For Action

2018 TTC APTA Audit Safety Initiatives Report

Date: June 12, 2019
To: TTC Board
From: Chief Safety Officer

Summary

The American Public Transportation Association (APTA) conducts audits of the TTC's SMS every 3 years. During the most recent audit in 2018, 14 areas were deemed to exhibit industry leading best practices. Many aspects of the SMS advanced into the "sustained data driven" category on the SMS maturity scale. The report identified 55 recommendations for improvement. At the time this report was written, 27 had been closed and the remaining items are being tracked to completion.

Recommendations

It is recommended that:

1. The 2018 APTA TTC Safety Initiatives Report along with the TTC Safety Initiatives Report responses be accepted for information.

Financial Summary

As documented in the TTC Safety Initiatives report, a number of actions have been completed or have been implemented as an ongoing process. Sufficient funding is included in the 2019 Operating budget, approved by the Board on January 24, 2019 to support these ongoing processes.

Completion of other Safety initiatives is dependent upon the completion of major capital projects. These include:

Capital Project	Estimated Final Cost
Automatic Train Control	$1,092,372,000
Enterprise Safety Health and Environment Management Software (ESHEM)	$2,400,000
Computer Assisted Dispatch (VISION)	$117,170,000
Asset Management Implementation	$547,000

Capital Project	Estimated Final Cost
Track Level Occupancy Lights	$12,325,000
Operations Computer Infrastructure	$450,000

Funding for these capital projects are included in the TTC's 2019-2028 Capital Budget and Plan as approved by the Board on January 24, 2019. Additional major capital projects would need to be funded and completed to fully implement all of the initiatives that APTA has encouraged the TTC to consider implementing.

The Chief Financial Officer has reviewed this report and agrees with the financial impact information.

Equity/Accessibility Matters

None

Decision History

APTA Audit Reports and TTC Safety Initiative responses have been presented to the Board on a regular basis since 1998.

Issue Background

The 2018 TTC APTA Safety Initiatives Report provides a documented review of observations highlighting effective practice or identifies items for potential action by TTC. The 2018 audit performed April 16-25 2018 served as a follow-up to the 2014 audit which reflected a new format based on the TTC's recently implemented Safety Management System.

Comments

None

Contact

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Signature

John O'Grady
Chief Safety Officer

Attachments

Attachment 1 - 2018 APTA TTC Safety Initiatives Report
Note: Due to the size of this report, the document is available on the June 12 agenda page at the following link.
http://www.ttc.ca/About_the_TTC/Commission_reports_and_information/Commission_meetings/2019/index.jsp

Attachment 2 - TTC Safety Initiatives Report responses

System Safety Audit Report

for the

TORONTO TRANSIT COMMISSION

Conducted as a service of the

Rail Safety Management Audit Program

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION
1300 I Street, NW
Washington, DC 20005
Paul P. Skoutelas, President/CEO
Brian Alberts, Director - Safety

Safety Review Background

The **Rail Safety Management Audit Program** (RSMAP) of the American Public Transportation Association is designed to provide participating rail transit systems with a process for development and implementation of a System Safety Program Plan (SSPP) or Public Transportation Agency Safety Plan (PTASP) that is specific to an individual system's needs. The Program also provides for a periodic Safety Review of the level to which a transit system has implemented its SSPP or PTASP. In addition, the program reviews an agency's safety management system (SMS) and its implementation of SMS.

The RSMAP was developed by the APTA Rail Safety Review Board (RSRB) in conjunction with the APTA Rail Safety Committee to ensure that the highest standards for safety are maintained. The RSRB initiated the Safety Accreditation Task Force to review system safety programs and activities within the rail transit industry and to develop the formal program. Under the RSRB's direction, the Task Force recommended the format outlined in APTA's *Manual for the Development of Rail Transit System Safety Program Plans.* After approval, APTA's Executive Committee inaugurated the Rail Safety Management Program on January 1, 1989. The program continues to contribute to the rail industry's ability to maintain effective self-regulatory programs for safety.

What This Safety Review Represents

The Safety Review for Toronto Transit Commission (TTC) was conducted April 16 – 25, 2018 by Safety Auditors Brian Alberts, Jim Brown, Polly Hanson, William Kessler, Dave Geake and peer auditor ViJay Khawani from LACMTA. The Safety Audit was conducted in accordance with provisions of the APTA *Manual for the Development of Rail Transit System Safety Program Plans*. Agency Liaisons coordinated the meetings and interviews were held with representatives from all major departments within TTC.

