommendations, in connection with the National Railroad Passenger Corporation ("Amtrak") Maintenance of Way employee watchman/lookout fatality near Bowie, MD on April 24, 2018**

S. J. Bruno, BLET-Safety Task Force, National Chairman
C.W. Fields, BLET-Safety Task Force, Party Spokesman

## Final Submission

The Brotherhood of Locomotive Engineers and Trainmen ("BLET"), a division of the International Brotherhood of Teamsters ("IBT"), was assigned party status by the Board in the above-referenced investigation. BLET respectfully submits the following proposed findings, probable cause, and safety recommendations to the Board for consideration.

## Accident Synopsis:

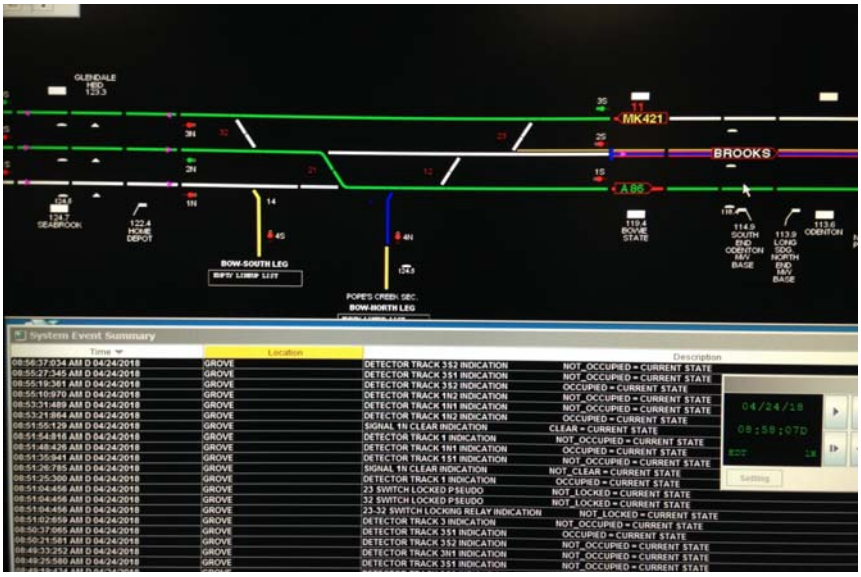
On April 24, 2018, at approximately 8:59 AM,[1] a northbound National Railroad Passenger Corporation ("Amtrak") Maintenance of Way ("MOW") roadway worker was fatally injured as he performed duties as a Watchman/Lookout.[2] As part of an Amtrak undercutting MOW project, Rail Gang Y-222A was working near milepost ("MP") 119.2 on Main Track No. 2 of Amtrak's Philadelphia to Washington ("PW") line. The Rail Gang Foreman delegated three (3) Amtrak MOW employees to act as Watchmen using the Train Approach Warning ("TAW") system.[3] Two (2) of the Watchmen were used as Advance Watchmen,[4] while the fatally injured employee (Watchman No.3) was used exclusively as a Watchman for the welding truck. Watchman No. 3 had less than nine (9) months of experience on the railroad.

As a southbound local Maryland Area Regional Commuter ("MARC") commuter train ("MK-421") was passing through the work location on Main Track No. 3, Amtrak Northeast Regional passenger Train No. 86 was passing through the work location on Main Track No. 1. This is a so called "Double Bubble" scenario. Watchman No. 3 was struck and fatally injured by Amtrak Train No. 86.

The event recorder data downloaded from Amtrak Train No. 86's lead locomotive (AMTK No. 625) established and the inward facing camera confirmed that the Locomotive Engineer placed the train into emergency braking at 104 miles per hour ("MPH"). Amtrak train 86 had decelerated to a speed of 98 MPH when the employee was struck. Weather at the time of the incident was 55° F, few clouds, with wind at 10 knots (according to the BWI Airport weather station).

[1] All times throughout this report will be Eastern Daylight Time.
[2] For the sake of brevity, the remainder of this report will simply state "Watchman" when referencing a Watchman/Lookout.
[3] Train Approach Warning refers to 49 CFR § 214.329 actions provided by watchmen/lookouts.
[4] An Advance Watchman is the placement of employees used mainly for protection to the workers using sight distance placement.

Snapshot of Amtrak Train Dispatcher screen of activities in area.




(Courtesy of Amtrak)

## Method of Operation:

The accident occurred on the Amtrak's Philadelphia to Washington ("PW") line, consisting of three (3) main tracks (1-2-3 east to west). The area where the accident occurred is 261 territory.[5] Due to the MOW track outage, northbound trains were delegated to Main Track No. 1, and south-bound trains to Track No. 3. The maximum authorized speed ("MAS") approaching the accident site for Amtrak train set (Type "B")[6] is 110 MPH, with a further speed restrictions of 105 MPH in the immediate area of the accident (MP 119 to MP 120.3).

## Amtrak Rules / Policies in effect for Track (MOW) employees:[7]

- Amtrak Roadway Worker Protection Manual, effective April 1, 2017
- Amtrak Engineering Production Department Production Undercutting Site Specific Work Plan, Bowie (MP 120.5) to Grove (112.4), #2 Track work being completed by the Under-cutter Group supported by Communication and Signals ("C&S"), Electric Traction ("ET"), and Bridge and Building ("B&B") production, continuous outage March 9, 2018 through June 14, 2018
- Northeast Operating Rules Advisory Committee ("NORAC"), 11th edition, effective Feb-ruary 1, 2018

[5] 261 territory is intended for and has automatic signals for movements in both directions.
[6] *See* APPENDIX 1
[7] Notable by its absence is the Amtrak Hot Spot Manual

## Amtrak Rules / Policies in effect for Train & Enginemen ("T & E"):

- Northeast Operating Rules Advisory Committee ("NORAC"), 11th edition, effective February 1, 2018
- Amtrak New York to Washington Bulletin Order: NYW7-13, effective April 23, 2018
- Amtrak New York to Washington Summary Bulletin Order: NYW7-10 SUM, effective April 2, 2018
- Amtrak New York to Washington Supplemental Bulletin Order: NYW7-06SCH-b, effective March 10, 2018
- Amtrak Northeast Corridor ("NEC") Employees Timetable No. 7, Special Instructions, dated February 1, 2018

## The Accident:

**Amtrak Y-222A MOW work gang:**

On April 23, 2018, the Y-222A work gang worked at or near the location of the accident site, working on the east rail of Main Track No. 2. On the day of the accident the Y-222A work gang worked on the west rail of Main Track No 2. Track No. 2 had a continuous track outage from Bowie, MD (MP 120) to Grove (MP 112.4), approximately 8.1 miles that was scheduled from March 9, 2018 to June 14, 2018.

On the morning of the accident, the work gang met at the hotel lobby at 6:00 AM, and held a job briefing. They were transported by bus to the general work area – arriving at approximately 7:00 AM, where they conducted a second job briefing.[8] Once the work gang arrived at the work site, they held a third job briefing with their respective Gang Foremen;

- Undercutter Machine and the supporting work Gang,
- Rail Destressing and Welding Gang,
- Track Surfacing Gang,
- Spoil Removal Gang

The fatally injured employee was assigned as a Watchman to the rail destressing and welding gang by the Track Foreman. There were approximately ninety (90) MOW employees on site. At approximately 7:23 AM the Roadway Worker In Charge ("RWIC") communicated with the Train Dispatcher by phone ensuring that Main Track No. 2 was out of service, advised him of the work

[8] For a copy of the job briefing documentation sheet, see APPENDIX 2

to be performed and that they would use Train Approach Warning ("TAW") protection. The various gangs began working at approximately 8:30 AM. The welding gang Foreman positioned Watchman No. 3 directly across from the work they were performing.[9]

## Southbound Maryland Area Regional Commuter ("MARC") Commuter Train Local No. 421 ("MK-421"):

MARC Train No. 421 consisted of one (1) locomotive and six (6) cars, was operating in push mode with the cab control car leading and the engine pushing the train. The train was – operating southbound on Main No. 3 as they approached and passed through the work location, and was braking to stop for the Bowie State Station platform to board/discharge passengers. Interviews of Amtrak's MOW personnel, confirmed they took no exceptions to the operation, headlight, auxiliary lights, bell and whistle of MARC local No. 421.

## Northbound Amtrak Northeast Regional Passenger Train No. 86:

The crew of Amtrak Train No. 86 went on duty in Washington, D.C. at 7:45 AM. Train No. 86 departed Washington, D.C. Union Station on time at 8:40 AM with approximately 250 passengers on board. Train No. 86 consisted of one (1) locomotive (AMTK 625) and eight (8) cars. Its next stop was at 8:52 AM in New Carrolton, Maryland. Train 86 was scheduled to bypass Bowie State station (MP 119.1). The next scheduled stop was BWI Marshall Airport Station.

In a post-accident interview, the Locomotive Engineer stated that, as he approached the work location at approximately 100 MPH, he observed the Watchman on the Bowie State station platform and began using his bell and whistle on the approach. As he began passing Bowie State station he saw Watchman No. 3 with his back to him so he began to use the locomotive horn extensively. These actions were confirmed by the inward facing camera and event recorder data. The Locomotive Engineer went on to state that Watchman No. 3 was clearly in the foul of Main Track No. 1. This was confirmed by the outward facing camera. Subsequently, the Locomotive Engineer initiated an emergency brake application, but was unable to stop and Amtrak Train No. 86 struck the Watchman. Interviews of Amtrak's MOW personnel, confirmed they took no exceptions to the operation, headlight, auxiliary lights, bell and whistle of Amtrak train No. 86. Post-accident

[9] *See* E. Treut interview p.16, lines 6-8.

inspections conducted by the Federal Railroad Administration ("FRA") of Train No. 86's locomotive (AMTK 625) determined the locomotive performed as designed. We conclude Amtrak locomotive No. 625 was not a contributing or casual factor in the accident.

