Los Angeles County
Metropolitan Transportation
Authority
One Gateway Plaza
3rd Floor Board Room
Los Angeles, CA

File #: 2015-0920, **File Type:** Informational Report **Agenda Number:** 42.

REVISED
SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
SEPTEMBER 17, 2015

SUBJECT: SUMMARY AND RECOMMENDATIONS OF APTA PEER REVIEW REGARDING STOP SIGNAL VIOLATIONS

ACTION: RECEIVE AND FILE

RECOMMENDATION

RECEIVE AND FILE status report on the **summary and recommendations of the APTA Peer Review of Metro's Rail Operating Practices and Programs**, held in June 2015.

ISSUE

The APTA Peer Review was precipitated by a board-approved motion by Director Antonovich (Attachment C) that highlighted the 38 red light violations recorded for the Metro Rail system over the past 24 months. This motion called for independent review of Metro Rail operations and its safety culture. Additionally, the motion sought input from the Federal Transit Administration and Federal Railroad Administration to develop partnerships with the federal government to reduce Red Light violations systemwide and review policies and procedures to ensure industry best practices. ~~Metro Operations requested that~~ The American Public Transportation Association (APTA) conducted an independent peer review of Metro's Rail Operating Practices and Programs. The scope of APTA's peer review also included reviewing stop signal and red traffic signal incidents and recommending interventions to mitigate such incidents.

DISCUSSION

APTA assembled a panel of four experts from peer transit agencies to review Metro's bus and rail operating practices, with an emphasis on stop signal violations. The peer review panel reviewed the following seven areas:

1. Stop Signal/Red Traffic Signal Violations
2. Rules and Procedures
3. Program of Rules Compliance
4. Disciplinary Policies and Practices
5. Signal and Traffic Control System and New Technologies
6. Bus Control Center and New Technologies

7. Confidential Close Call Programs

As part of the peer review, the panel conducted the following activities:

- Review of policies and procedures for vehicle operations, training, and discipline
- Rides on Metro revenue vehicles, including cab rides on at-grade portions of rail alignments
- Visits to rail locations where stop signal violations have been reported
- Visits to rail and bus divisions
- Interviews with Rail and Bus Operators, and division managers
- Observations at Rail Operations Control Center and Bus Operations Control Center

The peer review was held over the course of four days, and led by Metro Operations staff. It concluded with a presentation of observations and findings by the APTA panel (Attachment A), and a report of findings (Attachment B).

Findings

The panel found that the Metro team works well together, with open dialogue between management and staff on safety issues. The panel also found that in some areas, Metro's policies, procedures, and actions are considered to be "best practices" for the industry.

Stop Signal/Red Traffic Signal Violations, with focus on street running segments with rail interlocking signals
The panel observed that on-time performance is a motivation for some Bus and Rail Operators' actions, ultimately resulting in stop signal/red traffic signal violations. The timetables and recovery times can be tight, especially on bus lines. However, the panel noted that there is little evidence to suggest that management is prioritizing on-time performance over safety.

Rules and Procedures, with Emphasis on Defensive Driving
The panel took no exception to the existing rail rules and procedures, but noted that bus has a more robust defensive driving module than rail. For both bus and rail, the panel noted inconsistencies between classroom training and field application on the rules and defensive driving modules. For example, while the classroom training teaches defensive driving practices, the panel observed Operators anticipating signal changes, which can result in Operators making abrupt stops or violating stop signals.

Program of Rules Compliance and Efficiency Testing
The panel identified several opportunities to improve this program, including additional Supervisory oversight activities, further developing the Efficiency Testing program, and repurposing the Mystery Rider program to transcend its current ADA focus. This could include having Mystery Riders on board to gauge whether there are abrupt stops due to anticipation, or other near-miss violations.

Disciplinary Policies and Practices
The panel considered the disciplinary policies of Metro, with regard to stop signal violations, to be a best industry practice for rail. Although the panel approved of the reclassification of red light violation incidents from "minor" rule infraction to "major" rule infraction, in the recent labor contract for both bus

and rail, they considered the six month rollback provision on bus to be a major risk for the agency. The panel also recommended developing a database to document violations for both bus and rail.

Signal and Traffic Control System and New Technology
The panel identified issues pertaining to design and placement of signals and signage for both rail vehicles and automobiles along the at-grade alignment. The panel recommended improvements to the signal design and signage to improve clarity. Suggested improvements include consistency in signal spacing, and additional Manual on Uniform Traffic Control Devices-approved signage to inform motorists.

Review Metro's Bus Control Center including new technology that could be implemented to mitigate violations
The panel found the Bus Control Center and Emergency Operations Center to be very impressive.

Explore Confidential Close Call Programs
The panel found this issue to be secondary to other issues previously identified. The panel suggested considering a pilot at select bus divisions.

NEXT STEPS

Staff has formed a Working Group comprised of labor and management to evaluate the recommendations and develop a plan for implementing them. This cross functional team will evaluate stop signal violation locations, assess existing conditions and make recommendations (e.g., education, engineering and enforcement) to further reduce stop signal violations.

Staff will conduct an outreach campaign at rail lines to educate employees about stop signal violations. Stop signal information will be posted at rail lines and updated monthly.

Staff will evaluate the current training program for Rail Operators. This evaluation will help identify opportunities to provide additional training and support for Rail Operators during their first two (2) years of rail service. Additionally, all front line Bus and Rail Employees, as well as Bus and Rail Supervisory staff, will participate in Metro Annual Safety Sustainment Training.

Staff will assess the feasibility of adding simulation-based training for Rail Operators and Rail Controllers to the existing training programs.

Staff will enhance the current efficiency test program. For example, structured efficiency tests will be developed to evaluate Rail Operator and Rail Controller compliance with signal rules in the field.

Staff will continue to maximize the effect of using Smart Drive video as a tool to change operators' behaviors and ultimately reduce red traffic light violations.

As of August 2, 2015, all Bus Operations Divisions began participating in the National Coalition for Safer Roads campaign, "Stop on Red." The campaign lasts for one week, and each day is dedicated to different safety aspects, useful statistics and information, and heartfelt messages from supporters.

In addition, Staff has created campaign banners featuring employees from each division.

Staff has certified Transit Operations Supervisors-Instruction to teach the National Safety Council's "Attitudinal Dynamics of Driving" course to Bus Operators. Operators identified as "high risk," based on Smart Drive events, and/or accident history, were the first to receive ongoing training.

Staff believes these actions will help reduce stop signal and red traffic violations even further.

The Inspector General is currently procuring for the independent consultant as directed by the motion (Attachment C).

ATTACHMENTS

Attachment A - APTA Review Closing Presentation
Attachment B - APTA Review Final Report
Attachment C - Motion on Rail Red Light Violations

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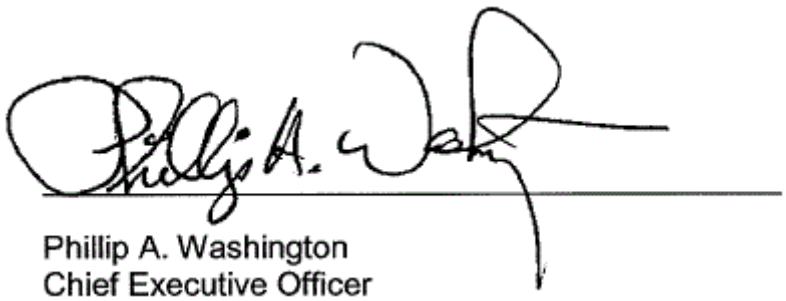
Reviewed by: James T. Gallagher, Chief Operations Officer



Phillip A. Washington
Chief Executive Officer

Attachment A

BUS & RAIL OPERATING PRACTICES REVIEW

A Peer Review Provided by the North American Transportation Services Association

June 9 - 12, 2015

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

Peer Review Panel Members

Svetlana Grechka – Senior Engineer
Regional Transportation District
Denver, CO

Rodney Hunter– Transportation Superintendent
Sacramento Regional Transit District
Sacramento, CA.

Dave Jensen, Training Supervisor
San Diego Trolley
San Diego, CA

Russell Stone
Dallas Area Rapid Transit
Dallas, TX

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Bus & Rail Operating Practices Review

- **Agenda**
  - Scope of Review
  - Peer Review Objectives
  - Methodology
  - Observations & Findings

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Scope of Review

The Peer Review Panel was convened at the request of Arthur Leahy, former CEO, to assist LACMTA in reviewing its Bus and Rail Operating Practices with an emphasis on Red Light Signal Violations.

The observations and findings provided through this peer review are offered as an industry resource to be considered by LACMTA in support of strengthening the organization's operating policies, plans, procedures and enhancing practices for both the bus and the rail systems.

Peer Review Objectives

1. Review red signal violations for both bus and rail with focus on street running with interlocking signals.
2. Review Metro's rules and procedures with emphasis on defensive driving.
3. Review Metro's program of rules compliance and efficiency testing.
4. Review Metro's disciplinary policies and practices on red light violations and compare to other agencies.
5. Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations.
6. Explore confidential close call programs.

Peer Review Methodology

APTA is pleased to use its NATSA resources to support this peer review at LACMTA. The APTA Peer Review process is well established as a valuable resource to the public transit industry.

Highly experienced and respected professionals voluntarily provide their time and support to address the scope required to help the transit system and the industry as a whole.

The panel conducted this peer review through documentation review, field observations and a series of briefings and interviews with LACMTA staff from all levels within the organization.