This preliminary report represents the findings of the Safety Review relative to the Transit System Safety Program Plan and the agency's Safety Management System. All APTA recommendations, unless related to established industry standards, are non-binding and may be accepted or rejected after management review by the Authority. The System Safety Audit Report period extends over the next 45 working days and allows TTC the opportunity to investigate the Safety Review findings and take corrective action to resolve as many findings as possible before the Final Report is issued.

Supplemental forms have been included with this report that provide comments on findings for which the Audit team recommend corrective action to comply with the System Safety Program Plan or suggest enhancements to augment the present SSPP and SMS. The Audit team will receive any additional information from TTC to correct, clarify, or upgrade a finding prior to issuing the Final Safety Review Report.

How to Respond to the Safety Review

The numerical notations on the Safety Review Checklist determine the status of the observation by the Safety Review team and are defined as follows:

"1: Conforms: "Meets Plan Requirements" - Complies with program plan requirements and/or standards set by the industry and requires no additional action by the transit system.

"2: Non-conformance: "Needs Improvement" – This designation indicates documentation appears not to meet program plan requirements and/or standards set by the industry and requires immediate attention by the transit system, detailed in the Safety Improvement Plan.

"3: Compliance with Recommendation" – This designation technically meets the program plan requirements and/or standards set by the industry with an opportunity for continuous improvement proposed.

"4: Unable to Audit": - This designation indicates that there was either insufficient information gathered to assess the item or the item did not apply.

The RSMAP focuses on a rail system's System Safety Program Plan or Agency Safety Plan and the implementation of such a plan. The Safety Review report prepared under the RSAP reviews the System Safety Program Plan or Agency Safety Plan and evaluates the extent to which a system's management processes are complying with the plan. The Safety Review report does not, nor is it intended to represent, an in-depth review or Safety Review of the safety of the rail system itself or of its operations and should not be relied on as such.

TTC must advise APTA's Safety office of any item that may be appealed. Such items will be reviewed and, if not resolved, referred to the Rail Safety Committee for review and disposition. Safety Improvement Plans and Strategic Plans for items noted in the Safety Review findings as "2" are to be filed by TTC for inclusion in the Final Safety Review Report. The Safety Improvement Plans are based upon program guidelines and outline the measures a transit system will take to bring its System Safety Program into compliance with its written Plan and/or enhancements to strengthen that element. A schedule of proposed implementation dates is part of the Safety Improvement Plan.

SAFETY REVIEW OVERVIEW

The Safety Review encompassed all elements of the TTC System Safety Program Plan and SMS and the means for its implementation. The Safety Review focused on reviewing processes, documents and records, and interviewing managers in each department to verify that all elements of the System Safety Program were developed, implemented, and reviewed on an ongoing basis. In addition, the review looked at the level of implementation and maturity of the agency's Safety Management System.

The important aspect of the program is that it offers a system the benefit of having an outside, independent evaluation of the extent to which its own management processes are tracking all the items necessary to maximize safety in the areas of operations, maintenance, training, inspections, and employee testing. The safety management practices of the participating systems are evaluated to help each system determine if its own System Safety Management Program and Safety Management System is up to the accepted, contemporary standards.

Transit systems participating in the APTA Safety Review Program will be expected to ensure that all the items contained in the "Checklist" portion of this document have been incorporated into their respective System Safety Program Plans (or Agency Safety Plans). However, as it is fully realized that each system is somewhat unique, and that respective System Safety Program Plans or Agency Safety Plans must allow for the characteristics of each system and this document does not prescribe an absolute format for System Safety Program Plans or Agency Safety Plans. Rather, it offers a suggested format along with the type of methodology that will accomplish the purposes of system safety. The final choice of methodology to ensure that these checklist items are accomplished will rest with each respective transit system. The methodology must, however, be demonstrable from a safety compliance assessment perspective and properly documented by the system.

It should be emphasized that the System Safety Program Plan or Agency Safety Plan establishes the Safety philosophy of the entire organization and provides the means for implementation. A System Safety Program Plan or Agency Safety Plan could be implemented to:

- Establish a safety program on a system-wide basis;
- Provide a medium through which a property can display its commitment to safety;
- Provide a framework for the implementation of safety policies and achievement of related goals/objectives;
- Satisfy federal and state requirements;
- Meet accepted industry guidelines and safety compliance assessment provisions; and
- Satisfy self-insurance provisions.