## Amtrak lead locomotive No. 625 Track Image Recorder ("TIR") Outward Facing Video Camera:

On May 31, 2018 investigators reviewed the video of the outward facing camera installed on locomotive AMTK 625 at the NTSB's Research and Development Lab. The video showed the fatally injured Watchman standing on the ties just west of the embankment on Main Track No. 1 (on an approximate 45° slope) but fouling Main Track No. 1. He was raising his paddle and air horn, and was facing in a northward direction. As the MARC train operated through the work location approaching Bowie State Station, he continued standing on the embankment, still fouling Main Track No. 1. As the MARC train's rear car cleared, Amtrak Train No. 86 arrived in the immediate area traveling northward, striking him on Main Track No. 1, with his back to the south.

View looking North from Bowie State Platform.
Arrow reflecting approximate accident location.
No. 1 track is on the right side.

## Watchmen:

All Watchmen were positioned on the "field side" of Main Track No. 1 they were not between the Main tracks. Track centers between Main Track No. 1 and Main Track No. 2 at the accident site were 13' 2½". The track centers between Main Track No. 2 and Main Track No. 3 in the vicinity of the accident were measured to be 13' 1".

*Sight distance and reaction time recreations from the accident site (courtesy of NTSB):*

| Watchman | Sight Distance –Direction looking | Warning Time Track No. 1 | Warning Time Track No. 3 |
|---|---|---|---|
| #1 Located on Bowie Station Platform | 4,200 feet – South | 27 seconds | 22 seconds |
| #2 Located on ground 795 feet north of Watchman # 1 | 3,700 feet – North | 24 seconds | 18 seconds |
| #3 Located 662 feet north of Watchman # 2<br><br>*1st sight distance recreated from where employee was struck (field side Main No.1) this is confusing | 5, 490 feet – South with an advanced watchman-in-place | 35 seconds | 29 seconds |
| | 4,950 feet – North with no advanced watchman-in-place | 30 seconds | 26 seconds |
| 2nd sight distance test standing at bottom of ballast shoulder on access road | 3,490 – North | 21 seconds | 18 seconds |

Post-accident sight distance testing established that the catenary poles used to support the electrification system hindered the view from both north and south. We conclude there were an insufficient number of watchmen because the catenary poles were hindering sight lines, the geography of the multiple curves, and the maximum authorized speed in the area.

## Watchman Duties:

The regulatory requirements for Watchman's duties are outlined in 49 CFR § 214.329:

> Roadway workers in a roadway work group who foul any track outside of working limits shall be given warning of approaching trains by one or more watchmen/lookouts in accordance with the following provisions:
>
> **(a)** Train approach warning shall be given in sufficient time to enable each roadway worker to move to and occupy a previously arranged place of safety not less than 15 seconds before a train moving at the maximum authorized speed on that track can pass the location of the roadway worker. The place of safety to be occupied upon the approach of a train may not be on a track, unless working limits are established on that track.
>
> **(b)** Watchmen/lookouts assigned to provide train approach warning shall devote full attention to detecting the approach of trains and communicating a warning thereof, and shall not be assigned any other duties while functioning as watchmen/lookouts.
>
> **(c)** The means used by a watchman/lookout to communicate a train approach warning shall be distinctive and shall clearly signify to all recipients of the warning that a train or other on-track equipment is approaching.
>
> **(d)** Every roadway worker who depends upon train approach warning for on-track safety shall maintain a position that will enable him or her to receive a train approach warning communicated by a watchman/lookout at any time while on-track safety is provided by train approach warning.
>
> **(e)** Watchmen/lookouts shall communicate train approach warnings by a means that does not require a warned employee to be looking in any particular direction at the time of the warning, and that can be detected by the warned employee regardless of noise or distraction of work.
>
> **(f)** Every roadway worker who is assigned the duties of a watchman/lookout shall first be trained, qualified and designated in writing by the employer to do so in accordance with the provisions of § 214.349.
>
> **(g)** Every watchman/lookout shall be provided by the employer with the equipment necessary for compliance with the on-track safety duties which the watchman/lookout will perform.

The Watchmen's duties entail being on the lookout for oncoming trains, then warning the MOW gang visually typically using an orange-colored hand-held paddle and audible using air horn and/or hand-held whistle. The Watchmen must hold their paddle up until the train clears their immediate location, then lower the paddles in sequence as the train clears their work area. The Watchmen are not equipped with handheld radios, to avoid possible distraction. The Watchmen duties are essential to the safety of their co-workers, because the noise emitted from the MOW equipment —

such as ballast regulators, MOW machines, rail grinders, welding, etc. — interferes with the ability to hear the bells and horns from the oncoming train traffic traveling on tracks adjacent to their work locations.

## Amtrak Watchman Training:

Watchman classroom training consists of a four (4) hour class, which entails going over the roadway worker protection ("RWP") manual.[10] According to Amtrak recordkeeping, the fatally injured Watchman's roster date is July 31, 2017; he received his qualification card to be a Watchman on November 29, 2017 with an expiration date of December 31, 2018. He was qualified on RWP on February 12, 2018, with an expiration date of December 31, 2019.

## Amtrak's Fatally Injured Watchman's Work History:

| Date | Start Work | Off Duty | Total Time on Duty |
|---|---|---|---|
| April 24, 2018 (day of occurrence) | 6:00 AM | 8:59 AM (time of incident) | 2 hours, 59 minutes |
| April 23, 2018 | 6:00 AM | 6:00 PM | 12 hours, 0 minutes |
| April 22, 2018 | OFF WORK | OFF WORK | OFF WORK |
| April 21, 2018 | OFF WORK | OFF WORK | OFF WORK |
| April 20, 2018 | OFF WORK | OFF WORK | OFF WORK |
| April 19, 2018 | 6:00 AM | 4:30 PM | 10 hours, 30 minutes |
| April 18, 2018 | 6:00 AM | 4:30 PM | 10 hours, 30 minutes |
| April 17, 2018 | 6:00 AM | 10:00 PM | 16 hours, 0 minutes |
| April 16, 2018 | 6:00 AM | 8:30 PM | 14 hours, 30 minutes |

## Personal Electronic Devices:

No improper cellular phone activity was detected on the part of Watchman No. 3, or the Locomotive Engineers of either train.

[10] For portions of Amtrak's Roadway Worker Protection Manual see APPENDIX 3

## Post-Accident Toxicology Testing:

FRA post-accident toxicological testing was performed on the fatally injured Watchman and the Locomotive Engineer of Amtrak Train No. 86. All tests were negative for the presence of prohibited substances.

## Post-Accident Actions by Amtrak:

On June 12, 2018, Amtrak issued Rules Alert No. 2018-01, with an effective date of June 25, 2018. This Alert revised Northeast Corridor ("NEC") Special Instruction 175-S2, reducing the 80 MPH "Slow-By" restriction by Undercutter and Track Laying Machine ("TLM") projects to 60 MPH.[11] We believe Amtrak is attempting to accomplish two things with "slow-by" restrictions in general. First to minimize the impact to the scheduled operation of the train and second to address the legitimate safety concerns of the employees working with and around such equipment. However, it is unclear why Amtrak determined that 60 MPH is the appropriate new speed. Without an explanation it seems arbitrary. BLET recommends that until such time as a sufficient explanation is provided or in the absence an objective analysis is completed to determine what a safe speed is for such passing trains, Amtrak should lower the speed to 30 MPH when trains are passing work locations with operating TLM or Undercutter machinery. The impact to the schedule of the train would be negligible. This would cause only a minor inconvenience to the public in favor of possibly saving the life of an employee.

## Podiums for Watchman performing duties:

It has come to the BLET's attention that Amtrak is testing types of structural platforms that may offer a Watchman protection from flying debris, safety from fouling the envelope of a live track, reliable footing other than standing on uneven ballast, and/or straddling a tracks shoulder to keep out of harm's way. These types of structures appear to be either permanent (fixed) or portable. We support the use of such platforms, as they materially enhance the safety of Watchmen from passing trains and urge Amtrak to expedite the implementation.

[11] *See* APPENDIX 4

See photos below of prototypes being produced for possible Amtrak deployment in the field.

These types of structures were not provided at the jobsite where the accident occurred. Instead, the Watchmen either; used the catenary pole to shield themselves from the passing trains and the debris the passing equipment kicked up, or stayed lower on the access road with somewhat compromised sight lines, or as the fatally injured employee did, positioned themselves immediately adjacent to a live track. As of this report, it is unclear whether these are available at Amtrak job sites, however Amtrak could use its own personnel to construct them.

## SITE SPECIFIC WORK PLAN ("SSWP"):

Amtrak develops and oversees a Site Specific Work Plan ("SSWP")[12] for major work projects. The items listed below are some of the items identified in respective SSWPs:

- Work limits
- Schedule
- Contact telephone numbers
- Medical facilities nearby
- Checklist of safety watchmen equipment

[12] For portions of Amtrak's SSWP, see APPENDIX 5

Conspicuous by its absence is SSWP language regarding issues affecting Watchmen in high-speed operating areas such as determining the number of Watchmen needed, their placement and accounting for train speed, terrain, and visibility or line of sight impediments. BLET believes the absence of such analysis and implementation contributed to this accident.

