



## Washington Metrorail Safety Commission

### Findings that require Metrorail to propose Corrective Action Plans (CAPs)

#### April 30, 2021

**Overview:** Following several recent safety events, the WMSC conducted risk-based inspections of WMATA rail yards. These inspections, along with the investigations into the safety events that prompted them, including an April 6, 2020 collision involving the Track Geometry Vehicle in the Branch Avenue Yard, a July 30, 2020 derailment in the Greenbelt Rail Yard (W-0054), a September 15, 2020 red signal overrun (W-0064), and a February 1, 2021 red signal overrun at the West Falls Church Rail Yard, have identified radio communications deficiencies and aspects of operations in which Metrorail is not complying with or does not have written procedures, which has led to uncoordinated vehicle and switch movement.

These inspections and investigations have led to the two findings described below. Pursuant to the WMSC Program Standard WMATA must propose corrective action plans to address these findings within 30 days.

#### Radio Communications in Rail Yards<sup>1</sup>

Multiple WMATA employees working in maintenance and operations positions informed the WMSC during inspections, investigations and other interactions that there are ongoing radio communications gaps in rail yards, including in the Greenbelt Rail Yard and West Falls Church Rail Yard. This was also identified at Greenbelt Rail Yard through safety event investigations, and confirmed through WMSC on-site inspections as recently as Friday, March 19, 2021. WMSC on-site inspections at West Falls Church Rail Yard on Friday, March 26, 2021 confirmed significant radio communications challenges in parts of the yard with unclear or inconsistent transmissions or a lack of radio coverage as described by employees and as noted in local safety committee meetings since at least February 2019. The WMSC's March 26 inspection also identified additional specific areas where radio communication does not work.

WMATA personnel have noted the need for improved radio quality for attempted transmissions between tower and shop or other personnel in multiple yards, including New Carrollton, and have identified poor radio transmissions at West Falls Church Yard going back to at least 2019. In fall 2020, WMATA said that some interim improvements were attempted in the West Falls Church Yard involving radio repeaters. These improvements occurred approximately a year and a half after the issues were formally raised through a local safety committee, and approximately a year after the departments that raised the issue were told that communications had checked and found no problems. The WMSC's March 26 inspection demonstrates that the problems persist, including a complete lack of communication at Signals N91-44 and K99-100 which are located between the Silver Line mainline tracks and the yard. Employees reported that this communication gap played a role in a red signal overrun on February 1, 2020.

The WMSC's March 19 inspection at Greenbelt Rail Yard identified seven areas with inconsistent radio coverage, two areas where train operators could not hear the interlocking operator, and two areas in the shop where WMSC radio checks failed.

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<sup>1</sup> These radio communications deficiencies are in addition to those that Metrorail has not yet completed addressing under open Corrective Action Plan (CAP) FTA-RED-16-004 related to accurate transmissions and repeat backs in compliance with Metrorail's radio protocols. Metrorail had aimed to complete this corrective action plan as long ago as 2017 and later committed to completion in January 2021, but has not yet instituted changes that consistently result in minimum compliance with WMATA's radio protocols,



A March 6, 2017 WMATA communications engineering report specific to the Greenbelt Yard described improved radio signal reception in some areas of the yard after the installation of digital repeaters, but only when using a Yard Ops 3 channel that the WMSC's recent inspections confirmed Metrorail personnel working in the yard on a regular basis and their respective operational departments are unaware of. The WMSC's inspections demonstrate that the systems in use by interlocking operators, train operators, maintenance workers and other personnel have largely the same gaps today that existed in 2017.

The WMSC appreciates that WMATA is in the process of building and then transitioning to an entirely new radio system in coming years. However, functioning radio communication or appropriate alternative mitigations and information sharing must be maintained in the interim, and the new system must ensure full coverage of yards and shops as well as all mainline track.

Clear and effective radio communication is central to Metrorail's safety policies, safety procedures and overall operations.

**WMSC Finding:** Metrorail is not maintaining a fully functioning radio communications system in all rail yards and shops.

**Minimum Corrective Action:** Metrorail must identify and resolve radio communications gaps in rail yards so that radio communication fully functions as intended within, to and from all yard and shop spaces where there is or may be rail vehicle traffic, and must actively record and resolve additional reported radio communications gaps, going forward. Until upgrades are complete, Metrorail must determine and implement interim steps to mitigate risk such as creating and maintaining an up-to-date map of areas with poor or no radio communication and specifying alternate means of communication or safety protections in those areas.