For a Safety Review to be effective the ensuing results must be used for positive, all-encompassing corrective actions. This does not occur if the Safety Review report is not an official document that is automatically provided to all appropriate levels of management. Various techniques such as Safety Review coordination meetings and management briefings can be used to make the process as unobtrusive as possible while still providing valuable input to each respective department being Safety Reviewed, as to areas of concern and possible corrective actions. No matter which method is chosen, it is important to design the process, so it is construed as a positive force in the organization.

It should be emphasized that the Safety Review process is only a management tool that aids in discovering possible problem areas. By itself, it should not be considered an internal regulatory or decision-making process. Final authority for all decisions always rests within the management structure as prescribed by the individual organization.

April 2018

TTC Response to 2018 APTA Safety Initiative Report

TTC ID#	TTC Dept Maturity Level	Recommendation (as stated in APTA report)	TTC (A)ccept or (R)ebut	Safety Improvement Initiative / Rationale for Rejection	Date Due (dd/mm/yyyy)	Individual Responsible (Position and Dept if applicable)	Closed Date (dd/mm/yyyy)
	Component 1: Safety Policies & Procedures						
1	General 3-C	In order to continue the progressive transition towards a fully mature SMS, APTA suggest TTC consider the development of an SMS implementation document that incorporates the scope of the four principal elements of SMS and defines the organizational roles and responsibilities for the implementation of the SMS elements. **(Supplemental form page 6 #1)**	R	The TTC's SH&E Management System Manual broadly describes how the TTC will meet SH&E management system elements, including the roles and responsibilities for its implementation and maintenance. The effectiveness of TTC's SH&E Management System is evaluated on an annual basis (annual review process) to identify key opportunities for improvement and then to develop the 3 year TTC Corporate SH&E Goals and Objectives. Updates on these Corporate SH&E Goals and Objectives are provided at the monthly Safety, Security and Environment Executive (SX) Committee meetings (SX Projects Dashboard). In addition, monthly updates are provided to the SX on the status of implementation plans associated with these objectives. Additional SMS implementation documents are not deemed necessary.	N/A	B. Hasserjian Manager - SHE Policy & Strategy	N/A
2	Occupational Hygiene and Environment 3-C	The Environmental Plan was withdrawn and is currently under revision. APTA recommend that the Plan be reviewed by affected stakeholders and finalized for implementation. **(Supplemental form page 6 #2)**	A	The Plan is currently being revised, reviewed and is following the approval process used for all corporate documents subject to SX approval. This item is considered closed.	31/05/2019	S. Fortin Manager - OHE	24/4/2019
3	RAMS 3-C	Since the data collected by the RAMS group is indication of the performance of a fleet, it is important to feed this information back into the specifications for future fleet purchases so lessons learned are captured to improve the performance of new cars. APTA suggests TTC consider realigning the reporting structure by having the RAMS group report to the RC&S Vehicle Engineering group. **(Supplemental form page 6 #3)**	R	RC&S rejects this recommendation due to the following: • The recommendation deals with reporting structure of a department, and does not address what impact that such a reporting structure has on the safety management system. • RC&S agrees with the APTA suggestion that information sharing between the RAMS function and the vehicle procurement function is required. However, a change in reporting structure is not necessary, due to the strong relationship between Engineering and RAMS. • With the creation of the Vehicle Programs group, responsible for the procurement of vehicles, TTC is re-assessing the split of work between departments. The Vehicle Programs group will have a dedicated RAMS function, for the purpose of vehicle procurement. Such activities are parallel and complimentary to the RAMS function in operations and maintenance groups (such as Rail Cars & Shops). Both functions must, and will, have a working relationship, regardless of reporting structure. • RAMS provides support equally with vehicle engineering and carhouses/shops. It must be an impartial and independent function, as it has the mandate of ensuring quality for the RC&S Department. • RAMS audits the work done by the Department, and therefore must remain objective and impartial in the carrying out of audit activities.	N/A	D. Mireanu Manager RAMS Group	N/A