Bus & Rail Operating Practices Review

Observations & Findings

Observations & Findings

Opening Comments:

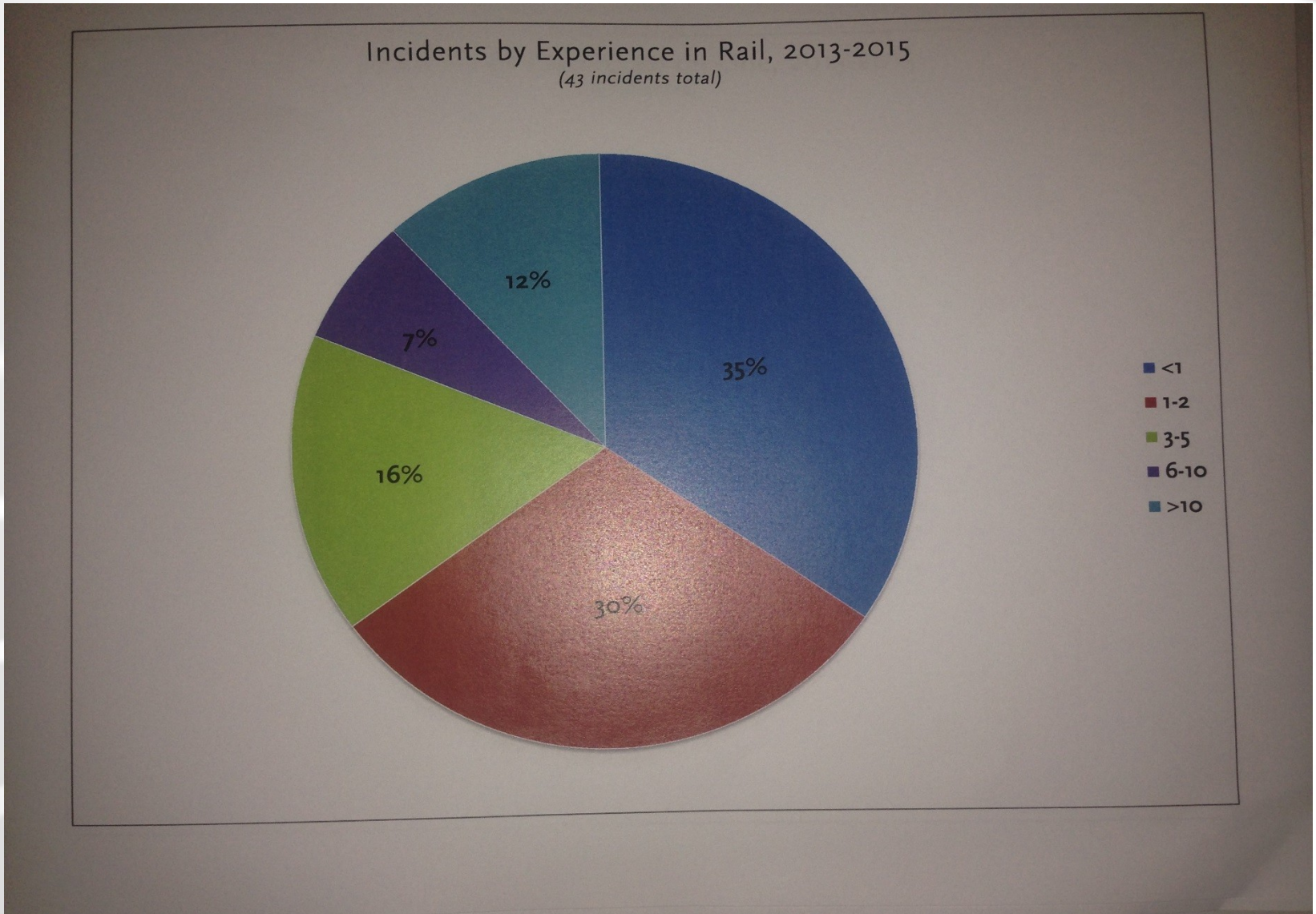
The peer review team found that LACMTA team works well together with open dialog between management and labor on safety issues. It is apparent that there is a well developed level of trust and openness shared by employees on the value of safety to the organization which has permeated all levels in the organization. The management system approaches and organizational structure follow industry practice in establishment of operating rules, procedures, training, discipline, and supervision. In some areas LACMTA has developed best practice and in other areas they have modeled best practice. In short, the peer review team found the conditions and programs were healthy to robust, which enabled the team to focus on areas where programs and practices could be enhanced or strengthened.

Observations & Findings

1. **Review red signal violations for both bus and rail with focus on street running with interlocking signals (Rail):**

- On the rail side there appears to be a disconnect within the levels of the organization on the cause for the spike in red signal violations.
  - -No real evidence that complacency is a factor
  - No observations that OTP pressure is being exerted
  - Signal placement could be a human factor issue
  - Signal display of red and green is being addressed
  - Integration of the interlocking and bar signals would eliminate the condition where proceed and stop are simultaneously displayed. Currently they operate independently of each other.
  - No written procedures found to guide operator on correct use of countdown timers.
  - Information on Blue Line LOS speeds vary between 32, 35, 36 and DOT recommendation of 33 – 35.
  - Training program documentation vs observed operation shows a gap exists. There could be a risk that line training is being taught in a fashion that the engineered system cannot support. Example is countdown and train coming short cycles.
  - Supervisors are not trained to identify operators “Hi-spotting” the signals to get over the road,

Effect of Operating Experience



Observations & Findings

1. **Review red signal violations for both bus and rail with focus on street running with interlocking signals (Bus):**

- On the bus side the motivation for running the signals are different from rail. The minimum recovery time is 6 minutes which can be lost if there are more than one wheelchair boardings, as example, which translates into loss of opportunity for restroom use, smoke break, or decompression time.
  - There is little evidence to suggest that management is prioritizing OTP over safety
  - Statistics showing an increase in bus red light running may be the result of installation of technology (Smartcam) so the management is seeing these events now when they couldn't prior to the installations
  - Smartcam is dependent upon other event tags to be found for a signal violation to be noticed. Not all signal violations are being discovered, so the overall red signal failure rate is likely much higher than currently reported.

Observations & Findings

2. Review Metro's rules and procedures with emphasis on defensive driving (Rail):

- The peer review team takes no exception to the rules and procedures being used
- The rules or procedures governing the countdown timers could not be located and is still an open item
- The rules and defensive driving modules are inconsistent for classroom training and not properly implemented in the field. Inconsistency between classroom training and field application were observed.

Observations & Findings

2. Review Metro's rules and procedures with emphasis on defensive driving (Bus):

- The Bus Defensive Driving modules are considered to be more robust than the peer review team saw in the rail program and this presents an opportunity for transference of program content to be able to improve both programs.
- As noted with the Rail program, the rules and defensive driving modules are inconsistent for classroom training and not properly enforced in the field. Inconsistency between classroom training and field application were observed.

Observations & Findings

3. Review Metro's program of rules compliance and efficiency testing (Rail):

- There is opportunity to improve the program with the development of additional Supervisory oversight activities, such as, using Smartcam clips for skill development instead of just discipline.
- The Efficiency Testing program needs to be more robust.
- The Mystery Rider program is primarily ADA focused but could easily be repurposed to include driver observations which could be used for indicators on what areas the Efficiency Testing program should target.

Observations & Findings

3. Review Metro's program of rules compliance and efficiency testing (Bus):

- There is opportunity to develop a supervisory oversight or formal efficiency testing program for bus operations and with the development of wireless capabilities of the TVX video system, a digital Efficiency Testing program could emerge.
- Currently there is little supervisory oversight programs being applied to verify that rules, procedures and training skills are being applied at an acceptable level.
- As with the Rail program, the Mystery Rider program is primarily ADA focused but could easily be repurposed to include driver observations which could be used for indicators on what areas the Efficiency Testing program should target.

Observations & Findings

4. Review Metro's disciplinary policies and practices on red light violations and compare to other agencies (Rail):

- The Rail disciplinary policies, such as successfully bargaining the issue of Red Light Violations from a minor to a major classification were highly regarded by the review team as was the strict suspension to termination progression of 3 – 15 – termination policy. The team considers this program to be at the level of best industry practice.

Observations & Findings

4. Review Metro's disciplinary policies and practices on red light violations and compare to other agencies (Bus):

- The Bus disciplinary policies, although successful bargaining raised the issue of Red Light Violations from a minor to a major classification, was considered by the team as an area where improvement can be made. It was considered to put the agency at too much risk due to the 6 month roll back provision. It is possible that an operator could continue to work with a major violation on his/her record without ever escalating the Level 1 discipline category as long as the events were spaced greater than 6 months apart.
- Both Bus and Rail could benefit from a database that documents the major violations in the same way that is being done with accidents.