## Fatality Analysis of Maintenance-of-way Employees and Signalmen ("FAMES") TRAIN APPROACH WARNING:[13]

Subsequent to this accident, a June 15, 2018 report was generated by the Fatality Analysis of Maintenance-of-way Employees and Signalmen ("FAMES") Committee. Under the heading Fatal Accidents Under Train Approach Warning (Watchman/Lookout), the report states, in part: "Following the implementation of the Roadway Worker Protection ("RWP") Rule in 1997, the FAMES Committee, using available FRA accident data, estimates that there have been a total of 52 fatal RWP accidents, in which 55 roadway workers have perished, as of February 1, 2017."

Since the initial release of its findings and recommendations, the FAMES Committee has determined that at least five (5) additional "Train Approach Warning" (TAW) fatalities have occurred. These fatalities are still being analyzed by the FAMES Committee.

Of the 55 Roadway Worker fatalities analyzed by FAMES, 13 accidents resulting in 16 fatalities occurred where TAW was being used. Significantly the Watchman/Lookout was the fatally injured employee in 5 of the 13 fatal accidents. Moreover, in 2 of the fatal accidents, 2 trains passed in close succession and a Roadway Worker was struck by the second train. The relevant FAMES Committee Recommendations states:

> "Watchmen/Lookouts should position themselves outside the foul of any track whenever possible. If a Watchman/Lookout must foul a track to provide protection for a work group, when the work group is notified to clear, the Watchman/Lookout must also clear."

BLET believes this Recommendation should be codified in FRA regulations and Amtrak SSWPs as a means of affording Watchmen a higher level of safety.

[13] *See* APPENDIX 6

## Predetermined Place of Safety ("PPOS"):

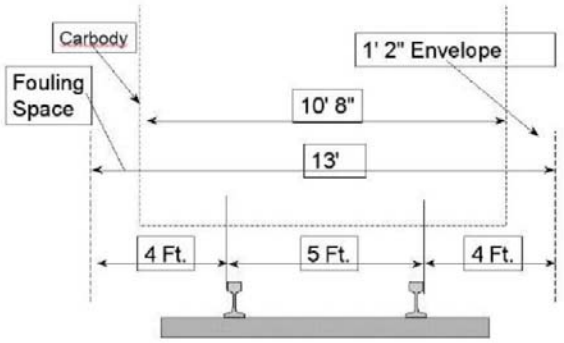
FRA regulations, at 49 CFR § 214.336, defines a "predetermined place of safety" ("PPOS") as a

> "…specific location that an affected roadway worker must occupy upon receiving a watchmen/lookout's warning of approaching movement(s) (warning) or a roadway worker-in-charges ("RWIC's") notification of pending movement (s) on an adjacent track ("notifications"), as designated during the on-track safety job briefing required by Part § 214.315. The PPOS may not be on a track, unless the track has working limits on it and no movements permitted within such working limits by the RWIC. Thus, under these circumstances, the space between the rails of the occupied track may be designated as a place to remain in position or to otherwise occupy upon receiving a warning or notification. The RWIC must determine any changes to a PPOS, and to communicate such change to all affected roadway workers through an updated on-track safety job-briefing."

## Fouling a Track:

The FRA defines "fouling a track" in 49 CFR § 214.7 as "the placement of an individual or an item of equipment in such proximity to a track that the individual or equipment could be struck by a moving train or on-track equipment, or in any case is within four feet of the field side of the near running rail."

Below diagram shows car body fouling point and fouling space
*See* APPENDIX 3, Amtrak's Roadway Worker Protection Manual




## NTSB report Accident No. DCA-08-FR-004, Location Providence, Rhode Island, March 13, 2008 and Hot Spots:

On March 13, 2008, a former Amtrak manager was killed and a MOW employee was severely injured in an accident near Providence, Rhode Island. The NTSB generally determined that the probable cause in that accident was an insufficient number of Watchmen. This accident led Amtrak

to consider an evaluation of its operation to identify locations where similar circumstances existed which were given the designation “Hot Spots. Hot spots are locations on the railroad where additional roadway worker protection is required. These physical locations include a variety of conditions, such as curves with limited visibility, tunnels with limited clearances, and locations with heavy outside noise.

## History of Hot Spots:

On March 13, 2008, a former Amtrak manager was killed and a MOW employee was severely injured in an accident near Providence, Rhode Island. The NTSB generally determined that the probable cause in that accident was an insufficient number of Watchmen. An Amtrak joint Labor and Management internal investigation determined that staffing inadequacies were the basis of ongoing and bitter arguments at on-track briefings. The parties agreed that these conflicts could be largely resolved if they jointly determined how many Watchmen would be needed at several “Hot Spot” locations and publish the findings.

In 2008-09, representatives of the engineering Unions and management undertook the effort to identify the hot spots. The analysis considered the geometry of the track, MAS and other relevant factors. The group performed stop watch and whistle tests, establishing data to be used in publishing a “Hot Spot” manual, illustrating known locations by name, mile post, and listing the minimum number of Watchmen required for each Hot Spot and their placement to safely effect lookout duties for the on track workers at each location. The tests to establish the number of Watchmen required at each location were performed during the most ideal daylight hours, clear weather conditions and no machinery on the track. Obviously, if conditions are less than ideal additional Watchmen are required. Amtrak distributed this data to Engineering Department employees by via the Roadway Worker Protection (RWP) manual, training was provided.

Subsequent to the publication of the Hot Spot manual placards, signage or decals were erected or installed along the right of way. A white diamond shaped reflective decal with an orange spot were placed on the catenary poles on both sides of the right of way in the area of the Hot Spot. The decals were visible to locomotive engineers during the operation of their trains.


Typical decal or placard at MP 53.74 denoting Hot Spot due to limited visibility
Curves 344-345 on Amtrak's Mid-Atlantic Division

The Hot Spot manual was published and distributed in the RWP manual. Amtrak unilaterally abandoned the printing and distribution of the Hot Spot manual in 2014 and, at the same time, removed Hot Spot training from all curriculums and instructions.

Since 2014, Amtrak has not published the Hot Spot manual. The training department does not teach new or existing employees about the existence of Hot Spots in RWP classes. Amtrak has concluded that the Hot Spot book is no longer relevant because it was published in 2009 and today's infrastructure is not the same. We believe this is an absurd position in as much as the Northeast Corridor has had the same basic infrastructure for 150 years while train speeds have dramatically increased. The geometry of the track at the location of the instant accident has not changed significantly in that time and certainly not to the extent that cutting the minimum number of required watchmen by half was warranted.

On April 24, 2018, the work being performed was located between back-to-back Hot Spots. There was a Hot Spot at Curve 404, near MP 119.7, and another Hot Spot at Curve 403 at MP 118.4. The fatally injured employee was struck at MP 119.2. The absence of sufficient watchmen at this location is a contributing factor to the fatality of Watchman No. 3.

## Hot Spot Work Locations:

Figure below – page 29 from Amtrak's "Hot Spot" manual referencing recommendations for the accident area, Curve # 404.

**Hot Spot Recommendations**

| Name of Location | MP | Curves (Track Chart #) | # of Gang Watchmen | # of Advanced Watchmen | | Comments | Hot Spot Stickers Applied | Sub Division |
|---|---|---|---|---|---|---|---|---|
| | | | | West | East | | | |
| Jericho Park | 119.7 | 404 | 1 | 3 | 2 | Limited Visibility | No | Odenton |
| Curve 403 | 118.4 | 403 | 1 | 1 | 3 | Limited Visibility | No | Odenton |
| Curve 402 | 117.7 | 402 | 1 | 3 | 4 | Limited Visibility | No | Odenton |
| Curve 401 | 117.5 | 401 | 1 | 4 | 1 | Long Curve<br>Limited Visibility | No | Odenton |

Mid Atlantic Division 29

Clearly, six (6) Watchmen was the minimum number required at the location of this fatality as determined by consensus of the employees' representatives and Amtrak's engineering personnel. It bears repeating that the track geometry and infrastructure at the accident location has not significantly changed since the analysis was performed and Hot Spot manual was published.

# PROPOSED FINDINGS

The BLET determines that there were operational factors contributing to this accident. Even without the Hot Spot manual in active publication, reducing the number of Watchmen from six (6) to three (3) is an unexplained decision especially in light of the NTSB's previous analysis of the Providence, Rhode Island accident. It was a fateful decision and we contend this is the root cause of the fatality.

The area of the incident had a steep shoulder, offering no safe standing arena to maintain a vigilant sight in both directions. The absence of stable footing for the fatally injured Watchman left him little choice but to position himself on the only secure ground available. Temporary platforms for

Watchmen, positioned to ensure stable footing and an appropriate field of vision, could have prevented this accident.

Trains were permitted to proceed through the work sites at speeds that exacerbate hazardous working conditions for on-ground employees. The on ground employees were not sufficiently trained how to anticipate and react to the situation where two trains were passing through the work area simultaneously at speeds of 100 MPH is opposite directions.

# Probable Cause and Contributing Factors

The Brotherhood of Locomotive Engineers and Trainmen concludes that the probable cause of this accident and the fatal injuries sustained by the Amtrak employee was the result of multiple safety failings;

1. Insufficient staffing of Watchmen at the work/accident location was the root cause of the accident.

   Amtrak abandoned the underlying analysis and logic they relied upon and disregarded the resulting Hot Spot safety recommendations they previously published. Amtrak removed "Hot Spot" notices, and eliminated training on specific additional safety measures that should be undertaken at such locations. It is a confounding decision in as much as the physical plant has not changed since the original analysis and publication of those consensus safety recommendations, and the frequency and speed of train operations has only increased.
2. Improper guidance provided to a relatively new employee regarding proper positioning when acting as a Watchman in a high-speed / multiple track area was a contributing factor
3. Inadequate training of the MOW employees on protection in "Double-Bubble" scenarios was a contributing factor.

