

# EXTREME WEATHER EMERGENCY TECHNICAL REVIEW



**A Peer Review Provided by the North  
American Transportation Services  
Association**

March 17 - 19, 2015



# Peer Review Panel Members

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# MBTA Extreme Weather Emergency Technical Review

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



# Scope of Review

The Technical Review Panel was convened at the request of Beverly A. Scott, Ph.D., General Manager, to assist MBTA in reviewing its 2015 Extreme Weather Emergency

The observations and findings provided through this peer review are offered as an industry resource to be considered by MBTA in support of strengthening the organization's strategic directions, policies, plans, procedures and enhancing practices in the operation of the rail systems during extreme weather emergency events.

# Technical Review Objectives



## Review of Extreme Weather Emergency of 2015:

1. Assess the T's snow emergency plans, procedures, preparation and resources.
2. Concentrate on immediately actionable snow emergency planning and equipment enhancements to inform the FY 16 Budget Cycle.
3. Focus on improving service availability, reliability and resiliency during and after major weather events.
4. Provide advice, guidance, benchmarking and best practices.



# Peer Review Methodology

APTA is pleased to support this peer review at MBTA. 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.

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



# MBTA Extreme Weather Emergency Technical Review

## Observations & Findings



# Observations & Findings

## Opening Comments:

The peer review team found that the MBTA is well grounded in management system approaches and has followed industry practice in developing their Emergency Preparedness Plans, Snow Plans, and individual Storm Plan.

- Approach has worked for many years for major storms.
- 4 major storms closely following has not been experienced by any other US transit property
- 1965 Hallsberg Sweden had a similar series of snow storms that shut down all rail modes for 12 days



# Observations & Findings

## Assess the T's snow emergency plans, procedures, preparation and resources:

- Re-evaluate the Storm plan to include: Main Line storage of cars in underground sections, Stop Work Procedures for adverse working conditions, consideration for staged reduction of service levels, fatigue and hours of service, and to review the methodology for transfer of information between field and emergency operations center. Consider the need to expand the 5 level system to include extreme events based on cold, wind, ice, freezing rain or blizzard. (6 inches and above is too large a category)
- Consideration must be made for reduction and curtailing of service for the safety of the employees, patrons, and preservation of equipment.
- Coordination with commuter rail on snow fighting plans and field activities (bus bridges, rail shuttles, equipment sharing, command center attendance).
- Management performing condition assessments



# Observations & Findings

**Concentrate on immediately actionable snow emergency planning and equipment enhancements to inform the FY 16 Budget Cycle.**

- A systematic approach to acquisition of snow clearing equipment should take into consideration the following:
  - Establish a predictable annual budget supporting the State of Good Repair for Rolling Stock (MLOH)
  - Implement customization program to make existing equipment more effective in supporting snow clearing. (modify ballast regulator, auger discharge chute, preventive maintenance on snow fighting equipment)
  - Anti-icing equipment has been done out of open doors on revenue cars and this practice needs to be made more effective by mounting to non-revenue equipment and using specialty applications such as done by TTC. Acquisition of new revenue vehicles in the future should consider design of snow fighting capability.



# Observations & Findings

**Concentrate on immediately actionable snow emergency planning and equipment enhancements to inform the FY 16 Budget Cycle.**

- Explore new technologies such as the “Chameleon” for snow clearing capabilities that could be used for all modes.
- Consider acquisition of diesel powered equipment using on-track multiple purpose attachments (snow brushes, augers, and blowers with work car or box trailer to allow dumping in pocket areas) that can be used as snow clearing in winter and other applications during other seasons. Give priority to the ability to clear to top of rail and 3<sup>rd</sup> rail.
- Install remote control on switch heaters and install more rail heaters in areas of grades. Consider replacement of wood switch covers with manufactured covers.



# Observations & Findings

## Concentrate on immediately actionable snow emergency planning and equipment enhancements to inform the FY 16 Budget Cycle.

- Consider reconfiguring the traction motor covers to provide a better seal on the air vent. Then review the maintenance practice on motor repair (on property and off-site) to ensure meeting OEM requirements.
- Rubber-tired vehicle fleet needs to be updated. Recommend 4X4 drive, SUV, and utility trucks to support adequate response capabilities.
- As an interim short term measure, review the design and attachment of snow plows applied to revenue equipment to enable ATO operation. Reconsider the operating practice of relying on selected numbers of cars equipped with plows to act as the first line of defense in snow fighting.
- Acquisition of additional torpedo heaters for availability in the shops to dry brake rigging and traction motors while spotted in the service and inspection tracks.



# Observations & Findings

**Concentrate on immediately actionable snow emergency planning and equipment enhancements to inform the FY 16 Budget Cycle.**

- Commuter Rail needs to explore the purchase of additional plows and flangers or investigate acquisition of a Beilhack snow fighter machine.
- Establish an in-house door rehabilitation program for commuter rail cars to enhance operating reliability.
- Conduct a feasibility study for a secondary commuter rail repair facility located on the south side of the railroad to support running repairs. Current two track operation is sub-optimal not only for emergency operations but also for routine maintenance practices.



# Observations & Findings

**Focus on improving service availability, reliability and resiliency during and after major weather events:**

- Certification program and an apprentice program are needed for commuter rail
- Keolis has to enhance to their Snow Plan to include the lodging criteria currently available as an operating practice. A similar lodging practice should be adopted for MBTA staff utilization in conjunction with access to meals and adequate rest breaks.
- Standardize nighttime/low visibility flagging requirements to ensure that all personnel are wearing the personal flashers and other high visibility equipment to maximize effectiveness.
- Review On Track Safety program procedures that allows working at track level in extreme weather conditions while operating trains at authorized track speed.



# Observations & Findings

**Focus on improving service availability, reliability and resiliency during and after major weather events:**

- MEMA interface established with other state agencies to pool resources and interface on clearing issues at grade crossings and bus shelters. Evaluate thresholds for when to ask for help.
- Emergency workforce staffing plan should provide for:
  - communication and coordination reporting from the field to ensure essential services are covered.
  - Higher experienced personnel should be utilized to implement mission critical and safety critical work and defer non-essential work to non-operating staff or contractors
  - Expand the practice of using contractors on Purchase Order or retainer to provide snow clearance on walkways, platforms and parking lots to free up essential personnel.



# Observations & Findings

**Provide advice, guidance, benchmarking and best practices:**

- In addition to the files provided on the MBTA dropbox account and resources uploaded to the MBTA website, additional files have been faxed, or copied onto memory sticks to share with the MBTA departments.
- Appendix C to this report will contain a partial listing of documents provided that offer guidance and best practice on snow planning, equipment acquisition, procedures, drawings and organizing for effective command and control of emergency events.
- Appendix D will contain a photo log of types of equipment to consider for use in snow clearing.

# MBTA Extreme Weather Emergency Technical Review



**Installation of broom and  
snow throwers on existing  
Maintenance of Way  
equipment**



# MBTA Extreme Weather Emergency Technical Review



Push Style Snow Thrower  
Based on TTC Design



# MBTA Extreme Weather Emergency Technical Review



**Push Style Snow Thrower  
Based on TTC Design**





# MBTA Extreme Weather Emergency Technical Review

## Concluding Remarks

The findings provided through this review are intended to assist MBTA in its strategies for enhancing and strengthening its Snow Emergency Preparation and Response processes.

The panel sincerely appreciates the support and assistance extended throughout the entire technical review process by MBTA staff.

Are there any questions at this time?