Observations & Findings

5. **Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations (Rail):**

- **Line of Sight in the corridor does provide for interlocking signals for normal and reverse running. The signalling system does not provide an approach signal to the interlocking (home) signal which provides the operator no information as to what the aspect should be ahead. Because of space restrictions, these signals are not uniformly placed. Consistency of location and an advance approach indication would be helpful.**
- **Hot spot of the signal lens need to be aimed for the operators vision when berthed.**

Observations & Findings

5. **Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations (Rail):**

- **Consider separating the Normal and Reverse running signal heads as they are often set side by side and easily confused. (on approach we saw 3 reds and one green). Another option would be to make reverse running approach lit or use program view heads.**
- **Several locations were observed displaying proceed interlocking signal indications with a stop semaphore bar signal. These signals are not independent of each other. It is poor practice to display a stop signal and proceed signal at the same location.**

Observations & Findings

5. **Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations (Rail):**

- **Audible warnings for grade crossings were observed to not be consistant with the operating rule warning pattern established.**
- **Several locations were observed displaying proceed interlocking signal indications with a stop semaphore bar signal. These signals are not independent of each other. It is poor practice to display a stop signal and proceed signal at the same location.**

Observations & Findings

5. **Review Metro's Bus Control Center including new technology that could be implemented to mitigate violations (Bus):**

- **The Bus Control Center and the Emergency Operations Center were found to be very impressive. The controller's 3 display monitors, the colocation of the Sheriff's communication desk and the division of responsibility among the supervisors were excellent.**

Observations & Findings

Explore Confidential Close Call Programs (Rail):

- **Rail operations has several key conditions and operator competence issues to resolve as a more immediate and fundamental action before the team were to suggest that a Confidential Close Call Reporting system considered. Structure needs to be put place to support the program.**

Observations & Findings

Explore Confidential Close Call Programs (Bus):

- The Bus Divisions may be in a position to engage a Confidential Close Call pilot at a few divisions.

Addition Comments and Observations

Addition Comments and Observations

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Addition Comments and Observations

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Suggested Improvements

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Suggested Improvements

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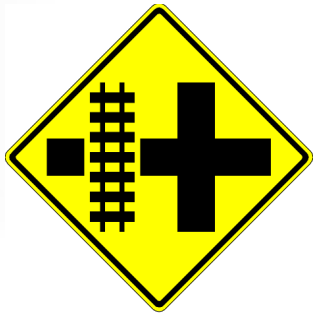
Suggested Improvements

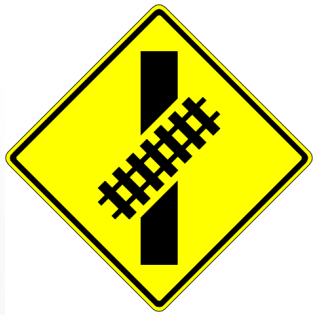
Suggested Improvements

- Advanced warning signs:
  - ✓ W10-2



W10-2
Parallel Railroad Crossing (crossroad)

  - ✓ W10-12



W10-12
Skewed Railroad Crossing

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Safety Treatments

- Alternating Black-out sign consists of:
  - ✓ W10-7 “Light Rail Transit Approaching”
  - ✓ R3-1 “No Right Turn” or R3-2 “No Left Turn”

Intersection Study

- Gathering data:
  - ✓ Field review
  - ✓ Surveillance cameras
- Focus of study – risky behavior
  - ✓ Vehicle collisions at crossings are rare
  - ✓ Risky behavior allows to assess the effectiveness of the traffic engineering treatments at crossings
    - The “before” and “after” analysis
      - ✓ effectiveness in decreasing the frequency of violations

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Questions?

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PEER REVIEW

FOR

Los Angeles County Metropolitan Transportation Authority

Los Angeles, California

JUNE 2015

A Service of the American Public Transportation Association
performed by the
North American Transit Services Association
a wholly owned subsidiary of APTA

REPORT

OF THE

NORTH AMERICAN TRANSIT SERVICES ASSOCIATION

PEER REVIEW PANEL

ON

BUS AND RAIL OPERATING PRACTICES

PROVIDED AT

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY

PANEL MEMBERS:

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Dave Jensen
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Michael P. Melaniphy, President

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INTRODUCTION

In March 2015, Mr. Arthur Leahy, Title at the Los Angeles County Metropolitan Transportation Authority (LACMTA) contacted the American Public Transportation Association (APTA) to request two peer reviews. The first regarding an appropriate zero tolerance policy for red light violation on LACMTA's bus and rail system. The second a review of rail system training programs, rules and procedures. It was determined that these two peer reviews could be combined into one peer review.

APTA, through its wholly owned subsidiary the North American Transit Services Association (NATSA) and through discussions between NATSA and LACMTA staff, determined the review would be conducted June 9 – 12, 2015.

A panel of industry peers was assembled comprised of individuals with senior and executive industry leadership skills from within the public transit sector to provide advice, guidance, benchmarking and best practices. The onsite peer review panel consisted of the following individuals:

SVETLANA GRECHKA
Senior Engineer
Regional Transportation District
Denver, CO

RODNEY HUNTER
Transportation Superintendent
Sacramento Regional Transit District
Sacramento, CA

DAVE JENSEN
Training Supervisor
San Diego Trolley
San Diego, CA

RUSSELL STONE
Assistant Vice President
Dallas Area Rapid Transit
Dallas, TX

WILLIAM P. GRIZARD
Acting Assistant Vice President Public Safety, Operations & Technical Services
American Public Transportation Association
Washington, DC

The panel convened in Los Angeles on June 9, 2015. Panel coordination and logistical support was provided by NATSA Staff Advisor Mr. William Grizard who coordinated panel

member input in the drafting of this peer review report. Ms. Diane Frazier, Interim Executive Officer, directed overall Agency participation and support for the Panel's work.

METHODOLOGY

The NATSA peer review process is well established as a valuable resource to the industry for assessing all aspects of transit operations and functions. The process begins much like a structured formal audit activity, but unlike a formal audit, peer review teams are comprised of highly experienced transit professionals who are selected on the basis of their subject matter knowledge. The purpose of using experienced subject matter professionals is to share methods, insight and experiences interactively with the requesting property. Through the utilization of on-site interviews of staff, review of relevant documents, and field inspections the review team engages the requesting property in an informal process of introspective examination and dialog on the areas of their concern.

It is through this exchange of ideas and experiences that the synergic process of the peer review earns value as each of the participants, on the review team and at the property, gain a better understanding of the complexities of transit functions and opportunities for improvement. It is truly an industry self-improvement process where all parties benefit.

The peer review concludes with a caucus among the peer review team to draw out the opinions of the team members and define a consensus summation of observations taken and their professional judgment as to where areas of improvement could be attained. This information is then presented to the requesting property in an exit conference and followed by a report, if so desired by the requesting property. There are no expectations expressed or implied that the requesting property take any action to satisfy the opinions of the peer review team or to engage any members of the team in any follow up activities as the requesting property may want to undertake as a result of the review. The information provided by the peer review team is consensus based and transferred to the requesting property as a "Pro Bono" work product which the transit property holds all rights to under the terms of the peer review agreement.

SCOPE OF THE REPORT

The review focused on the following objectives identified in the Letter of Request:

1. Review red signal violations for both bus and rail with focus on street running with interlocking signals.
2. Review Metro's rules and procedures with emphasis on defensive driving.
3. Review Metro's program of rules compliance and efficiency testing.
4. Review Metro's disciplinary policies and practices on red light violations and compare to other agencies.
5. Review Metro's Train Control Signal System to preclude red signal violations, including new technology that could be implemented to mitigate violations.
6. Explore confidential close call programs

OBSERVATIONS AND RECOMMENDATIONS

OPENING COMMENTS

The peer review team found that the LACMTA team works well together with open dialog between management and labor on safety issues. It is apparent that there is a well-developed level of trust and openness shared by employees on the value of safety to the organization which has permeated all levels in the organization. The management system approaches and organizational structure follow industry practice in establishment of operating rules, procedures, training, discipline, and supervision. In some areas LACMTA has developed best practices and in other areas they have modeled best practices. In short, the peer review team found the conditions and programs were healthy to robust, which enabled the team to focus on areas where programs and practices could be enhanced or strengthened.

OBSERVATIONS RAIL

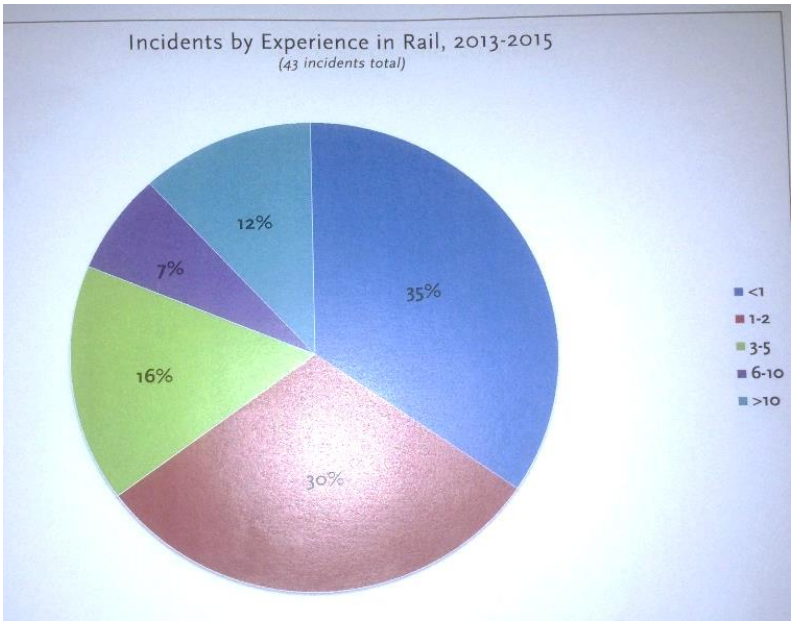
1. REVIEW RED SIGNAL VIOLATIONS FOR RAIL WITH FOCUS ON STREET RUNNING WITH INTERLOCKING SIGNALS:

- On the rail side, there appears to be a disconnect within the different levels of the organization on the cause for the spike in red signal violations.
  - Although the term "complacency" was offered as a causal factor, the peer review team did not find any real evidence that complacency is a factor.
  - No observations were made that indicated On Time Performance (OTP) pressure is being exerted over safety considerations.
  - The review team did find several observations where interlocking signals placement away from direct Line of Sight could impact the train operator performance and cause human error.
  - LACMTA does have an unusual interlocking signal display of red yellow and green aspects however, this situation is already actively being addressed by the agency.
  - It appears that both the traffic lights for motorists and the bar signals mounted on the mast arms are operated by local jurisdiction. The integration between traffic light/bar signs and interlocking signs could create a complex situation and cause human error.
  - Integration of the interlocking and bar signals would eliminate the condition where proceed and stop are simultaneously displayed. It appeared that currently, they operate independently of each other. The operators are being trained to observe the pedestrian crosswalk countdown timer to anticipate when the bar signal will change to a favorable signal.
  - No written procedures found to guide operator on correct use of pedestrian countdown timers. The only advice given was found in a training power point presentation.
  - There was a Training Power Point that indicated a "minimum speed of 30-32 MPH" operating through particular segment. This is a range rather than noting a minimum number. It's is suggested, however, that slowing should always be an

option to ensure safe passage through intersections and rail corridors. Instructing Train Operators not to go any slower than a particular speed may cause some reluctance to slow down when it may be warranted.

- Several sources of information on Blue Line LOS speeds vary between 32, 35, 36 and DOT recommendation of 33 – 35. The conflicting information needs to be standardized.
- Training program documentation vs observed operation shows a gap exists. There could be a risk that line training is being taught in a fashion that the engineering of the system cannot support. (Example is countdown and train coming short cycles).
- The Train Operators should be instructed that "Train Control" isn't sufficient to mitigate potential hazards and that "Situation Control" must be incorporated. In other words; it's not enough to be able to "handle the train", what must be done is to "handle the situation". This begins with recognition, anticipation and evasive action.
- Supervisors should be trained and encouraged to enforce the train handling skills obtained in training. Quality control should also be evaluated and deficiencies corrected. Rough Train Operation will result in on board injuries. Field supervision should incorporate smooth train handling as part of routine evaluations.
- Supervisors are not trained to observe for and identify operators "Hi-spotting" the signals to get over the road.
- Some of the signage for motorist is distorted by oxidization and should be replaced to ensure clarity. Some of the signage is misplaced and should be reviewed to ensure that they are in the most advantageous place to allow motorist the time to recognize and react to the information that is being displayed.

EFFECT OF OPERATING EXPERIENCE:



2. REVIEW METRO'S RULES AND PROCEDURES WITH EMPHASIS ON DEFENSIVE DRIVING (RAIL):

- The peer review team takes no exception to the rules and procedures being used.
- The rules or procedures governing the pedestrian countdown timers could not be located and is still an open item.
- The rules and defensive driving modules are inconsistent for classroom training and not properly implemented in the field. Inconsistency between classroom training and field application were observed.
- The agency could benefit from "real-life" rail simulator to supplement current training without affecting revenue service.

3. REVIEW METRO'S PROGRAM OF RULES COMPLIANCE AND EFFICIENCY TESTING (RAIL):

- There is opportunity to improve the program with the development of additional Supervisory oversight activities, such as, using *Smartcam* clips for skill development instead of just discipline.
- The Efficiency Testing program needs to be more robust.
- The Mystery Rider program is primarily ADA focused but could easily be repurposed to include driver observations which could be used for indicators on what areas the Efficiency Testing program should target.

4. REVIEW METRO'S DISCIPLINARY POLICIES AND PRACTICES ON RED LIGHT VIOLATIONS AND COMPARE TO OTHER AGENCIES (RAIL):

- The Rail disciplinary policies, such as successfully bargaining the issue of Red Light Violations from a minor to a major classification were highly regarded by the review team as was the strict suspension to termination progression of 3 – 15 – termination policy. The team considers this program to be at the level of best industry practice.

5. REVIEW METRO'S TRAIN CONTROL SIGNAL SYSTEM TO PRECLUDE RED SIGNAL VIOLATIONS, INCLUDING NEW TECHNOLOGY THAT COULD BE IMPLEMENTED TO MITIGATE VIOLATIONS:

- Line of Sight operations in the corridor does provide for interlocking signals for normal and reverse running. However, the signalling system does not provide an approach signal to the interlocking (home) signal, the result of which does not prepare the operator as to what the aspect they should be approaching. Because of space restrictions, these signals are not uniformly placed. Consistency of location and an advance approach indication would be helpful.
- The application in the field appeared to be, that the Train Operators operated with the assumption that a signal would be clear, or would change to a clear indication, when the train arrived at the signal. This thought process could lead to signal over-runs. Training the Train Operators to always expect a restrictive or stop indication, and to approach each signal prepared to stop, would be a benefit. The assumption must be, that the train will have to stop and then only proceed once it's observed that the signal is favourable.

Training operators to anticipate a signal aspects to change to something better than a stop indication should never be done. This type of operation challenges the safety aspect and ride quality of the entire operation.

- Hot spot of the signal lens needs to be aimed for the operator's vision when berthed at the platform.
- Consider separating the Normal (green over red) and Reverse running (red over green) signal heads as they are often set side by side and easily confused (one approach we observed 3 reds and one green). Another option would be to make reverse running approach lit or use program view heads.
- Several locations were observed displaying proceed interlocking signal indications with a stop semaphore bar signal. These signals are not independent of each other. It is poor practice to display a stop signal and proceed signal at the same location.
- Audible warnings for grade crossings were observed to not be consistent with the operating rule warning pattern established.

6. EXPLORE CONFIDENTIAL CLOSE CALL RAIL PROGRAMS.

Rail operations have several key conditions and operator competence issues to resolve as a more immediate and fundamental action before the team were to suggest that a Confidential Close Call Reporting system be considered. Structure still needs to be put place to support the program.

OBSERVATIONS BUS

1. REVIEW RED SIGNAL VIOLATIONS FOR BUS WITH FOCUS ON STREET RUNNING WITH INTERLOCKING SIGNALS:

- On the bus side, the motivation for running the signals are different from rail. The minimum recovery time is 6 minutes which can be lost if there are more than one wheelchair boardings, as example, which translates into loss of opportunity for restroom use, smoke break, or decompression time.
  - In response to Executive Management concerns, there is little evidence to suggest that management is prioritizing OTP over safety.
  - Statistics showing an increase in bus red light running may be the result of installation of technology (Smartcam) so the management is now seeing these events when they were "blind" to them prior to the installation.
  - For the Bus operations, Smartcam is dependent upon other event tags to be found for a signal violation to be noticed. Not all signal violations are being discovered, so the overall red signal failure rate is likely much higher than currently reported.
  - Operators reported not braking hard to stop at a signal to avoid "tagging" the video. The Operators indicated a desire not to "get caught" operating too aggressively which a hard brake and tagged video would reveal. Periodic, random checks of video would allow for a better deterrent.

2. REVIEW METRO'S RULES AND PROCEDURES WITH EMPHASIS ON DEFENSIVE DRIVING (BUS):

- The Bus Defensive Driving modules are considered to be more robust than the peer review team saw in the rail program and this presents an opportunity for transference of program content to be able to improve both programs.
- As noted with the Rail program, the rules and defensive driving modules are inconsistent for classroom training and not properly enforced in the field. Inconsistency between classroom training and field application were observed.

3. REVIEW METRO'S PROGRAM OF RULES COMPLIANCE AND EFFICIENCY TESTING (BUS):

- There is opportunity to develop a supervisory oversight or formal efficiency testing program for bus operations and with the development of wireless capabilities of the TVX video system, a digital Efficiency Testing program could emerge.
- Currently there is little supervisory oversight programs being applied to verify that rules, procedures and training skills are being applied at an acceptable level.
- As with the Rail program, the Mystery Rider program is primarily ADA focused but could easily be repurposed to include driver observations which could be used for indicators on what areas the Efficiency Testing program should target.

4. REVIEW METRO'S DISCIPLINARY POLICIES AND PRACTICES ON RED LIGHT VIOLATIONS AND COMPARE TO OTHER AGENCIES (BUS):

- The Bus disciplinary policies, although successful bargaining raised the issue of Red Light Violations from a minor to a major classification, was considered by the team as an area where improvement can be made. The review team believes that this issue is too lenient and put the agency at too much risk due to the 6 month roll back provision. It is possible that an operator could continue to work with a major violation on his/her record without ever escalating the Level 1 discipline category, as long as the events were spaced greater than 6 months apart.
- Both Bus and Rail could benefit from a database that documents the major violations in the same way that is being done with accidents.

5. REVIEW METRO'S BUS CONTROL CENTER INCLUDING NEW TECHNOLOGY THAT COULD BE IMPLEMENTED TO MITIGATE VIOLATIONS (BUS):

- The Bus Control Center and the Emergency Operations Center were found to be very impressive. The controller's 3 display monitors, the colocation of the Sheriff's communication desk and the division of responsibility among the supervisors were excellent.