# PROPOSED RECOMMENDATIONS

## NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"):

1. Re-establish Hot Spot procedures and the Hot Spot publication and training immediately on the entire operating territory.

2. Establish specific guidelines and training so that maintenance of way employees can identify and move to a safe location when "Double-Bubble" hazards arise.

3. Temporarily reduce the speed of trains through work areas with an operating TLM and/or Undercutter machinery to thirty (30) MPH until an objective analysis can be performed and a permanent rule can be implemented.

4. Emphasize the definition and application of the 15-second predetermined place of safety in training of maintenance of way employees.

5. Require all candidates for Watchman/Lookout qualification to have at least 2000 hours of service as a maintenance of way employee.

6. Conduct a risk assessment at all existing work sites to ensure a sufficient number of Watchmen/Lookouts are deployed.

7. Afford Watchmen/Lookouts safe footing and if necessary by providing platforms that can be installed in the clear, while providing the necessary field of vision.

## FEDERAL RAILROAD ADMINISTRATION ("FRA"):

1. Revise current regulations to require that the speed of trains passing through or alongside maintenance of way work sites be reduced to one-half of the maximum authorized speed at that location when such sites are active.

2. Revise current regulations to require that all candidates for Watchman/Lookout qualification to have at least 2000 hours of service as a maintenance of way employee.

**CERTIFICATE OF MAILING**

***I certify that on September 30, 2019 I have on this date electronically served upon Mr. Troy Lloyd ([redacted]), Investigator in Charge RRD-18FR006, a full and complete copy of the "Proposed findings, probable cause, and safety recommendations" pursuant to 49 CFR § 831.14(a) with regards to the National Railroad Passenger Corporation ("Amtrak") maintenance of way employee fatality in Bowie, Maryland on April 24, 2018 , submitted by the Brotherhood of Locomotive Engineers and Trainmen's Safety Task Force to the National Transportation Safety Board. BLET appreciates the opportunity to participate as a party to this investigation.***

Mr. Troy Lloyd
Investigator-in-Charge, RRD-18FR006
National Transportation Safety Board
[redacted]

Mr. David Kannenberg
FRA, Regional Administrator, Region 2
[redacted]

Mr. John Defrancesco
Director of Safety
Amtrak
[redacted]

Mr. Steve Stearn
Brotherhood of Maintenance of Way Employes Division
Vice-Chairman, Pennsylvania Federation
[redacted]

***Yours truly,***

[redacted]
***Stephen J. Bruno***
***Brotherhood of Locomotive Engineers & Trainmen***
***National Secretary-Treasurer***
***National Chairman, Safety Task Force***
[redacted]

# APPENDIX 1

MAIN LINE-PHILADELPHIA TO WASHINGTON (PW)

| STATIONS | | MP | INT | PS | NOTES |
|---|---|---|---|---|---|
| PRINCE | **R**- See SI 900-P1 | 57.3 | X | ... | 18 |
| PERRYVILLE | | 59.4 | ... | X | ... |
| PERRY | **R**-CETC-3 TD (Port Road Branch, NS) | 59.5 | X | ... | ... |
| SUSQUEHANNA RIVER MOVABLE BRIDGE | | 60.2 | ... | ... | ... |
| GRACE | **R**-CETC-3 TD | 61.5 | X | ... | 10, 18 |
| OAK | **R**-CETC-3 TD | 62.9 | X | ... | ... |
| ABERDEEN | | 65.5 | ... | X | ... |
| BUSH | **R**-CETC-3 TD (Movable Bridge) | 71.6 | X | ... | 11, 18 |
| EDGEWOOD | | 75.1 | ... | X | ... |
| WOOD | **R**-CETC-3 TD (Edgewood & Magnolia Sidings) | 75.3 | X | ... | 12 |
| MAGNOLIA | **R**-CETC-3 TD (Edgewood & Magnolia Sidings) | 76.9 | X | ... | 12 |
| GUNPOW | **R**-CETC-2 TD | 79.3 | X | ... | 18 |
| MARTIN | | 84.0 | ... | X | ... |
| RIVER | **R**-CETC-2 TD | 89.3 | X | ... | ... |
| POINT | **R**-CETC-2 TD | 90.1 | X | ... | 13 |
| BAY | **R**-CETC-2 TD | 91.9 | X | ... | 9 |
| BIDDLE | **R**-CETC-2 TD | 94.3 | X | ... | ... |
| PAUL | **R**-CETC-2 TD | 95.2 | X | ... | ... |
| BALTIMORE | | 95.7 | ... | X | ... |
| CHARLES | **R**-CETC-2 TD | 95.9 | X | ... | ... |
| JOHN ST. | (Opening⊟B&P Tunnel) | 96.2 | ... | ... | ... |
| PENNSYLVANIA AVE. | (Opening⊟B&P Tunnel) | 97.0 | ... | ... | ... |
| GILMORE ST. | (South Portal⊟B&P Tunnel) | 97.5 | ... | ... | ... |
| FULTON | **R**-CETC-1 TD | 97.7 | X | ... | ... |
| BRIDGE | **R**-CETC-1 TD | 98.2 | X | ... | ... |
| WEST BALTIMORE | | 98.5 | ... | X | 15 |
| FREDERICK ROAD | | 99.9 | ... | ... | ... |
| HALETHORPE | | 103.0 | ... | X | 15 |
| WINANS | **R**-CETC-1 TD | 103.4 | X | ... | 9 |
| B.W.I. | | 106.3 | ... | X | ... |
| GROVE | **R**-CETC-1 TD | 112.4 | X | ... | 18 |
| ODENTON | | 113.6 | ... | X | ... |
| BOWIE STATE | | 119.4 | ... | X | ... |
| BOWIE | **R**-CETC-1 TD (Pope's Creek Sec. Trk., CSX) | 120.5 | X | ... | 18 |
| SEABROOK | | 124.7 | ... | X | ... |
| CARROLL | **R**-CETC-1 TD | 127.0 | X | ... | 18 |
| NEW CARROLLTON | | 127.0 | ... | X | ... |
| LANDOVER | **R**-CETC-1 TD (Landover Line, CSX) | 128.8 | X | ... | ... |
| STATE LINE | (Maryland-D.C.) | 131.6 | ... | ... | ... |
| CP AVENUE | **R**-CETC-1 TD (Washington Terminal) | 134.6 | ... | ... | 14 |

**37-P1. PASSENGER TRAINS and FREIGHT TRAINS MAXIMUM SPEEDS and SPEED RESTRICTIONS, UNLESS OTHERWISE RESTRICTED**

Locations and speeds shown in normal type are maximum authorized speeds. Locations and speeds shown in **bold type** are speed restrictions. *Maximum equipment speeds listed in SI 37-S5 must not be exceeded.*

Where speeds change at an interlocking and the specific point where the speed change occurs is not specified, the lower speed will apply through the entire interlocking.

Where two speeds are separated by a diagonal line, the lower speed applies to trains not equipped with operative ACSES.

| **PASSENGER TRAIN TYPE "A" & "B" SPEEDS** |
|---|
| ***Train Type A*** refers to High Speed Trainsets (HST) with tilt system ***active.*** |
| ***Train Type B*** refers to **(1)** HST's with tilt system ***disabled;*** and **(2)** trains consisting ***exclusively*** of HHP-8, AEM-7, ACS-64, P40BH, P42BH, P32AC-DM, or P32-BWH engines, and Amfleet, Horizon, Capitoliner Control Cars, MARC III control/coach cars, MARC IV control/coach cars, LDSL Cars, or US DOT test car DOTX 216. |

MAIN LINE-PHILADELPHIA TO WASHINGTON (PW)