### **Uncoordinated Movement, Storage in “Dark Territory”**

WMSC safety event investigations, risk-based inspections and data reviews have identified safety gaps in Metrorail's operations in “dark territory” that exists in multiple WMATA rail yards. Dark territory is any portion of the tracks that is not controlled by signals. Such territory does not have electronic switches that can be remotely controlled by the interlocking operator in the yard tower. In dark territory there is no automated way for the interlocking operator to know what vehicles are present, what storage space is or is not available, or how the switches in that area are aligned. Equipment operators and others told the WMSC as part of inspections and investigations that vehicles are regularly moved in these areas without coordination with the interlocking operator, hand-thrown switches are regularly cranked in this area without coordination with the interlocking operator, and that vehicles are frequently stored without required spacing between them in order to squeeze more vehicles into this area.

Interlocking operators have an important safety role that requires full attention to detail, however WMSC inspections and investigations, such as a collision in the Alexandria Rail Yard on February 10, 2020 in which an entertainment video was found to be playing in the tower, demonstrate that additional training and managerial oversight is required.

Movement in dark territory without coordination creates a risk that a vehicle could strike a roadway worker, particularly given the significant amount of vehicle movement that occurs at night.

Metrorail Safety Rules and Procedures Handbook (MSRPH) SOP #35 “Hand Cranking, Blocking and Clamping of Switches” states that “Only the ROCC Supervisor or Yard Interlocking Operator may authorize hand cranking, blocking or clamping, or the removal of blocks or clamps” and that “All personnel are responsible for immediately reporting all cranking, blocking and clamping activities to the ROCC Supervisor or Yard Interlocking Operator.”



SOP #35 states that it applies whenever a lunar signal cannot be provided for passage over one or more track switches, which would include dark territory. However, the WMSC has found that this is not taking place for the hand-thrown switches in dark territory.

MSRPH rule 3.100 also states that "Class II vehicles shall be operated under Absolute Block (SOP #15) procedures at all times". This appears to be intended to cover mainline tracks only, but no other specific rules exist governing Class II vehicle movement in dark territory. MSRPH Rule 3.4 states that "The Interlocking Operator has full authority, jurisdiction and control over all activities in the yard." However, WMSC inspections and investigations demonstrate that Metrorail personnel are being directed to move Class II vehicles (Roadway Maintenance Machines) in this dark territory without an absolute block or any other coordination with the interlocking operator. This creates a risk of collision with other vehicles or with Metrorail personnel or contractors who might be moving through the yard.

The lack of communication and coordination with interlocking operators also means that they cannot fully complete their duties as directed in their training which include the tracking of Class II vehicles in the yard and the movement of those vehicles on a written log. Although some of these logs reviewed by the WMSC had some entries, they did not account for the locations of all vehicles in the yard as would be necessary to demonstrate full situational awareness of all yard movements. This could lead to an interlocking operator giving an equipment operator permission to enter dark territory where another vehicle is already present, or giving permission for a vehicle to move into an area where another vehicle is moving in the opposite direction. This lack of communication also prevents the interlocking operator from granting a proper absolute block because the interlocking operator does not know where the block should end.

Metrorail has many rules related to operations on mainline, but yard responsibilities and rules are not clearly delineated for or explained to equipment operators and interlocking operators for them to understand which rules apply in which part of the rail system.

Communicating all yard movement as required by the MSRPH also ensures accountability and identification of all safety events.

**WMSC Finding:** Metrorail does not have, provide training on, or otherwise follow specific rules related to rail vehicle and switch movement in non-signalized territory. Further, Metrorail provides no controls on or oversight of movement in dark territory.

**Minimum Corrective Action:** Metrorail must clearly specify safety-based rules and procedures governing vehicle and switch movement in dark (non-signalized) territory, including all aspects of coordination, cooperation, communication and movement. Metrorail must fully train employees on these rules and procedures. This includes safety procedures related to communication of switch position and switch movement requests and actions, vehicle location and movement requests and actions, absolute or other block requirements, personnel location and movement requests and actions, vehicle storage safety rules, and the responsibilities of interlocking operators to have full knowledge, awareness and control of all activities in the yard, whether on signalized or unsignalized territory.