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Inspector General

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May 4, 2017

Mr. Joseph Giuliatti  
President  
MTA Metro-North Railroad  
420 Lexington Avenue  
New York, NY 10170

**Re: Work Crews in Metro-North's  
Signals Division  
MTA/OIG # 2016-27**

Dear Mr. Giuliatti:

This letter serves as the Office of the Inspector General's final report on work crews in Metro-North's Signals Division that was previously presented to you in draft form on March 6, 2017.<sup>1</sup> In your April 21, 2017 response, you indicated that Metro-North would implement our recommendations. This final report incorporates your response.

In June 2016, the Office of the MTA Inspector General (OIG) completed its investigation of the Metro-North Signals Division (Signals). Our investigation found that four signal maintainers submitted false signal inspection reports. Metro-North management initiated disciplinary actions against the four signal maintainers, who either resigned rather than face discipline, or were terminated after the disciplinary process was completed.

During the course of our investigation, we also found that many Signals crews appeared to be idle for long periods of time during their tours-of-duty. Upon completion of our investigation OIG analyzed the workload of the Signals maintainers assigned to the New Haven and Harlem & Hudson subdivisions, respectively. We have had ongoing discussions with senior Metro-North management regarding this matter, and we are communicating our findings to you.

As discussed in more detail below, on average Signals crews were busy with work assignments approximately 24 percent of their time on-duty. These crews appeared to spend the remaining 76 percent waiting, on-standby to respond to a possible signal emergency. We also found that the amount of time that crews were actively engaged in work assignments varied from a low of seven percent to a high of 48 percent.

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<sup>1</sup> Formerly numbered #2016-05

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Clearly, ensuring that there is sufficient staffing to quickly respond to signal emergencies must be Metro-North's first priority. Yet, our work strongly suggests that there is also room for management to better align its staffing levels with actual workload requirements. We do note that Metro-North will need to undertake a more comprehensive analysis than presented herein, in order to ensure the appropriate alignment of staff to work.

As you know, Metro-North is in the process of replacing Signals' paper-based inspection system and its system for managing signal emergencies, which are very difficult to analyze, with a state-of-the-art electronic recordkeeping system, which will include asset management, inspection recordkeeping and a trouble-ticketing component.<sup>2</sup> The agency anticipates that the signal inspection recordkeeping component will be functional beginning in July 2017, and the trouble-ticketing component will be operational by the end of 2017. Metro-North should ensure that these components capture adequate information that can be utilized in conjunction with other tools such as its Automatic Vehicle Location Monitoring (AVLM) system,<sup>3</sup> to help management assess workload and staffing requirements. Further, after the inspection and trouble-ticket components become operational, we recommend that Metro-North conduct a thorough review of its staffing levels. This letter informs you of the results of our analysis.

### **Signals Organization**

The Harlem & Hudson and New Haven subdivisions are each headed by a supervisor and employ approximately 60 signal maintainers, inspectors and foremen. Together the two subdivisions employ approximately 120 signal personnel, and have a combined total of 39 crews. Crews are headquartered at one of 16 facilities which are dispersed along the Harlem & Hudson and New Haven lines. Most locations are staffed from 7:00 A.M to 11:00 P.M.<sup>4</sup> However, some locations are staffed 24 hours-a-day, 7 days a week.<sup>5</sup> Crews are usually comprised of two signal personnel, and are primarily responsible for responding to emergency conditions, and performing Federal Railroad Administration (FRA) required signal testing and inspections. (For more details on work assignments please see Attachment 1.)

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<sup>2</sup> The trouble-ticketing component will record emergency conditions and will help managers monitor responses to such conditions.

<sup>3</sup> AVLM is a means for automatically determining and transmitting the geographic location of a vehicle.

<sup>4</sup> There are two tours-of-duty during this time-frame. The "first-shift" begins at 7:00 A.M. and ends at 3:00 P.M.; the "second-shift" begins at 3:00 P.M. and ends at 11:00 P.M.

<sup>5</sup> The "third-shift" or overnight tour begins at 11:00 P.M. and ends at 7:00 A.M.

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### **Work Production and Emergency Stand-by**

To conduct our analysis, we interviewed Signals management, and analyzed inspection reports, payroll, work logs (when available), data from the system that Metro-North uses to manage emergency repairs and records generated by Metro-North's AVL system.<sup>6</sup> We analyzed the records pertaining to 12 of 39 Signals crews for either a one or a two month period in 2015, a total of 33 employees.<sup>7</sup>

We found that Signals crews were engaged in work assignments (testing and inspections, or emergency repairs), including travel to and from the work location on average approximately 24 percent of the time that crew members were on duty. In other words, using AVL system we observed a crew's assigned vehicle leave the crews' assigned headquarters, stop at a location adjacent to the right-of-way, apparently to work, and afterward return to their headquarters. We then matched the AVL records to inspection reports, emergency response and other records in order to ascertain the type of work being performed by the crew.