| Between/At | Train Type "A" Track Nos. | | | | Train Type "B" Track Nos. | | | |
|---|---|---|---|---|---|---|---|---|
| | 4 | 3 | 2 | 1 | 4 | 3 | 2 | 1 |
| Sig. Br. 877-876 & River | ... | 125 | 125 | 110 | ... | 110 | 110 | 110 |
| River & Point | ... | 110 | 110 | 110 | ... | 110 | 110 | 110 |
| River & Bay: Track A | 15 MPH | | | | | | | |
| Point & Bay | ... | 110 | 110 | 100 | ... | 100 | 105 | 100 |
| Bay & north portals Union Tunnels | ... | 60 | 60 | 60 | ... | 60 | 60 | 60 |
| **Reverse Cvs at Bay** | ... | ... | ... | **50** | ... | ... | ... | **50** |
| Bay & Biddle: Track A | 35 MPH | | | | | | | |
| **Cv MP 94** | ... | **50** | **50** | **45** | ... | **50** | **50** | **45** |
| **First Cv north of Union Tunnels** | ... | **45** | **45** | **45** | ... | **45** | **45** | **45** |
| Through Union Tunnels | ... | 45 | 45 | 45 | ... | 45 | 45 | 45 |
| South portals Union Tunnels & South limits Paul Int: All Routes to/from: | | | | | | | | |
| Nos. 6 & 7 Trks | 30 MPH | | | | | | | |
| Nos. 1, 3, 4 & F Trks | 15 MPH | | | | | | | |
| South limits Paul Int & Charles: | | | | | | | | |
| Nos. 3, 4, 6, & 7 Trks | 30 MPH | | | | | | | |
| Nos. 1, 5 & F Trks | 15 MPH | | | | | | | |
| South limits Charles Int & Fulton | ... | 30 | 30 | ... | ... | 30 | 30 | ... |
| Fulton & Bridge | ... | 80 | 80 | ... | ... | 80 | 80 | ... |
| **Cv at Fulton** | ... | **45** | **45** | ... | ... | **40** | **40** | ... |
| Bridge & MP 100 | ... | 110 | 110 | 75 | ... | 110 | 110 | 75 |
| Track A | 60 MPH | | | | | | | |
| **First Cv south of Bridge** | ... | **55** | **55** | **50** | ... | **50** | **50** | **50** |
| **Track A** | **30 MPH** | | | | | | | |
| **First Cv north of Frederick Road** | ... | **90** | **90** | **70** | ... | **80** | **80** | **70** |
| **Track A** | **55 MPH** | | | | | | | |
| **First Cv south of Frederick Road** | ... | **105** | **105** | ... | ... | **100** | **100** | ... |
| MP 100 & Winans | ... | 125 | 125 | 110 | ... | 110 | 110 | 110 |
| Track A | 60 MPH | | | | | | | |
| **First Cv South of MP 101** | ... | **120** | **120** | **105** | ... | **105** | **105** | **105** |
| Winans & MP 107 | ... | 120 | 125 | 110 | ... | 110 | 110 | 110 |
| **Cv at Winans** | ... | ... | ... | ... | ... | **100** | **100** | **100** |
| **MP 105 & Sig Br 1055-1054** | ... | **90** | ... | ... | ... | **90** | ... | ... |
| **First Cv South of MP 106** | ... | **110** | **110** | **90** | ... | **90** | **90** | **90** |
| MP 107 & MP 125 | ... | 125 | 125 | 110 | ... | 125 | 125 | 110 |
| **Cvs MP 110 & Grove** | ... | ... | ... | ... | ... | **120** | **120** | ... |
| **Cvs MP 113 & MP 118** | ... | ... | ... | ... | ... | **120** | **120** | ... |
| **Cvs MP 113 & MP 114.3** | ... | ... | ... | **95** | ... | ... | ... | **95** |
| **Cvs MP 115 & MP 116.5** | ... | ... | ... | **105** | ... | ... | ... | **105** |
| **Cv at MP 117** | ... | ... | ... | **95** | ... | ... | ... | **95** |
| **First Cv South of MP 118** | ... | ... | ... | ... | ... | **120** | **120** | ... |
| **Cvs MP 119 & MP 120.3** | ... | ... | ... | **105** | ... | ... | ... | **105** |
| **First Cv South of MP 120** | ... | ... | ... | **105** | ... | **115** | **115** | **105** |
| MP 125 & Carroll | ... | 125 | 125 | 110 | ... | 110 | 110 | 110 |
| **First Cv South of MP 125** | ... | ... | ... | **105** | ... | ... | ... | **105** |

# APPENDIX 2

AMTRAK

**Job Briefing Documentation Sheet**

Date: 4 12 18 | Time: 7 00 ☑ AM ☐ PM | Days W/O Injuries: N/A | Gang No. VARIOUS

1. Work Location: Bowie State Station | Job Briefing: This is to be done before starting **ANY** job.
2. Person Holding Job Briefing: : Gonzalez | Title: Foreman | Signature:
3. ☑ Weekly Safety Focus Overhead Storage | Security Focus Evacuate during chemical attack
4. ☑ What are we doing? destressing rail / material / grinding / cutting
5. ☑ Does everyone have all required PPE: (Hardhats, Glasses, Gloves, Footwear, etc.)? ☑ Yes ☐ No
   Does this work require special PPE: (Ear Protection, Respirator, Chaps, Face Shields, etc.) ☑ Yes ☐ No
6. ☑ Any unusual work site hazards? ☑ Yes ☐ No
   If yes, what hazards? tripping hazards, loose ballast, uneven surface
7. ☑ Have all of the following been checked for defects? ☑ Tools ☑ Vehicles ☑ Equipment
   What defects were found? None
8. ☑ Does this job require Fall Protection: ☐ Yes ☑ No If you are not sure, find out before working.
   Is everyone that must wear it qualified? ☐ Yes ☐ No
9. ☑ Is this area considered a Confined Space: ☐ Yes ☑ No If you are not sure, find out before working.
   Is this a permit required confined space? ☐ Yes ☐ No
10. ☑ What safety rule was discussed? 4138 / 612 Does it pertain to this job? ☑ Yes ☐ No
11. ☑ Overhead Wires/3rd Rail are: ☑ Energized ☐ De-energized
12. ☑ Do we need ET protection? ☐ Yes ☑ No
    If yes, did the Employee in Charge sign the Clearance Form? ☐ Yes ☐ No
13. ☑ Are everyone's qualification cards up to date? ☑ Yes ☐ No
    Operator's books up to date? ☐ N/A ☑ Yes ☐ No
14. ☑ If operating equipment or machines, are the operators qualified? ☑ Yes ☐ No
15. ☑ Are there any hazardous chemicals or environmental issues? ☐ Yes ☑ No
16. ☑ Nearest approved medical facility and worksite crossroads: Doctor's Community† Loop Rd † Jericho Park Rd.
17. ☑ Electronic Device Policy Reviewed? drivers (Amtrak Use Only) ☑ Yes ☐ No

Other items discussed:

4138: Gang watchman will, if practical, be stationed clear of all tracks at a point where he will have the best view of approaching trains in both directions.

612: Reversing Direction within an Interlocking.

Corey Ross Phone

911: Gonzalez / truck CTR: Gsell / G.

**Amtrak Police Emergency Number**
**1-800-331-0008**

**No one is required to sign this document until they have full understanding of the job and all safety concerns have been addressed. Check box ONLY if present for initial Job Briefing. Employee ID numbers must be legible.**

| Employee Sign-Off & Employee ID Number | | | | | |
|---|---|---|---|---|---|
| Signature | Emp ID # | Signature | Emp ID # | Signature | Emp ID # |

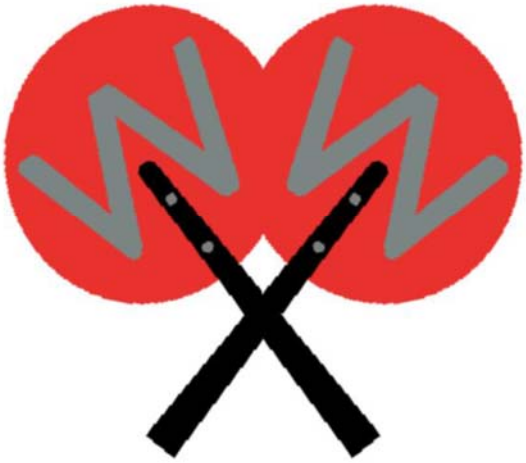
*On-Track Safety Briefing must be signed on site! This form must be retained for 7 working days*

[redacted]

**APPENDIX 3**

AMTRAK®

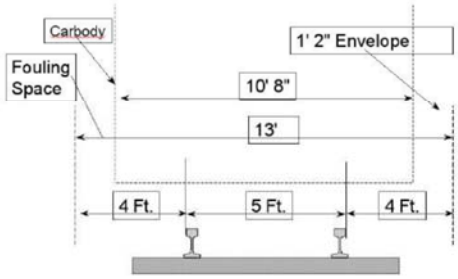
# Roadway Worker Protection Manual



**For the government of Roadway Workers performing duties on Amtrak NORAC territory**

**Effective: April 1, 2017**

**Fouling a Track:** The placement of an individual or an item of equipment in such proximity to a track that the individual or equipment could be struck by a moving train or on-track equipment, or in any case is within four feet of the field side of the near running rail. Locations specifically engineered to provide protection from moving trains or on-track equipment may encroach into the four foot envelope and still not be considered fouling. These locations are designated as clearing bays.




**Gang Watchman / Advance Watchmen:** An employee who is qualified to provide warning to roadway workers of approaching trains or on-track equipment. NOTE: A Gang Watchman/Advanced Watchman is not a Flagman.

**Train Approach Warning:** (Gang Watchman/Advanced Watchmen) A method of establishing on-track safety by warning roadway workers of the approach of trains *and/or equipment to ensure all workers can occupy a pre-determined place of safety (PPOS) at least 15 seconds before the train or equipment arrives.*

## 318 ON TRACK SAFETY BRIEFING GUIDELINES

Prior to performing any task which requires fouling a track or has the potential to foul a track, all roadway workers involved must participate in an On Track Job Safety briefing. This On Track Safety Briefing must be conducted and documented at the work location and include the means by which on-track safety will be provided, and instructions for the on-track safety procedures to be followed.

The On Track Safety Briefing must be conducted by the Road Way Worker In Charge. This On Track Safety Briefing must include each roadway worker.

An On Track Safety Briefing must be conducted with roadway workers arriving after the initial job briefing and *prior to fouling a track*.

On Track Safety Briefings are not complete until the roadway worker signs the briefing and acknowledges understanding the on-track safety being afforded to them *and all on-track safety concerns have been addressed*.

Always consider the following when participating in an On Track Safety Briefing:

- Everyone's Attention and Participation
- Type of On-Track Protection
- Identification of Adjacent Track(s) and Protection being provided on such track(s)
- Working Limits
- Track Speeds
- Direction of Train Traffic
- Predetermined Place of Safety (PPOS)
- Potential distractions
- Unique workplace hazards
- Hot Spot Areas
- Placement of Watchmen and Rotation & Relief Policy
- Weather Conditions/Visibility
- Inspect Watchmen's Equipment
- Review Electronic Device Use
- Brief New Arrivals
- Re-Brief when Changes Occur
- Complete Understanding & Documentation

## 329 TRAIN APPROACH WARNING PROVIDED BY GANG WATCHMAN/ADVANCE WATCHMEN

Roadway workers in a roadway work group who foul any track outside of working limits shall be given warning of approaching trains and engines by one or more watchmen in accordance with the following provisions:

(a) Train approach warning shall be given in sufficient time to enable each roadway worker to clear all equipment and move to and occupy a Predetermined Place of Safety not less than 15 seconds before a train moving at the permanent maximum authorized speed on that track can pass the location of the roadway worker. *The predetermined place of safety to be occupied upon the approach of a train may not be*

*on a track, unless working limits are established on that track.*

*(1) Gang Watchman / Advanced Watchmen placement is governed by permanent maximum authorized speed as defined in this manual.*

*(b) If adjacent tracks are protected by a form of on track safety which will be in place the entire time roadway workers are fouling the work site, no train approach warning would be needed. If the on track safety on the adjacent tracks are given up periodically, train approach warning would be needed.*

**(c) Gang watchmen and advance gang watchmen must:**

(1) Devote their full attention to detecting the approach of trains, engines, and maintenance machinery, and communicating a warning thereof, and shall not be assigned or perform, even momentarily, any other duties while functioning as watchmen.