6. EXPLORE CONFIDENTIAL CLOSE CALL BUS PROGRAMS.

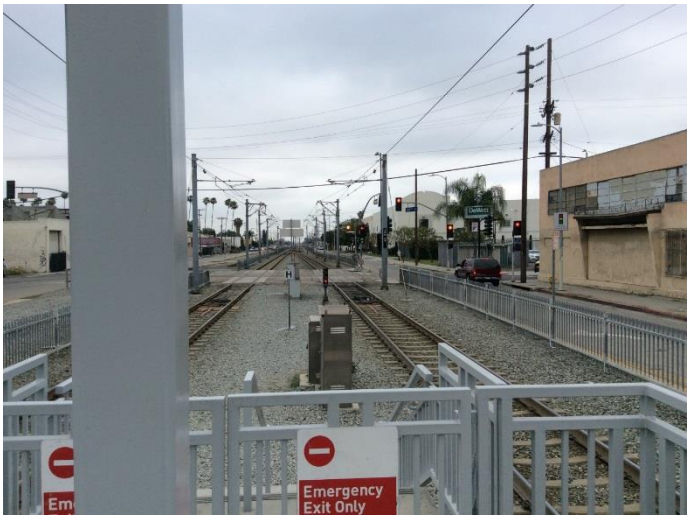
The Bus Divisions may be in a position to engage a Confidential Close Call pilot at a few divisions.

ADDITIONAL COMMENTS AND OBSERVATIONS

The following are examples of …..

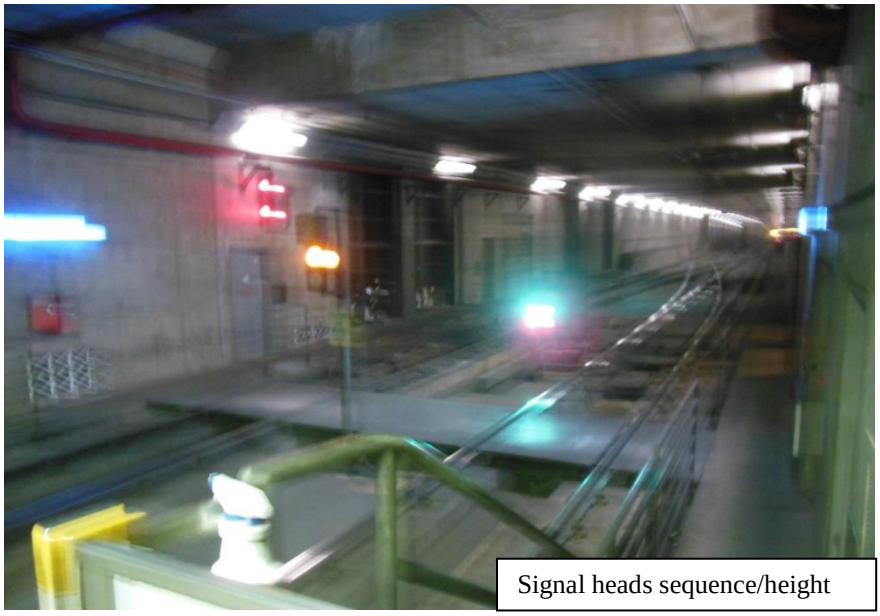
LIGHT TIMING DISCREPANCIES- Note the train occupying the intersection with a “Stop” indication illuminated

INCONSISTENT ASPECTS- Note “Stop” and “Proceed” indications illuminated simultaneously



Typical view of Interlocking signal from the station. This is clear and easily identifiable by the Train Operator. Much better design compared to other views where the reverse running singal is observed immediately next to the signal.

SUGGESTED IMPROVEMENTS:



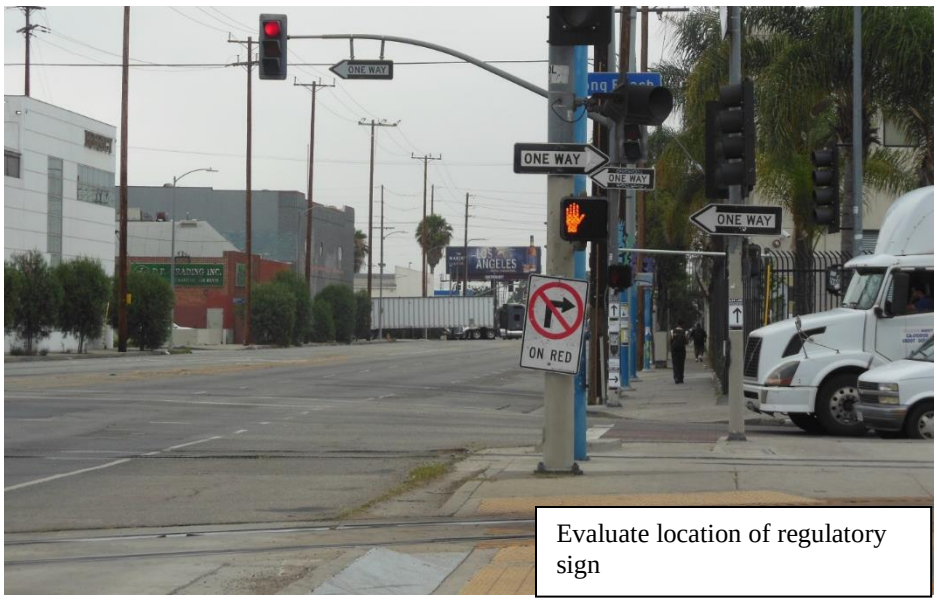
Signal heads sequence/height

Evaluate warrants for LT closure

Evaluate essential location and targeted audience of "No pedestrian crossing" sign

Rail the height of block signal

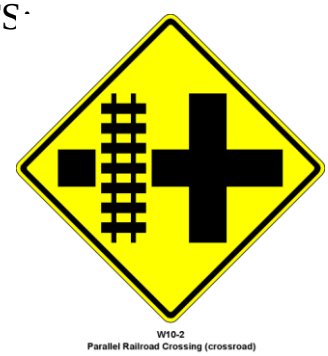
Evaluate the necessity to provide secondary access to platforms



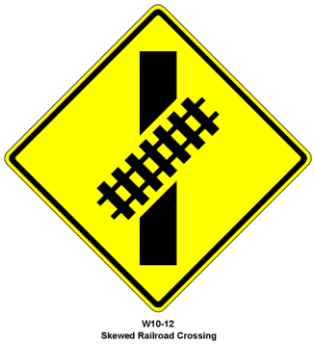
Evaluate location of regulatory sign

SUGGESTED IMPROVEMENTS

Install advance warning signs:



W10-2



W10-12

SAFETY TREATMENTS

Alternating Black-out Sign consists of:

W10-7 "Light Rail Transit Approaching

R3-1 "No Right Turn"
R3-2 "No Left Turn"

Intersection Study

- Gathering Data:
  - Field Review
  - Surveillance cameras
- Focus of study – risky behavior
  - Vehicle collisions at crossing are rare
  - Risky behavior allows to assess the effectiveness of the traffic engineering treatments at crossings
- The "before" and "after" analysis
  - Effectiveness in decreasing the frequency of violations

CONCLUDING REMARKS

The peer review panel wishes to express sincere appreciation for the professional support, assistance, and courtesy extended throughout the peer review process by the staff of LACMTA.

The observations and findings provided through this peer review are offered as an industry resource to be considered by Agency in support of strengthening the organization's strategic goals and enhancing practices in the operation and safety of bus and rail operations.

Appendix

Appendix A

Los Angeles County
Metropolitan Transportation Authority

One Gateway Plaza
Los Angeles, CA 90012-2952

Arthur T. Leahy
Chief Executive Officer
213.922.6888 Tel
213.922.7447 Fax
metro.net

March 27, 2015

Michael Melaniphy
President
American Public Transportation Association
1666 K Street, NW, 11th Floor
Washington, DC 20006

Dear Mr. Melaniphy,

As a follow up to my letter on March 10, 2015 (attached) regarding our request for the APTA Peer Review, I would like to inform you of additional efforts initiated by our Board of Directors. On February 26, 2015 our Board directed Metro's Inspector General to conduct research regarding an appropriate zero -tolerance policy for red light violations on our bus and rail system. Work thus far from the Inspector General's office includes the following:

- Requested appropriate Metro departments to provide applicable policies and procedures related to the subject matter.
- Reviewed applicable policies including the collective bargaining agreements, bus and rail operator rulebook, standard operating procedures and rules, and our system safety program plan.
- Interviewed and met with Metro officials.
- Researched internet related safety and red light violation policies.
- Contacted other transit agencies for their red light violation policies (WMATA, Maryland Transit Administration, SFMTA, and CTA).

Please let us know if you have any questions related to this additional information. We look to working with the panel on this review.

Sincerely,

Arthur T. Leahy

Arthur T. Leahy
Chief Executive Officer

Cc: Board of Directors
W.P. Grizard, Acting Director, Security, Operations & Technical Services, APTA
Kathy Waters, V.P., Member Services, APTA

Los Angeles County
Metropolitan Transportation Authority

Metro

One Gateway Plaza
Los Angeles, CA 90012-2952

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metro.net

March 10, 2015

Michael Melaniphy
President
American Public Transportation Association
1666 K Street, NW, 11th Floor
Washington, DC 20006

Dear Mr. Melaniphy,

The Los Angeles County Metropolitan Transportation Authority (LACMTA) requests the assistance of the American Public Transportation Association (APTA), in conducting a peer review of our rail operating practices and program. Specifically, I am looking to APTA to send us experts in the field of rail operations, technology and safety who can provide a review of our rail system training programs, rules and procedures, service management and control and disciplinary policies and oversight programs, such as rules compliance and efficiency testing for frontline employees. The panel should also evaluate our system to evaluate whether our practices are consistent with current safety standards and principles used by light rail transit systems in North America.