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4	Stations 3-C	APTA suggests the TTC assess the adequacy of its station supervisory staffing levels to address line incidents as it progresses through the implementation of its Turn-back, Overcrowding and Evacuation (TOE) policy objectives. **(Supplemental form page 6 #4)**	A	Completed - June 2018 Peak Post Station Resources SOP. Implementation of Peak Post Station Resouces SOP reviewed and approved. This SOP increased the staffing levels during the rush hour Monday to Friday 6am-10am and 3pm-7pm. The staffing requirements are uplifted by the addition of trained staff from TTC Training Department, TTC Transit Enforcement Unit; Bus Transportation; Streetcar Transportation	complete at time of SIP response	E. Stassen Head - Stations	25/06/2018
5	Bus & WT Transportation 3-C	APTA encourages Bus Operations and Corporate Safety to assess scope, effectiveness and the consistency of its desired application and initiate recommendation as applicable. **(Supplemental form page 7 #5)**	A	WT and BT perform regular ride checks, focusing primarily on the safety surrounding the boarding, securements and deboarding of our Customers to ensure the Operators are adhering to safe practices according to policy. However, resources sometimes prevent ride checks for all operators so a risk assessment process (Risk Registry) has been implemented across all modes of transportation which identifies high risk, poor performing employees. Employees that normally go un-noticed are identified and brought to Management's attention. Non-disciplinary action is taken to support these employees and reduce the risk of future and or more serious incidents. Employee support includes face to face interview, EFAP (if applicable), ADDs (assessment of defensive driving) and a 3 day Risk Management course directed by the Training Dept. Employees identified as the highest risk at each Division are selected to attend the 3 day Risk Management course. Risk evaluations are based on overall performance for 5 years. Individual risk levels are measured against the department average.	complete at time of SIP response	D. Porter Manager Operations Service Delivery Bus Transportation	22/10/2018
6	Safety & Environment 3-B	APTA encourages Corporate Safety to assess the role of the Plant Department SC and consider sharing any identified effective practices within the scope of the SC organizational-wide roles. (3-B) **(Supplemental form page 7 #6)**	A	The restructuring of the Safety Department and the re-integration of the Safety Consultants will strive to realize the best practices of the former org structure and maintain relationships and lines of connunication with the new Safety Inspector and Safety Specialist roles. Discussions with the Head of Plant Maintenance have taken place to document past sucesses. S&E is committed to supporting such initiatives as Lock out Tag out and existing JHSC work orders and IMC requests. This item is considered closed.	complete at time of SIP response	N/A	22/10/2018

Component 2: Safety Risk Management

TTC Response to 2018 APTA Safety Initiative Report

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7	Risk Management 3-C	While a key component of SMS is to identify and analyze safety risks, an even more important element is the identification and implementation of effective interventions to mitigate or eliminate those identified risks. The audit team did not find any evidence of mitigation strategies planned to address the risk indicators that are being experienced in the day-to-day operations of TTC's service. Hazardous events should be incorporated within the TTC's risk register, but more importantly, the organization must develop strategies, preferably by deploying available technology, to mitigate such risks as well as providing additional training and revamping rules/procedures/practices to address these issues, the audit team is not aware of any dedicated funding allocated to 'design out' such hazards. TTC should continue to assess measures employed suitable for its system to reduce such risks to an ALARP level. **(Supplemental form page 12 #1)**	R	The Enterprise Risk Management (ERM) program applies an analysis to identify specific discrete "risk causes" which are precursors to the occurrence of an unwanted hazardous event. The analysis then identifies "controls" which can reduce both the probability of each risk leading to an incident and mitigating the impact of the incident if it does occur. These controls include technology, procedures, training and many other interventions. If existing controls are found to be insufficient to reduce the risk to a level that is "As Low as Reasonably Practicable" (ALARP), then the risk owner can prepare a business case for submission through the budget process to seek additional funds to implement the new control(s). The business case is a formal process by which new proposals are evaluated against TTC's strategic objectives. By this systematic method, risks are continuously reduced over time. In the past there has been no single pool of funds allocated non-specifically to risk reduction. This has made it challenging to respond to the sudden identification of previously unanalyzed risks. The 2019 capital budget proposal contains provision for a small contingency fund for safety and reliability to address such items in a timely fashion.	N/A	J. O'Grady Acting PRA	N/A
8	Subway Transportation 3-C	APTA encourages TTC to pursue measures and expanded application of technology such as in-cab cameras, ATP, CBTC, and other systems already deployed on other TTC lines (e.g., such as the correct side door opening system). **(Supplemental form page 12 #2)**	A	Automatic Train Control (ATC) continues to be phased in along Line 1 which includes correct door side enabling, etc and is scheduled for completion at the end of 2019. When modernization projects are brought forward for other lines, best practices and a review of current technology will be considered and proposed.	~~12/31/2019~~ 12/31/2021	~~P.Tomlin~~ L. Wang Deputy Project Director ATC	
9	Bus & WT Transportation 3-B	APTA encourages Bus Operations and Corporate Safety to assess program scope, effectiveness and the consistency of its desired application and initiate recommendation as applicable. **(Supplemental form page 13 #3)**	A	See #5 above	N/A	N/A	22/10/2018