(2) Stand in position at the location identified during the On Track Safety Briefing until instructed, by the RWIC, that on-track safety is no longer necessary or relieved by another watchman, and ready to warn of approaching movements. If for any reason a gang watchman or advance gang watchmen must leave their position, they must first provide warning to clear all roadway workers from the tracks.

(3) Be relieved, rotated, or provided a 15-minute break every 2 to 4 hours.

(4) Signal the approach of train or equipment by sounding an audible warning and raising an orange disc or approved light at arm's length above the head. When it is safe to resume work, lower the orange disc or approved light horizontally at arm's length toward the point of work, hold this position momentarily, then lower to rest position.

(5) Provide train approach warning that can be plainly seen. Acknowledge and/or repeat train approach warning received from other watchmen or advance watchmen. If train approach warning is not acknowledged, advance watchmen will attempt to stop train by using red flag or fusees provided for that purpose.

(6) When providing train approach warning for only one person and advance watchmen are not

needed, watchmen equipment must include an orange disc or approved light, a warning whistle, and a highly reflective vest or clothing which meets ANSI-2010-107 Class 2 specifications.

(7) Must stand stationed at a point where they will have the best view of approaching trains or equipment in both directions, as identified and discussed at the On Track Safety Briefing, and a sufficient distance from the roadway worker or work group to prevent attention from being distracted by the work, but not further than their warning whistle can be distinctly heard. Gang watchmen, advance gang watchmen, and flagmen may be positioned in the fouling envelope of live track only if all the following conditions are met:

(i) The person responsible for on-track safety and the watchmen, advance watchmen, and or flagmen agree that the location and nature of work require placement on live track.

(ii) The On Track Safety Briefing specifically addresses the placement of watchmen in live track and where each will clear upon approaching trains.

(iii) Gang watchmen and flagmen must be able to clear in sight of the gang. Advance gang watchmen must clear in the sight of gang watchmen or adjacent advance gang watchmen. All watchmen, advance watchmen, or flagmen must be clear of all live tracks or in the gauge of a track where additional working limits were established for on-track safety.

(iv) The On Track Safety Briefing sheet specifically documents the requirements of i, ii and iii of this part.

(8) Conduct a whistle test that meets the following conditions:

(i) Positioned at the identified watchman location, as identified and discussed at the On Track Safety Briefing.

(ii) Before any roadway worker fouls any tracks not protected with working limits

(iii) Performed with the whistle, not the air horn

(iv) Under similar noise conditions as the work will create.

The whistle test is to ensure that all affected

roadway workers are able to receive the notification of approaching movement. If any affected roadway worker cannot receive the notification the RWIC must immediately be notified, additional protection is to be provided, and a new On Track Safety Briefing is to be performed and documented.

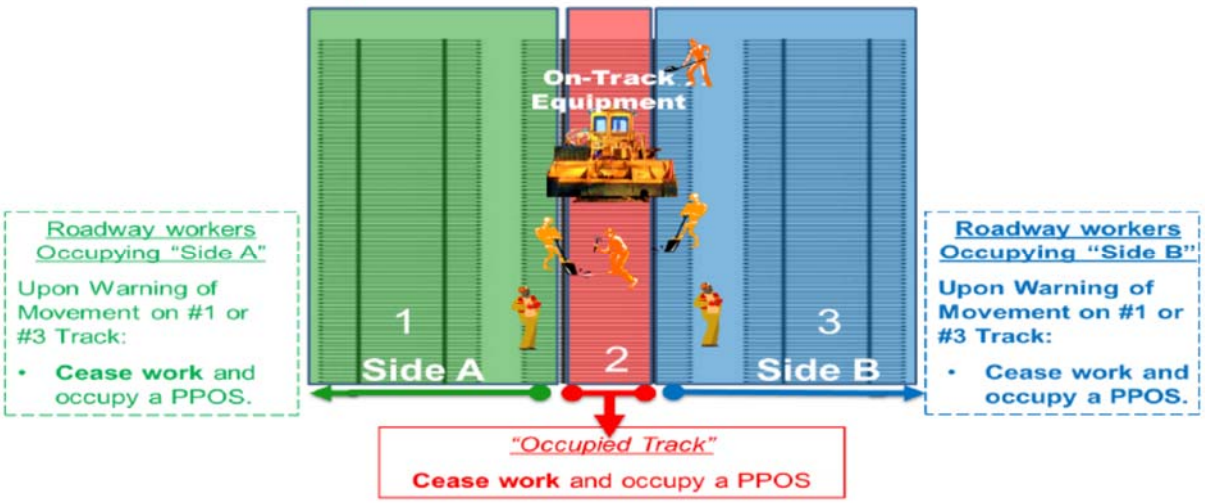
(9) When noisy machinery or equipment is in use or any noise that may interfere with detecting train approach warning, a tap man or other precautions must be taken.

(10) Gang watchmen and advance gang watchmen must have the equipment indicated on the following chart. This equipment must be in good working order and readily accessible. Warning whistles must be worn on the outside of clothing. The person responsible for on-track safety must also be equipped with a warning whistle.

## Watchman Equipment

| Visibility | Gang Watchman | Advanced Gang Watchmen |
|---|---|---|
| **Good** | Warning Whistle | Warning Whistle |
| | Orange Disc | Orange Disc |
| | | **Red Flag** |
| | Air Horn | Air Horn |
| | Watchman's Vest | Watchman's Vest |
| **-Night Work** | Warning Whistle | Warning Whistle |
| **-Tunnel** | Watchman's Wand | Watchman's Wand |
| | | **Two (2) Red Fusees** |
| | Air Horn | Air Horn |
| **-Poor Visibility** | Watchman's Vest | Watchman's Vest |

**Ex. 4** ***"Occupied Track"*** **on #2 Track, TAW on #1 and #3 Track:**

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**SPEED DISTANCE CHART**

| Miles Per Hour | Feet Per Second | Feet in 15 Seconds | Miles Per Hour | Feet Per Second | Feet in 15 Seconds | Miles Per Hour | Feet Per Second | Feet in 15 Second | Miles Per Hour | Feet Per Second | Feet in 15 Seconds |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 14.7 | 220 | 50 | 73.3 | 1100 | 90 | 132.0 | 1980 | 130 | 191 | 2860 |
| 15 | 22.0 | 330 | 55 | 80.7 | 1210 | 95 | 139.3 | 2090 | 135 | 198 | 2970 |
| 20 | 29.3 | 440 | 60 | 88.0 | 1320 | 100 | 146.7 | 2200 | 140 | 205 | 3080 |
| 25 | 36.7 | 550 | 65 | 95.3 | 1430 | 105 | 154.0 | 2310 | 145 | 213 | 3190 |
| 30 | 44.0 | 660 | 70 | 102.7 | 1540 | 110 | 161.3 | 2420 | 150 | 220 | 3300 |
| 35 | 51.3 | 770 | 75 | 110.0 | 1650 | 115 | 169.6 | 2530 | 155 | 227 | 3410 |
| 40 | 58.7 | 880 | 80 | 117.3 | 1760 | 120 | 176.0 | 2640 | 160 | 235 | 3520 |
| 45 | 66.0 | 990 | 85 | 124.7 | 1870 | 125 | 183.3 | 2750 | 170 | 250 | 3740 |

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# APPENDIX 4

AMTRAK

# RULES ALERT

**Rules Alert No. 2018-01, Tuesday, June 12, 2018**

## "60 MPH SLOW-BY" SPEED RESTRICTION
### Revision of NEC Special Instruction 175-S2

**DEPARTMENTS INVOLVED: Engineering & Transportation**

As an enhancement to safety, the existing "80 MPH Slow-By" restriction in NEC Special Instructions and Train Dispatcher's Manual requirements will change. Please review the following information closely so that you are aware of how the changes may affect your job.

**EFFECTIVE DATE: 12:01 AM, Monday, June 25th, 2018 by Bulletin Order.**

**WHAT IS CHANGING**

- The 80 MPH speed restriction will become 60 MPH.
- This speed restriction will apply not only when the TLM and Undercutter are working, but during larger 'continuous and planned track outages'.
    - The instruction will apply to larger-scale projects where a track will be under a continuous outage and adjacent track protection is needed due to the size, scale and number of employees on a project.
    - Nightly planned outages for surfacing, tie replacement, welding, etc., will generally not meet the criteria for a Slow-By restriction.
    - If there is question as to whether a Slow-By is needed, the RWIC must confer with the Division Engineer or appointed Engineering management representative.
- The restriction will generally be issued by Bulletin Order or Supplemental Bulletin Order, with at least 2 business days' notice from the Engineering department that the restriction is needed.
- When the restriction is issued by Bulletin Order or Form D, it will no longer be in effect (will be fulfilled) once the time limits of the restriction are exceeded. For example:
    - If a restriction is issued by Bulletin Order or Form D, effective between 7 am and 5 pm, the restriction will no longer be in effect at 5pm and will not require cancellation.