I would appreciate APTA's assistance in convening a Peer Review panel this spring in order to provide our agency and our patrons with an independent outside review of our rail safety programs and practices. Diane Frazier, Interim Executive Officer of Transportation, will serve as your main point of contact. She may be reached at 213-922-1101 or at Frazierd@metro.net.

Thank you in advance for your consideration in convening this Peer Review panel. I look forward to hearing from you regarding this request.

Sincerely,

Arthur T. Leahy

Arthur T. Leahy
Chief Executive Officer

cc: Board of Directors
W.P. Grizard, Acting Director, Security, Operations& Technical Services, APTA
Kathy Waters, V.P., Member Services, APTA

Appendix B

LACMTA Bus and Rail Ops Peer Review
Schedule

Tuesday, June 9, 2015

7:45 am—8:00 am	Walk from Millennium Biltmore Hotel to Pershing Square Station	Transportation Planning Manager IV, Tamar Fuhrer & Joanna Chan Rail Operations ELTP
8:04 am—8:08 am	Train ride: Red/Purple Line Pershing Square Station to Union Station	Transportation Planning Manager IV, Tamar Fuhrer & Joanna Chan Rail Operations ELTP
8:30 am—8:45 am	13th Floor Heritage - Introductions	Team
8:30 am—8:45 am	Opening Remarks	Interim Chief Operations Officer, Robert Holland
9:00 am—9:30 am	Scope of the peer review, overview of Metro's rail network, stop signal violations, and discipline	Executive Officer Rail Operations, Patrick Preusser
9:30 am—9:45 am	Overview of Corporate Safety Department & interface with Rail Operations	Director of Corporate Safety, Eddie Boghossian
9:45 am—10:00 am	Overview of Metro's Signal & Train Control System	Director Wayside Systems, Remi Omotayo
10:00 am—10:15 am	Overview of Metro's SCADA System	Supervising Engineer, Chuck Weissman
10:15 am—10:30 am	Break	
10:30 am—11:00 am	Overview of Metro's Training Program for Rail Operators, Controllers, and Supervisors	Rail Instruction Manager, Linda Leone
11:00 am—11:30 am	Overview of Metro's Rules and Procedures pertaining to signals	Service Operations Superintendent Robert Castanon
11:30 am—12:00 pm	Overview of Metro's Efficiency Testing Program	Service Operations Superintendent Patricia Alexander
12:00 pm—12:45 pm	Lunch	
12:45 pm—1:00 pm	Walk to Gold Line Union Station	
1:04 pm—1:26 pm	Observe Train Operators: Gold Line Union Station to Atlantic Station	Transportation Operations Manager, Michael Moore APTA Panel A
1:16 pm—1:38 pm	Observe Train Operators: Gold Line Union Station to Atlantic Station	Transportation Operations Manager, Michael Moore APTA Panel B
1:45 pm—2:30 pm	Drive alignment to Division 21	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
2:30 pm—4:00 pm	Interview employees	APTA Panel
4:00 pm—4:15 pm	Drive to Metro Headquarters	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
4:15 pm—5:00 pm	13th Floor Heritage - Exit briefing	Team

Wednesday, June 10, 2015

7:45 am—8:00 am	Walk from Millennium Biltmore Hotel to Pershing Square Station	Assistant Operations Manager, Michael Alexander
8:03 am—8:05 am	Train ride: Purple Line Pershing Square Station to 7th Street Metro Center Station	Assistant Operations Manager, Michael Alexander APTA Panel
8:09 am—8:21 am	Observe Train Operators: Blue Line 7th Street Metro Center Station to Washington Station	Assistant Operations Manager, Michael Alexander APTA Panel A
8:13 am—8:25 am	Train ride: Blue Line 7th Street Metro Center Station to Washington Station	Assistant Operations Manager, Michael Alexander APTA Panel B
8:30 am—9:30 am	Drive alignment to Division 11	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
09:30 am—11:30 am	Interview employees	APTA Panel
11:30 am—12:00 pm	Working Lunch	Team
12:00 pm—12:30 pm	Drive to Rail Operations Control Center	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
12:30 pm—12:45 pm	Overview of Control Center	Chol Kim
12:45 pm—1:45 pm	Observe Rail Controllers	APTA Panel
1:45 pm—2:00 pm		Break
2:00 pm—3:30 pm	Interview employees	APTA Panel
3:30 pm—4:30 pm	Drive to Metro Headquarters	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu
4:30 pm—5:00 pm	13th Floor Heritage - Exit Briefing	APTA Panel

Thursday, June 11, 2015

8:00 am—5:00 pm		Bus
8:14 am—8:18 am	Travel on Red/Purple Line to Metro Headquarters	APTA Panel
8:30 am—8:40 am	13th Floor Heritage - Introductions	Interim Executive Director, Transportation, Diane A. Frazier
8:40 am—9:30 am	Overview of Metro's Program-Policies, Rules, Standard Operating Procedures Pertaining to Safety Compliance	Interim Executive Director, Transportation, Diane A. Frazier
	Metro's Red Traffic Signal Violations Data	Interim Executive Director, Transportation, Diane A. Frazier
	Metro's Training Program for Bus Operators	Service Operations Superintendent, Daniel Dzyacky
	Metro Safety Systems-Resources	Service Operations Superintendent, Stephen Rank
	Discipline -Metro/S.M.A.R.T. Union Collective Bargaining Agreement	Interim Service Operations Superintendent, Maria Reynolds
	Incentive Rewards, Recognition and Programs	Interim Executive Director, Transportation, Diane A. Frazier

Thursday, June 11, 2015

9:30 am—12:00 pm	Peer interviews	
Lunch		
1:15 pm—1:30 pm	Drive to Division 3201	Bus Operations Team
1:30 pm—2:30 pm	Interview employees	APTA Panel
2:30 pm—2:45 pm	Drive to Metro Headquarters	Bus Operations Team
2:45 pm—3:00 pm	Break	
3:00 pm—4:30 pm	Peer interviews	APTA Panel
4:30 pm—5:00 pm	13th Floor Heritage - Exit Briefing	APTA Panel

Friday, June 12, 2015

8:00 am—10:00 am	13th Floor Heritage - Prepare closeout presentation	APTA Panel
10:00 am—10:15 am	Break	
10:15 am—11:45 am	Closeout presentation	APTA Panel
11:45 am—12:00 pm	Closing remarks	Chief Executive Officer, Phil Washington
Box Lunch		
12:00 pm—1:00 pm	Drive to airport	Transportation Planning Manager IV, Tamar Fuhrer & Stephen Tu

Document List

February 26, 2015

MTA Board of Directors

MOTION

Directors Antonovich and Solis

MTA Rail Red Light Violations and Agency Safety Culture

The MTA Board has made a firm commitment on behalf of its riders to create a strong safety culture for the agency, recognizing that rail accidents in particular are often tragic final outcomes of an agency that has not provided a strong focus on fostering and maintaining a strong safety culture for the agency over a period of time.

The MTA board approved a motion in October 2011 (Attachment A) that sought a full review of the safety culture of the agency, with the understanding that this effort would become even more necessary as our rail system simultaneously ages (the Blue Line turns 25 years old this year) and expands (starting with extensions to Azusa and Santa Monica opening in early 2016).

To maintain a strong safety culture, the Board expects the CEO and staff to monitor continuously the safety of our system and work with the Board to develop policies and seek resources to resolve problems and trends that undermine the safe operation of our system.

Antithetical to a strong safety culture is the presence of Red Light violations on our rail system. We have seen in this County the tragedy that ensues from a Red Light violation, most notably in 2008 when a Metrolink engineer (operator) ran a Red Light and crashed his train into a freight train, killing 25 people and injuring over 100 more.

MTA has had its share of close calls in recent years with Red Light violations. An August 2012 accident that involved a Blue Line train striking an MTA bus was the result of a Red Light violation by the train. Only luck prevented the train from hitting the bus more squarely, which could have caused more injuries—in number and in severity—than the 31 minor injuries reported.

While Metrolink staff took immediate action to drive down red light violations and adopt a zero tolerance approach to such violations in the wake of the Chatsworth crash, the MTA's response after the Blue Line crash has been ineffective.

Over the past 24 months, the MTA has had 38 Red Light violations recorded. Even more alarming is that over the past two years, the Blue Line—which has the most complex operational environment of all our light rail lines due to the adjacent freight tracks within the right-of-way and number of at-grade crossings—has had 24 Red Light violations —an average of one per month. The Gold Line has had seven (7) in that same timeframe. Both the MTA rail system as a whole and the Blue Line have experienced more Red Light violations in the past 12 months (20 and 14, respectively) than the prior 12 months (18 and 10), suggesting a trend that is getting worse, not better.

A couple of Red Light violations over the course of the year could be the result of isolated operator error – however, 38 Red Light violations over 2 years signal a failure of effective management and focus by the CEO to identify and resolve this breakdown in MTA's safety culture and operational safety with appropriate urgency.

WE THEREFORE MOVE that the MTA Board directs the Inspector General to

A. conduct research into an appropriate zero-tolerance policy for Red Light violations for our Rail and Bus system and return to the Board in March with such a policy for consideration; and

B. retain an independent consultant with expertise in safety culture and rail operational safety to conduct a review of MTA rail operations and management, including a root cause analysis of the Red Light violations committed over the past two years.