The amount of time that crews were actively engaged varied. One crew, the Croton Test Maintainers spent almost half of its time on-duty engaged in work assignments (see Table 1 below). In contrast, two of the crews (the New Haven second- and third-shift crews) spent less than 10 percent of their time on-duty engaged in work assignments. Another crew, the Springdale Switch Maintainers were engaged only approximately 16 percent of the time. Note that this crew frequently idled their Metro-North assigned vehicle for four consecutive hours or more in the parking area adjacent to their headquarters at Metro-North's Springdale facility, which indicates to us that the crew was idle as well.<sup>8</sup>

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<sup>6</sup> Most of the switch and signal devices that required inspection or maintenance were located miles from where signalmen are headquartered. Signalmen drive to these locations using Metro-North vehicles equipped with AVL.

<sup>7</sup> We analyzed nine crews for one month, either in April or June 2015. We analyzed three crews for the two month period May and June 2015.

<sup>8</sup> In May and June of 2015, the crew idled their Metro-North vehicle for four consecutive hours or more during 22 of the 43 eight-hour tours-of-duty that they completed.

**Table 1: Work Activity of Select Metro-North Signals Crews**

<u>Crew</u>	<u>Shift</u>	<u>Percent of On-Duty Time Engaged in</u>		
		<u>Emergencies</u>	<u>Inspections/ Other</u>	<u>All Work Assignments</u>
Croton Test Maintainers	Third	0%	48%	48%
Springdale Trouble-Truck Crew	Third	36%	0%	36%
Croton Switch Maintainers	Third	3%	31%	34%
Croton Trouble-Truck Crew	Third	24%	0%	24%
New Haven	First	7%	16%	23%
Poughkeepsie	Second	0%	23%	23%
Norwalk	Third	2%	19%	21%
Riverdale	First	1%	19%	20%
Springdale Test Maintainers	Third	0%	17%	17%
Springdale Switch Maintainers	Third	1%	15%	16%
New Haven	Second	4%	5%	9%
New Haven	Third	6%	1%	7%
<b>12 Crew Average</b>				<b>24%</b>

Source: OIG analysis of Metro-North electronic and hardcopy records for April, May and/or June 2015.

When we presented the results of our analysis to the supervisor in charge of the Harlem & Hudson subdivision he acknowledged that his crews have “a lot of downtime.” However, he told OIG that although Signals crews are given some regular inspection and testing assignments, their primary responsibility is to be ready to respond quickly when notified of a signal emergency. In his estimation signal maintainers were productively engaged approximately 20 percent of the time, and the rest of the time they were “on standby” waiting for a “trouble call.” He likened signal crew members to “firefighters,” who standby at their assigned post until they are dispatched to an emergency condition. He went on to stress that if a signal failure is not quickly resolved it could result in significant train delays, and inconvenience Metro-North’s riders.

Notwithstanding the need for an emergency response, the amount of time consumed in standby just for the 12 crews that we analyzed is sizable, approximately 4,700 person-hours for the months that we analyzed. On an annual basis, we estimate that the amount of time consumed in standby just for these 12 crews could equate to approximately 22 full-time positions. If extended beyond these 12 crews to the entire Signals division, the amount of time that signal maintainers are waiting to respond to an emergency would be even more substantial.

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Further, it appears that the crews that we analyzed rarely responded to signal emergencies during the time period that we reviewed. Other than the two third-shift “trouble-truck” crews, which are primarily responsible for responding to signal emergencies that occur anywhere in their respective subdivision during their time on-duty,<sup>9</sup> no signal crew spent more than seven percent of its time on-duty performing emergency repairs.

Ensuring that there is sufficient staffing to quickly respond to signal emergencies is obviously a valid concern and must be a top priority for management. Although our analysis is clearly not definitive, it does suggest that there is room for Metro-North to better align its staffing levels with actual workload requirements while also ensuring a robust emergency response capability.

In order for Metro-North to undertake this task, however, it must improve Signals’ poor recordkeeping systems. To start with, Signals’ paper-based system for recording inspections is not easily analyzable. Further, Signals’ system for recording emergencies is error prone. According to one supervisor the emergency call log was often erroneous and incomplete<sup>10</sup> Daily work logs required by Metro-North, which may have shed additional light on when and where emergency conditions occurred, were often unavailable, or when available, appeared incomplete.<sup>11</sup>

As noted above, Metro-North is in the process of acquiring an electronic recordkeeping system. In our June 2016 letter, we recommended that Metro-North ensure that the mobile devices that signal maintainers will use to record inspections are equipped with Geographic Position System (GPS) capabilities. Our recommendation was predicated on the knowledge that the GPS data from the hand-held devices could be utilized by Metro-North managers to help ensure accountability. In its response to our June 2016 letter, Metro-North agreed with our recommendation and went on to state that it “believes that GPS technology will bring multiple benefits to the Signal Division’s work.”