Note: Provisions made for issuing the restriction via TSRB (permitted only in Boston by SI 175-B1) will remain permissible at the required 60 MPH speed. Proper speed signs must be in place.

**THE NEW INSTRUCTION**

*Subject to change until the rule becomes effective, June 25th.*

**175-S2. "60 MPH SLOW-BY" SPEED RESTRICTION**

During a continuous and planned track outage, as deemed necessary by the Roadway Worker in Charge (RWIC) or appointed Engineering department representative, a "**60 MPH Slow-By**" restriction will be issued by Bulletin Order, or Form D when required. If issued by Form D, it will be addressed to all passenger trains operating on track(s) immediately adjacent (next to) to the out-of-service track(s) by line 13 in the following format:

*13. "Do not exceed 60 MPH on NYP Line No.2 track, between Ham and Fair, between 7:00 am and 5:00 pm. Speed signs will be displayed and restriction applies to the head end only."*

The Train Dispatcher must ensure the speed restriction is properly entered into the appropriate system for PTC enforcement during the prescribed times. The speed restriction applies only between the hours specified and once the limits of time stated in the Bulletin Order or Form D have been exceeded, the directive will no longer be in effect. The time period must begin and end on the hour or half hour. Speed signs must be erected at the start time and removed at the end time (or cancelled time) of the directive. Speed signs encountered outside the specified time limits should be complied with and reported to the dispatcher.

A "continuous and planned track outage" exists when the work is planned, track(s) are removed from service and it is necessary for an RWIC to go off-duty and transfer responsibility of the track(s) to another RWIC, or dispatcher, until it can be returned to service.

**Shane Tuffy, Director – Operating Practices, Wilmington, DE**

# APPENDIX 5

## ENGINEERING PRODUCTION DEPT
## PRODUCTION UNDERCUTTING
## SITE SPECIFIC SAFETY WORK PLAN

**Bowie (120.5) to Grove (112.4) 2 Track**
**Work being completed by the Undercutter Group**
**Supported by C&S, ET, and B&B Production**
**Continuous Outage March 9 through June 14 2018**

Safety Work Plans help guide employees and contractors working on a project, to plan, review, and set requirements for all associated safety, industrial hygiene, and environmental concerns. Management, supervision, and craft employees, as well as the Safety Department, will work together to establish Site and Job Specific Safety Work Plans. Various aspects/elements of the work must be evaluated to effectively answer the following questions: What do we want to do? How will we do it? What is the worst that can happen? How can we prevent it from happening?

The ultimate objective of Safety Work Plans is to identify existing or potential hazards and determine the steps and responsibilities necessary to eliminate, control, or reduce the hazard to an acceptable level. Safety Work Plans must be completed for major projects/processes, not for individual tasks or routine maintenance jobs that are best addressed by conducting Job Safety Analyses or conducting thorough job briefings.

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# ENGINEERING PRODUCTION DEPT
# PRODUCTION UNDERCUTTING
# SITE SPECIFIC SAFETY WORK PLAN

Safety Work Plans must be **posted** and **distributed** to all supervisors, foremen and contractors working in the project area. They will ensure that all affected employees are briefed on the contents and requirements of the plan, including changes/revisions.

We will complete Undercutting with Safety as our top Priority as each and every one of us wants to go home the same way we came in to work. Working together with great communication between all crafts always makes the job go smoother and safer. The Start to our job is our job/on track briefing and we will make sure that everyone attending the briefing will know how they are being protected and that they are excepted to work safe at all times.

We will have our initial job briefing at Bowie Interlocking on Friday 3/9/2018 at 9pm. The closest physical address is 8614 Chestnut Ave, Bowie, MD 20715. The upmost importance that we have to stay committed to at Amtrak is working safe and that starts from the moment we come to work. We have to keep mentoring our newer employees and making sure are older employees are not getting complacent keeping our minds on what the goals are for each day and making sure that everyone understands these daily goals and every employee knows what is expected of them each and every day and that is to work safe work as a team ask questions understand the safest way to do the task giving to you and follow this that way. Together we can work to make our jobs sites safer and our work habits safer.

All the crafts that will be involved in Undercutting need to stay in constant communication with each other as this is key to keep everyone informed and have a understanding of what the other craft is doing.

Let's all make sure we are putting safety first and looking out for each other every day. Any craft that comes out to work With Undercutting make it your first priority to introduce yourselves and have a conversation about each other goals for the Day and how you will accomplish these goals safely.

# ENGINEERING PRODUCTION DEPT
# PRODUCTION UNDERCUTTING
# SITE SPECIFIC SAFETY WORK PLAN

**Project Summary:**

| |
|---|
| **To Destress rail, Undercut, and Surface from Bowie to Grove. Our Goal is to improve ride quality as well as drainage in this section of track to avoid any future issues.** |

**Project Schedule: On Friday night March 9 2018, the rail equipment operators will brief at 9pm at Odenton M/W Base in preparation for a move into the out of service (Bowie to Grove 2 track) simultaneously, the briefing for all support will be held at Bowie Interlocking at 9pm.**

**Location of Work:**

Bowie Interlocking (120.5) through Grove Interlocking (112.4)

**Pre-job Inspection Notes:**

- Jobsite is to be kept neat, clean and free of hazards
- Limited access to job site and muddy conditions.

**Environmental:**

Has the Environmental Review form been approved? (Form NRPC 3136)

Yes ☐ No ☐ N/A ☒

Comments from the Environmental Review

- Hazardous Material Spills over 1 gallon must be immediately reported to CNOC

**Excavation:**

Is any type of excavation or digging required? Yes ☒ No ☐

- Utility companies must be notified 3 to 10 days before digging
  - Nationwide Number 811
  - DE - Miss Utility of Delmarva 800-282-8555
  - MD - Miss Utility of Delmarva 800-282-8555
- Amtrak's C&S Dept. must be notified

**Track Outages Required:** Yes ☒ No ☐

# ENGINEERING PRODUCTION DEPT
# PRODUCTION UNDERCUTTING
# SITE SPECIFIC SAFETY WORK PLAN

*Clean up – All Departments and/or Contractors are to remove unused materials, scrap materials, trash and debris before job is considered complete

**Equipment**

- **Track Dept**. Undercutter, MSF 40 Cars, Slinger, Brandt Truck, Dozer, Backhoe, Mini Excavator and Welding Truck
- All personnel must stay at least ten (10) feet away from heavy equipment unless approved by the operator
- Rented or contractor owned Hi-Rail equipment must be inspected

**Job Briefing**: ALL WORKERS AND VISITORS MUST REPORT TO AMTRAK'S "ROADWAY WORKER IN CHARGE" (RWIC) AND OBTAIN A JOB BRIEFING BEFORE ENTERING JOBSITE

The Job briefings will be given at Bowie Interlocking to start and will be given at the equipment as the job progresses. *any change in conditions, work, or manpower will require a new job briefing.
Job Briefing sheet must be signed and employee id number on same line by everyone. (NRPC 3044 front)
All contract workers are to have their "Amtrak Safety Training Card" visible.

**RWP Briefing**: The RWP Briefing will be *where the work will take place*. *An RWP Briefing is required whenever work will be performed on or near the tracks. It will take place at Bowie Interlocking to start and will be given at the equipment as the job progresses. An RWP briefing will be given prior to anyone entering the foul zone.
RWP Briefing sheet must be signed by everyone entering the foul zone. (NRPC 3044)

# ENGINEERING PRODUCTION DEPT
# PRODUCTION UNDERCUTTING
# SITE SPECIFIC SAFETY WORK PLAN

### Hazard Assessment Worksheet

Are any of the following hazards present at the job/workplace? Check those present and write in any additional hazards. **Note*: If yes is checked, you must identify measures for mitigating, controlling, or eliminating the hazard(s).**

| | Hazard | | | Describe Hazard |
|---|---|---|---|---|
| 1 | Eye and/or Face Hazards | Yes ☒ | No ☐ | Safety Glasses and /or goggles will be required at all times while on site. Face Shields for grinding, cutting, etc. will be worn as required. Burning glasses and welding hoods will be utilized when required. When welding proper protection screen is to be used if possible |
| 2 | Potential Injury to the Head | Yes ☒ | No ☐ | A class B Hard Hat is to be worn at all times while on site, to protect from falling debris and any other potential head injuries. |
| 3 | Foot injuries | Yes ☒ | No ☐ | Work Boots 6" high with protective toe (steel or Fiber) will be worn at all times. Be aware of debris that could cause twisting or tripping and puncture injuries. |
| 4 | Hand Injuries | Yes ☒ | No ☐ | Work Gloves will be provided. They should be worn whenever possible when handling material or working. |
| 5 | Temperature Extremes | Yes ☐ | No ☒ | |
| 6 | Impact Sources | Yes ☒ | No ☐ | Be aware of the possibility of falling objects whether tools, material or debris. Protection against trains will comply with all RWP rules and procedures. |
| 7 | Penetration Sources | Yes ☒ | No ☐ | Watch for sharp objects protruding from ties or steel, which could pierce, cut or impale your boot, clothing or skin. |
| 8 | Compression Sources | Yes ☐ | No ☐ | |
| 9 | Confined Space | Yes ☐ | No ☒ | |
| 10 | Fall Protection | Yes ☐ | No ☒ | |
| 11 | Bridge Work | Yes ☐ | No ☒ | |