   - This review must at minimum include an analysis of safety culture, infrastructure issues, operator training, use of efficiency testing, and effectiveness of discipline for both operator and management.

WE FURTHER MOVE that the MTA Board sends a letter to the Administrators of the Federal Transit Administration and Federal Railroad Administration to seek partnerships in working with the MTA to reduce Red Light violations system-wide and to evaluate current policies, conditions, and management structures for flaws and deviations from industry best practices.

LACMTA
Full Board Meeting
October 27, 2011

MOTION
Director Antonovich

The top priority for the MTA Board of Directors has been and must always be exercising vigilant oversight of MTA's bus and rail system to ensure the safety and integrity of our transit system for every one of our 38 million monthly passengers. As a Board we must remain committed to this priority and continually strive to improve the safety culture at MTA in a proactive manner, rather than in a reactive manner after suffering a major accident, such as the one on June 22, 2009, that claimed 9 lives and injured 76 other passengers on the Washington Metropolitan Area Transit Authority (WMATA) subway system.

In its report on this tragic accident, the National Transportation Safety Board (NTSB) determined that this accident was not just the result of operator error or faulty equipment, but rather served as "an example of a 'quintessential organizational accident.'" In short, the NTSB directly called into question WMATA's safety culture and the effectiveness of the WMATA Board's oversight responsibility for system and organizational safety.

ANTONOVICH MOTION
October 27, 2011

To ensure that we as a Board are fulfilling our oversight duties to the fullest extent possible, it is vital that we have a thorough review of our safety culture.

Our capabilities will be tested in the coming months and years as we aggressively expand our bus and rail system with the opening of the Expo Line to Culver City, followed by the Crenshaw/LAX Line, the Regional Connector, and extensions on Gold Line, Expo Line, Orange Line and Purple Line to Azusa, Santa Monica, Chatsworth and West Los Angeles, respectively. Should the America Fast Forward plan come to fruition, additional rail and bus projects will be implemented at a faster pace than expected.

Simultaneously, we will be faced with maintaining an aging rail system—with the Blue Line (opened in 1990), Red Line (1993-2000) and Gold Line (2003) reaching significant milestones in maturity—and fleet that will require rehabilitation.

ANTONOVICH MOTION
October 27, 2011

Fostering a vigorous and effective culture of safety at MTA requires the Board to take overt leadership to influence the behavior and expectations of all MTA employees to place safety above other competing priorities. According to Dr. James Reason, a leading scholar in this field, a **safety culture** consists of five elements – an **informed culture**, a **reporting culture**, a **learning culture**, a **flexible culture** and a **just culture:**

- An **informed culture** is one in which the organization collects and analyzes relevant data while also disseminating safety information throughout the organization.
- A **reporting culture** encourages employees to report safety concerns with confidentiality and without blame.
- A **learning culture** allows an organization to learn from mistakes and continually react to feedback and new information.
- A **flexible culture** provides for an organization and employees that can adapt in an effective manner to changing demands on the system.
- A **just culture** allows for maximum avoidance of major errors by differentiating consequences resulting from unintentional and intentional unsafe acts.

ANTONOVICH MOTION
October 27, 2011

To accomplish a healthy safety culture, it is incumbent upon the Board to take a very clear leadership role in its actions and its policies, from simple steps of renaming its committees and updating its bylaws to ensconce safety as our primary organizational value, to conducting a thorough review of our safety culture and maintaining frequent and meaningful oversight over safety at our meetings.

We can accomplish this goal by:

- reviewing thoroughly the safety culture of our organization
- clarifying our organizational values to support safety as our primary value
- reorganizing our committee structure to highlight and centralize the Board's fundamental responsibility to oversee safety
- developing frequent and comprehensive reports and agenda items regarding system safety for Board discussion and action

ANTONOVICH MOTION
October 27, 2011

I THEREFORE MOVE that the MTA Board takes the following actions:

(1) Direct the CEO to provide a literature review to the Board within 60 days on the topic of "safety culture". In particular, this review should clearly delineate the Board's role and responsibilities to ensure and support fully a strong safety culture at MTA, as well as provide a review of the WMATA accident and subsequent NTSB report.

(2) Direct the CEO to procure an outside, independent consultant to conduct and complete within 90 days a full review of MTA's safety culture, including specific evaluations of the five elements (informed culture, reporting culture, learning culture, flexible culture and just culture) that compose a safety culture, and present an evaluation of and recommendations on how to improve MTA's safety culture to the Board and CEO. The CEO shall follow-up within 30 days with a presentation to the Board on additional recommendations and a plan to implement all recommendations to enhance MTA's safety culture.

(3) Change the name of the "**Operations Committee**" to the "**System Safety and Operations Committee**" to indicate clearly the Board's central role of providing oversight of MTA's safety culture and system safety.

ANTONOVICH MOTION
October 27, 2011

(4) Expand the scope of the "**System Safety and Operations Committee**" to include:

a. Monthly reports on corporate safety and system safety

b. All items related to safety audits, safety upgrades, and overall system safety issues

c. All recommendations on how to improve the safety culture at MTA

(5) Direct the CEO to report to the full Board on a quarterly basis on MTA's system safety and provide recommendations on how the Board can better support the agency's safety culture and the safety of our transit system.

(6) Direct the CEO to provide a review of our agency bylaws and any associated statement of organizational values and Board responsibilities to determine if these documents promote safety as the Board's top oversight role and the agency's top priority.

(7) Direct the CEO to include as part of each board report and agenda item a separate, clearly marked section that provides an assessment of the item's impact on system safety and safety culture.

ATTACHMENT B

Red Signal Rail Violations

2011-2014

By Line and By Year

Violations	2011	2012	2013	2014	TOTAL
BLUE	6	17	14	15	**52**
EXPO		3	2	2	**7**
GOLD	2	7	6	2	**17**
RED	3	1	0	2	**6**
GREEN	0	1	0	0	**1**
TOTAL	**11**	**29**	**22**	**21**	**83**

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2010	1,557,188	04/01/10 03:56PM	Red Signal Main Line	Blue	1
2011	2,017,188	05/19/11 06:22PM	Red Signal Main Line	Blue	6
	2,039,899	07/30/11 11:46PM	Red Signal Main Line	Blue	
	2,045,615	08/17/11 06:09PM	Red Signal Main Line	Blue	
	2,069,338	10/05/11 05:33PM	Red Signal Main Line	Blue	
	2,091,421	11/08/11 06:30PM	Red Signal Main Line	Blue	
	2,112,199	12/12/11 11:23AM	Red Signal Main Line	Blue	
2012	2,125,506	01/11/12 04:26PM	Red Signal Main Line	Blue	17
	2,129,632	01/22/12 02:02PM	Red Signal Main Line	Blue	
	2,157,774	03/25/12 04:00PM	Red Signal Main Line	Blue	
	2,164,329	04/10/12 09:08AM	Red Signal Main Line	Blue	
	2,165,974	04/14/12 10:57AM	Red Signal Main Line	Blue	
	2,166,637	04/15/12 12:06PM	Red Signal Main Line	Blue	
	2,168,568	04/20/12 08:04AM	Red Signal Main Line	Blue	
	2,171,024	04/25/12 02:17PM	Red Signal Main Line	Blue	
	2,173,215	04/30/12 05:28PM	Red Signal Main Line	Blue	
	2,211,635	08/01/12 02:10PM	Red Signal Main Line	Blue	
	2,231,724	09/20/12 08:59AM	Red Signal Main Line	Blue	
	2,233,437	09/25/12 05:23PM	Red Signal Main Line	Blue	
	2,234,726	09/28/12 02:36PM	Red Signal Main Line	Blue	
	2,234,850	09/29/12 04:40AM	Red Signal Main Line	Blue	
	2,246,790	10/30/12 11:42AM	Red Signal Main Line	Blue	
	2,255,639	11/22/12 11:43PM	Red Signal Main Line	Blue	
	2,264,396	12/19/12 07:02AM	Red Signal Main Line	Blue	

2013	2,272,162	01/10/13	10:09AM	Red Signal Main Line	Blue	14
	2,274,173	01/16/13	06:18AM	Red Signal Main Line	Blue	
	2,275,609	01/19/13	12:48PM	Red Signal Main Line	Blue	
	2,277,118	01/23/13	05:16PM	Red Signal Main Line	Blue	
	2,282,987	02/07/13	07:15PM	Red Signal Main Line	Blue	
	2,315,916	05/06/13	04:55AM	Red Signal Main Line	Blue	
	2,323,007	05/26/13	01:35PM	Red Signal Main Line	Blue	
	2,323,855	05/29/13	08:16AM	Red Signal Main Line	Blue	
	2,339,316	07/01/13	04:54PM	Red Signal Main Line	Blue	
	2,361,294	09/05/13	08:27PM	Red Signal Main Line	Blue	
	2,365,773	09/18/13	05:48AM	Red Signal Main Line	Blue	
	2,401,617	12/22/13	04:01PM	Red Signal Main Line	Blue	
	2,403,841	12/29/13	10:55PM	Red Signal Main Line	Blue	
	2,403,850	12/29/13	10:58PM	Red Signal Main Line	Blue	
2014	2,404,777	01/01/14	11:26AM	Red Signal Main Line	Blue	15
	2,410,959	01/18/14	02:53PM	Red Signal Main Line	Blue	
	2,414,720	01/28/14	06:17PM	Red Signal Main Line	Blue	
	2,420,442	02/13/14	09:15AM	Red Signal Main Line	Blue	
	2,423,811	02/21/14	11:24PM	Red Signal Main Line	Blue	
	2,432,120	03/15/14	07:46PM	Red Signal Main Line	Blue	
	2,441,775	04/10/14	12:13AM	Red Signal Main Line	Blue	
	2,448,879	04/29/14	09:38PM	Red Signal Main Line	Blue	
	2,463,230	06/01/14	10:46AM	Red Signal Main Line	Blue	
	2,483,041	07/16/14	06:04PM	Red Signal Main Line	Blue	
	2,491,647	08/08/14	12:43AM	Red Signal Main Line	Blue	
	2,516,211	10/08/14	05:41PM	Red Signal Main Line	Blue	
	2,521,078	10/20/14	10:04PM	Red Signal Main Line	Blue	
	2,529,442	11/11/14	05:00PM	Red Signal Main Line	Blue	
	2,538,388	12/06/14	10:58AM	Red Signal Main Line	Blue	