Indeed, the benefits of the GPS technology do not stop at helping Metro-North ensure accountability, but could also be a valuable tool to help management assess its staffing needs. For example, management could utilize GPS data to calculate, on a systematic basis, the amount of time that each crew is engaged in performing inspections. These results could be combined with data from the trouble-ticket component to calculate the total amount of time that each crew is engaged in work assignments.

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<sup>9</sup> Trouble-truck crews will receive the “first-call” in the event of an emergency, and are assigned few regular testing and inspection tasks.

<sup>10</sup> As an example, he told OIG that the name of the signal maintainer dispatched to the emergency was frequently incorrect.

<sup>11</sup> During our investigation, Metro-North re-instructed its employees that they are required to maintain a daily log of work activities, including trouble calls.

Metro-North must ensure that its electronic recordkeeping system captures when and where inspections and emergency conditions are occurring, the Metro-North personnel assigned, and how much time is consumed in performing the inspection or correcting the signal failure.

## RECOMMENDATIONS

OIG recommends that Metro-North Signals Division:

1. Ensure that the electronic recordkeeping system
  - a. Captures all emergency conditions that require a response;
  - b. Accurately captures the asset requiring repair, when and where the emergency condition occurred, names of signal personnel who responded, and how much time was consumed in correcting the signal failure; and
  - c. Produces data that can easily be analyzed for workload analysis and staffing purposes.
2. Ensure that electronic information on completed inspections is comprehensive and in a format that can easily be analyzed. The system should capture, at a minimum, the location of the inspection, the names of crew members performing the inspection and the amount of time consumed performing the work.
3. Evaluate the optimal level and deployment of its first- second- and third-shift signal personnel.

### Agency Response

In response to our draft letter report, you provided a response dated April 21, 2017, which stated that Metro-North “acknowledged [our] concerns and believe that the new electronic recordkeeping system, currently being tested in Signals, will help provide the tools needed to better assess workloads, and the staffing requirements needed to meet those workloads.”

With respect to the letter reports’ specific recommendations, Metro-North stated the following:

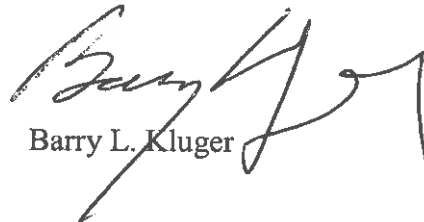
- Signals trouble-ticketing system will capture all emergency conditions that require a response.
- Inspection data captured by Metro-North’s electronic recordkeeping system will be coordinated with AVLM data to record the location of the inspection and the time and date of the start and completion of each inspection. In addition, comprehensive crew-member information will also be collected and linked to each inspection.

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- Metro-North management will perform a review in order to evaluate the optimal level and deployment of its first, second, and third-shift Signal personnel. The review is expected to start before the end of 2017.

As always, we appreciate the courtesy and cooperation afforded to us at all times by you and your staff. If you have any questions, please call me at (212) 878-0007 or Executive Deputy Inspector General Elizabeth Keating at (212) 878-0022.

Very truly yours,



Barry L. Kluger

## **Attachment 1: Additional Information Regarding the Work Assignments of Metro-North Signals Crews**

Most Harlem & Hudson and New Haven Signals crews are comprised of two signal personnel and are responsible for responding to emergency conditions that arise during their shift along the right-of-way in the vicinity of their crew quarters. These crews are also tasked with conducting FRA mandated switch inspections and/or signal inspections at highway/rail grade crossings, which must be performed every 30 days, and other tasks such as providing support to Metro-North's Track Division.

In addition, the following crews, one at each subdivision, are assigned to the third shift and are primarily responsible for testing and inspections or emergency response as specified below:

- “Test-maintainer” crews are primarily responsible for conducting FRA mandated testing of signal relays and signal cables. These crews are comprised of four or five signal personnel.
- Emergency response or “trouble-truck” crews are primarily responsible for responding to emergency conditions that occur anywhere in their respective subdivision. These crews, which are comprised of three signal personnel, will receive the “first-call” in the event of an emergency, and are assigned few regular testing and inspection tasks.
- “Switch-maintainer” crews are primarily responsible for conducting FRA mandated switch inspections. These crews are called in the event of an emergency if the trouble-truck crew is occupied with an emergency (that is, they are the “second-call”). The New Haven switch crew is comprised of two personnel; the Harlem & Hudson crew is comprised of four signal personnel.

We analyzed the work activities of all eight third-shift crews. These crews are headquartered at Springdale, New Haven and Norwalk on the New Haven line and Croton-Harmon (Croton) on the Harlem & Hudson line.

We also analyzed four of the 31 crews assigned to the first- and second-shifts, including the first- and second-shift crews headquartered at New Haven. On the Harlem & Hudson line we analyzed the first-shift crew headquartered at Riverdale and the second-shift crew headquartered at Poughkeepsie. It should be noted that we did not examine the work of Electronic Technicians who are responsible for “non-vital” portions of the signal system, such as bench testing relays, and perform some tasks in the yard. We also did not examine the work of the “H-gang” which is assigned specific repair and construction tasks.