# ENGINEERING PRODUCTION DEPT
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| | | | | |
|---|---|---|---|---|
| 12 | On-Track Protection | Yes ☒ | No ☐ | Comply with all RWP rules and procedures. |
| 13 | Electrical Source | Yes ☒ | No ☐ | Lock out tag out will be provided when necessary. The ET Department will provide protection as required. |
| 14 | Utility Lines | Yes ☒ | No ☐ | |
| 15 | Fire Sources | Yes ☐ | No ☒ | |
| 16 | Chemical Sources | Yes ☐ | No ☒ | |
| 17 | Respiratory Hazards | Yes ☒ | No ☐ | Utilize proper PPE if applicable. |
| 18 | Radiation Sources | Yes ☐ | No ☒ | |
| 19 | Noise Sources | Yes ☒ | No ☐ | Hearing protection is required as part of your PPE |
| 20 | Lighting | Yes ☒ | No ☐ | Portable lights will be on site. As a reminder please ensure that the mast of the light plant is lowered @ the end of each shift. |
| 21 | Communication | Yes ☒ | No ☐ | Two-way radios will be on the job site. A working land line (telephone) is in the CIH. |
| 22 | Waste Material | Yes ☒ | No ☐ | Old ties and rail will be removed and placed for pick up by a contracted scrap dealer. |
| 23 | Lifting Equipment | Yes ☐ | No ☒ | |

# APPENDIX 6

Fatality Analysis of Maintenance-of-way Employees and Signalmen

FAMES

June 15, 2018

***Dedication:***

*The FAMES Committee dedicates its efforts to all roadway workers who have lost their lives in the performance of duty and to the families, loved ones, and coworkers they have left behind.*

# Fatal Accidents

# Under

# Train Approach Warning

# (Watchman/Lookout)

***Mission Statement:***

*The Mission of the Fatality Analysis of Maintenance-of-way Employees and Signalmen (FAMES) Committee is to analyze all fatalities and selected related incidents in order to make recommendations to reduce the risk of future occurrences and eliminate fatalities to roadway workers.*

## Fatal Accidents Under Train Approach Warning (Watchman/Lookout)

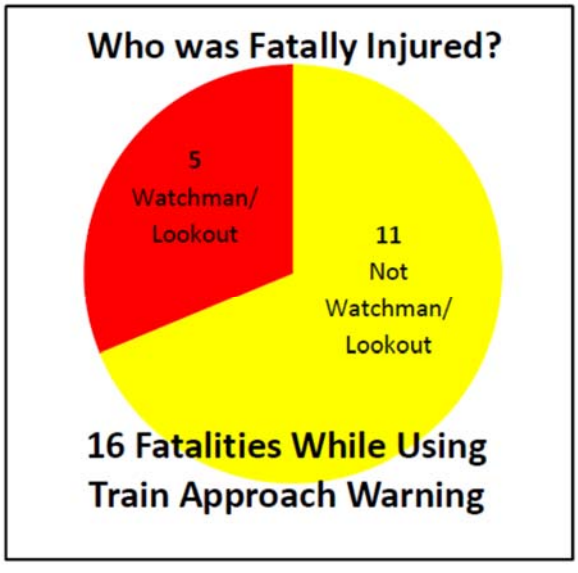
*Following the implementation of the Roadway Worker Protection (RWP) Rule in 1997, the FAMES Committee, using available FRA accident data, estimates that there have been a total of 52 fatal RWP accidents, in which 55 roadway workers have perished, as of February 1, 2017.*

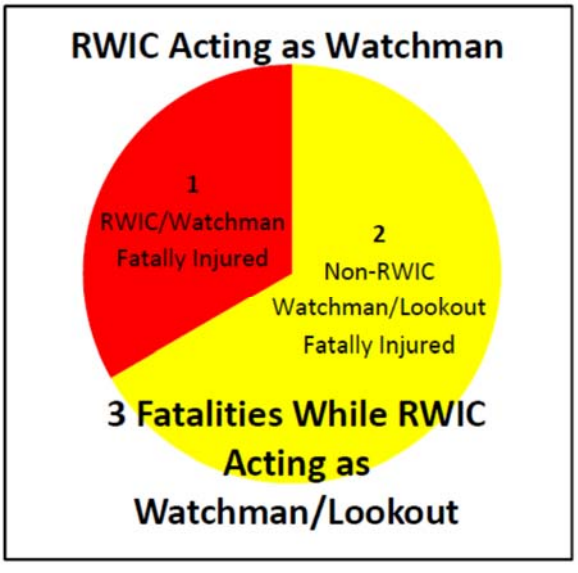
*Since the initial release of these recommendations, the FAMES Committee has determined that at least 5 additional "Train Approach Warning" (TAW) fatalities have occurred. These fatalities are still under analysis by the FAMES Committee but FAMES felt it was imperative to update and re-release these recommendations.*

One form of On-Track Safety for Roadway Work Groups is TAW provided by Watchmen/ Lookouts.

- TAW (often referred to as Watchman/Lookout) does not require trains to get authorization from the Roadway Worker in Charge (RWIC) to move on any track(s).
- When using TAW, a warning must be given in sufficient time to enable each Roadway Worker to occupy a previously arranged place of safety at least 15 seconds prior to a train passing the Roadway Worker's location.
- Watchmen/Lookouts must be trained, qualified, and properly equipped to provide warning to Roadway Workers of approaching trains or on-track equipment.

Of the 55 Roadway Worker fatalities analyzed by FAMES, 13 accidents resulting in 16 fatalities occurred where TAW was being used.

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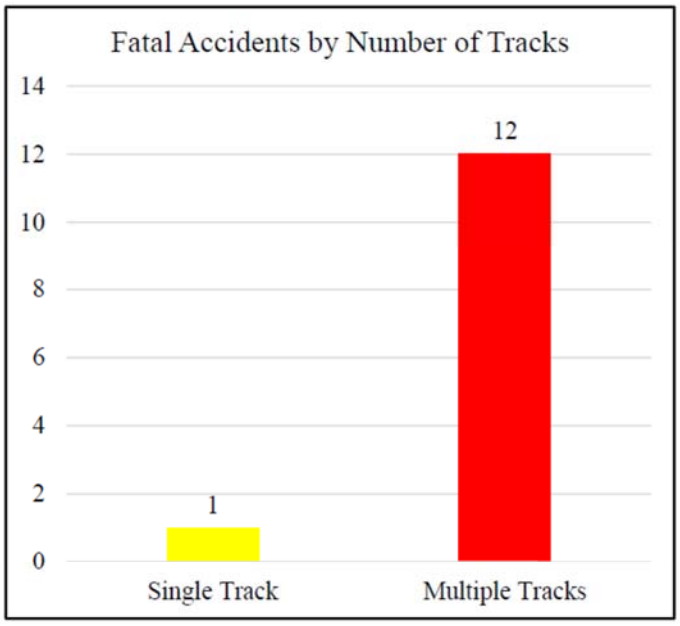


In 4 of the 13 fatal accidents, the Watchmen/Lookouts were not using prescribed warning devices, such as a whistle, air horn, white disk, red flag, lantern, or fusee. In one fatal accident under TAW, FAMES was unable to determine if the Watchman/Lookout was equipped with such devices. In the other 8 fatal accidents, the Watchmen/Lookouts were equipped with the prescribed warning devices.

**Findings:**

- **In 5 of the 13 fatal accidents,** ***the Watchman/Lookout was the fatally injured employee.***
- In 12 of the 13 fatal accidents, the accident occurred in multiple track territory.
- In 3 of the fatal accidents, the Watchman/Lookout was performing other duties or not focused solely on the detection of approaching trains when the fatality occurred.
- In 1 accident, the fatally injured Roadway Worker was not in a position that allowed him to receive the TAW.
- In 4 of the fatal accidents, trains were running against the anticipated flow of traffic.
- In 2 of the fatal accidents, two trains passed in close succession and a Roadway Worker was struck by the second train.

**Recommendations:**

- **Watchmen/Lookouts must focus their sole attention to the detection of approaching trains and equipment.**
- **Watchmen/Lookouts should position themselves outside the foul of any track whenever possible.** If a Watchman/Lookout must foul a track to provide protection for a work group, when the work group is notified to clear, the Watchman/Lookout must also clear.

> ***A predetermined place of safety must not be a live track.***

- Whenever environmental or working conditions change that could interfere with a Watchman/Lookout's ability to detect the approach of a train or provide appropriate warning, the Watchman/Lookout must immediately clear Roadway Workers from the tracks until proper protection can be established.
- Watchmen/Lookouts should take into consideration that passenger trains are generally quieter and faster than freight trains.
- **If the work requires oversight or supervision from an RWIC, the RWIC must not perform the duties of a Watchman/Lookout.**
- The RWIC must communicate precise instructions and expectations to Watchmen/ Lookouts during the on-track safety briefings and ensure that Watchmen/Lookouts have a clear understanding of their responsibilities and duties.
- During the on-track safety briefing, the RWIC must identify the method that the Watchman/Lookout will use to indicate when it is safe for Roadway Workers to re-enter the foul of the track.
- The RWIC should consider rotating Watchman/Lookout assignments periodically.
- Each Roadway Worker must maintain a position so he or she can receive a warning from a Watchman/Lookout at all times.
- Roadway Workers must not be in the foul of the track anytime they believe that TAW protection is insufficient or no longer appropriate. Roadway Workers have the right and responsibility to initiate a good faith challenge when necessary.

> ***Roadway workers have a responsibility to not only ensure their safety but that of their fellow workers.***

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*The FAMES Committee consists of safety representatives from a cross section of rail labor, railroad management, and federal regulators. FAMES is a continuous improvement process that relies on the candid sharing of available data and the views of its participants. To enable the process, FAMES explicitly refrains from making any findings regarding whether any past or present practice or protocol satisfies any legal duty or standard of care.*

*The views, opinions, and recommendations contained in this report are those of the FAMES Committee and do not necessarily represent the views, opinions, or recommendations of any specific railroad, labor organization, or governmental agency.*

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