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

*Revenue Service began in April 2012; last 2 stations opened in June 2012

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2012*	2,215,210	08/09/12 09:53AM	Red Signal Main Line	Expo	3
	2,240,624	10/15/12 01:07AM	Red Signal Main Line	Expo	
	2,261,247	12/10/12 06:53AM	Red Signal Main Line	Expo	
2013	2,300,472	03/20/13 10:20AM	Red Signal Main Line	Expo	2
	2,314,918	05/02/13 01:07PM	Red Signal Main Line	Expo	
2014	2,485,925	07/24/14 02:59PM	Red Signal Main Line	Expo	2
	2,529,698	11/12/14 11:37AM	Red Signal Main Line	Expo	

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2010	1,564,934	04/07/10 09:02AM	Red Signal Mail Line	Gold	5
	1,569,362	04/09/10 05:00PM	Red Signal Mail Line	Gold	
	1,858,418	10/26/10 01:12PM	Red Signal Mail Line	Gold	
	1,898,560	11/23/10 02:17PM	Red Signal Mail Line	Gold	
	1,915,798	12/07/10 11:10AM	Red Signal Mail Line	Gold	
2011	2,044,819	08/15/11 09:42PM	Red Signal Mail Line	Gold	2
	2,097,746	11/17/11 06:24PM	Red Signal Mail Line	Gold	
2012	2,127,739	01/17/12 05:22PM	Red Signal Mail Line	Gold	7
	2,157,374	03/23/12 02:44PM	Red Signal Mail Line	Gold	
	2,186,553	05/31/12 03:35PM	Red Signal Mail Line	Gold	
	2,214,401	08/07/12 07:19PM	Red Signal Mail Line	Gold	
	2,223,343	08/29/12 07:20PM	Red Signal Mail Line	Gold	
	2,229,760	09/15/12 01:06PM	Red Signal Mail Line	Gold	
	2,258,871	12/02/12 03:38PM	Red Signal Mail Line	Gold	
2013	2,269,508	01/03/13 08:26AM	Red Signal Mail Line	Gold	6
	2,292,899	03/02/13 12:41PM	Red Signal Main Line	Gold	
	2,309,505	04/16/13 09:48AM	Red Signal Main Line	Gold	
	2,309,928	04/17/13 12:00PM	Red Signal Main Line	Gold	
	2,353,512	08/16/13 07:56AM	Red Signal Main Line	Gold	
	2,356,106	08/23/13 06:30AM	Red Signal Main Line	Gold	
2014	2,473,300	06/26/14 08:10PM	Red Signal Main Line	Gold	2
	2,516,848	10/10/14 03:30AM	Red Signal Main Line	Gold	

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2011	2,015,566	05/14/11 05:49PM	Red Signal Main Line	Red	3
	2,068,527	10/03/11 04:37PM	Red Signal Main Line	Red	
	2,079,395	10/18/11 01:10PM	Red Signal Main Line	Red	
2012	2,222,537	08/27/12 10:17PM	Red Signal Main Line	Red	1
2013	--	--	Red Signal Main Line	Red	0
2014	2,514,606	10/05/14 05:54AM	Red Signal Main Line	Red	2
	2,521,475	10/21/14 07:35PM	Red Signal Main Line	Red	

Red Signal Rule Violations
02/01/2010 Through 12/31/2014

YEAR	Incident ID	Incident Date	Type	Line	TOTAL #
2010	*1,783,651*	*09/03/10 05:38AM*	*Red Signal Yard*	*Green*	0
2011	*2,020,074*	*05/29/11 03:05PM*	*Red Signal Yard*	*Green*	0
2012	**2,265,270**	**12/21/12 07:42AM**	**Red Signal Main Line**	**Green**	1
2013	--	--			0
2014	--	--			0

Red Signal Rule Violations
2011

Incident ID	Incident Date	Type	Line	TOTAL #
2,017,188	05/19/11 06:22PM	Red Signal Main Line	Blue	6
2,039,899	07/30/11 11:46PM			
2,045,615	08/17/11 06:09PM			
2,069,338	10/05/11 05:33PM			
2,091,421	11/08/11 06:30PM			
2,112,199	12/12/11 11:23AM			
2,044,819	08/15/11 09:42PM		Gold	2
2,097,746	11/17/11 06:24PM			
2,015,566	05/14/11 05:49PM		Red	3
2,068,527	10/03/11 04:37PM			
2,079,395	10/18/11 01:10PM			

2011 TOTAL	11

Red Signal Rule Violations
2012

Incident ID	Incident Date	Type	Line	TOTAL #
2,125,506	01/11/12 04:26PM	Red Signal Main Line	Blue	17
2,129,632	01/22/12 02:02PM			
2,157,774	03/25/12 04:00PM			
2,164,329	04/10/12 09:08AM			
2,165,974	04/14/12 10:57AM			
2,166,637	04/15/12 12:06PM			
2,168,568	04/20/12 08:04AM			
2,171,024	04/25/12 02:17PM			
2,173,215	04/30/12 05:28PM			
2,211,635	08/01/12 02:10PM			
2,231,724	09/20/12 08:59AM			
2,233,437	09/25/12 05:23PM			
2,234,726	09/28/12 02:36PM			
2,234,850	09/29/12 04:40AM			
2,246,790	10/30/12 11:42AM			
2,255,639	11/22/12 11:43PM			
2,264,396	12/19/12 07:02AM			
2,215,210	08/09/12 09:53AM		Expo	3
2,240,624	10/15/12 01:07AM			
2,261,247	12/10/12 06:53AM			
2,127,739	01/17/12 05:22PM		Gold	7
2,157,374	03/23/12 02:44PM			
2,186,553	05/31/12 03:35PM			
2,214,401	08/07/12 07:19PM			
2,223,343	08/29/12 07:20PM			
2,229,760	09/15/12 01:06PM			
2,258,871	12/02/12 03:38PM			
2,222,537	08/27/12 10:17PM		Red	1
2,265,270	12/21/12 07:42AM		Green	1

2012 TOTAL	29

Red Signal Rule Violations
2013

Incident ID	Incident Date	Type	Line	TOTAL #
2,272,162	01/10/13 10:09AM	Red Signal Main Line	Blue	14
2,274,173	01/16/13 06:18AM			
2,275,609	01/19/13 12:48PM			
2,277,118	01/23/13 05:16PM			
2,282,987	02/07/13 07:15PM			
2,315,916	05/06/13 04:55AM			
2,323,007	05/26/13 01:35PM			
2,323,855	05/29/13 08:16AM			
2,339,316	07/01/13 04:54PM			
2,361,294	09/05/13 08:27PM			
2,365,773	09/18/13 05:48AM			
2,401,617	12/22/13 04:01PM			
2,403,841	12/29/13 10:55PM			
2,403,850	12/29/13 10:58PM			
2,300,472	03/20/13 10:20AM		Expo	2
2,314,918	05/02/13 01:07PM			
2,269,508	01/03/13 08:26AM		Gold	6
2,292,899	03/02/13 12:41PM			
2,309,505	04/16/13 09:48AM			
2,309,928	04/17/13 12:00PM			
2,353,512	08/16/13 07:56AM			
2,356,106	08/23/13 06:30AM			
--	--		Red	0

2013 TOTAL	22

Red Signal Rule Violations
2014

Incident ID	Incident Date	Type	Line	TOTAL #
2,404,777	01/01/14 11:26AM	Red Signal Main Line	Blue	15
2,410,959	01/18/14 02:53PM			
2,414,720	01/28/14 06:17PM			
2,420,442	02/13/14 09:15AM			
2,423,811	02/21/14 11:24PM			
2,432,120	03/15/14 07:46PM			
2,441,775	04/10/14 12:13AM			
2,448,879	04/29/14 09:38PM			
2,463,230	06/01/14 10:46AM			
2,483,041	07/16/14 06:04PM			
2,491,647	08/08/14 12:43AM			
2,516,211	10/08/14 05:41PM			
2,521,078	10/20/14 10:04PM			
2,529,442	11/11/14 05:00PM			
2,538,388	12/06/14 10:58AM			
2,485,925	07/24/14 02:59PM		Expo	2
2,529,698	11/12/14 11:37AM			
2,473,300	06/26/14 08:10PM		Gold	2
2,516,848	10/10/14 03:30AM			
2,514,606	10/05/14 05:54AM		Red	2
2,521,475	10/21/14 07:35PM			

2014 TOTAL	21