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10	Bus & WT Transportation 3-C	TTC's Enterprise Risk Management group evaluated a high-risk hazard associated with a grade crossing signal timing issue. While the TTC has been proactive in addressing this hazard with an engineering solution, other mitigations should continue to be considered until such time the engineering solution has been fully implemented and tested. **(Supplemental form page 13 #4)**	A	In response to the high risk hazard, the TTC formed a Rail Crossing Safety Working Group with a standing membership providing representation from Metrolinx, the City of Toronto and the Toronto Transit Commission. The Working Group has focused their efforts on gate arm clearance times and uniformity in the placement of crossing stop markers. Completion of upgrades to the grade crossing gate arm clearance times is scheduled by the Rail Authority for the end of December 2018. The Working Group shall continue so as to provide a functional communications mechanism by which other issues related to rail crossing safety can be presented for discussion, consideration and resolution. Updated 4/2/2019 - Of the nine crossings identified as having insufficient gate arm clearance time, 7 have now been upgraded by the Rail Authority. An upgrade at the McNicoll crossing has been delayed by the Rail Authority pending completion of a major capital expansion to the rail line (a double track). An upgrade to the Morningside crossing has been delayed pending resolution of technical constraints. These projects are being addressed sufficiently by the Rail Authority such that TTC can consider these items closed.	31/12/2018	G. Turner Risk Management	04/02/2019
		Although mitigation initiatives are being applied, APTA recommends the TTC should continue to examine additional opportunities to mitigate these known hazards including the application of technology where applicable. **(Supplemental form page 13 #5)**	A	Considerable attention is devoted to these three risks. Regarding collisions and pedestrian contacts, the TTC launched the Safe Service Action Plan in 2015 which comprised an integrated set of initiatives to reduce collisions. Included were LiDar enforced speed control, new rules for operators to run to conditions rather than to schedule and the development of a register of operators with a history of risky behaviour, among many other initiatives. This work will form the basis for a new Traffic Safety Program scheduled for approval in Q4 2019. This program will be integrated with the City of Toronto Vision Zero program. Updated 16/1/2019 - Vision Zero team has been formed. Liaison with NYC created. Brain storming session with all internal stakeholders complete. Updated 24/4/2019 - a revised framework for traffic safety has being established and includes the formation of a Traffic Safety Committee governed by a Terms of Reference and involving all surface transportation modes. The Traffic Safety Committee will act as an overarching committee providing direction and oversight of the implementation of traffic safety project plans, including the development and implementation of a comprehensive Traffic Safety Corporate Program.	31/12/2019	J. O'Grady Chief Safety Officer	
	Safety and			The installation of a new Computer Assisted Dispatch/ All Vehicle Location (CAD/AVL) system will greatly enhance the amount a data available to manage the fleet and improve safety. Updated 16/1/2019 - Bus fleet installation 51% complete	31/12/2019		

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11	Safety and Environment 3-C			Regarding roadway worker access, a safety/culture reset has been ongoing since Q1 2018. Specific accomplishments include a review and reset of management best practices, onboarding new leaders and the development of our leaders including the release of a RFP to help leaders leverage knowledge and best practices within the transit community Additional Work cars have been added to support operations and are out for commissioning to be completed in Q4 2018 (Track Inspection vehicle and vacuum car (HEPA). Updated 16/1/2019 - Vacuum car has been delivered and is under commissioning. Commissioning on the Track Inspection Vehicle (RT 90/91) is complete and training to begin in February 2019. Defect recognition algorithms will be rolled out over the balance of 2019.	31/12/2019		
				Vehicle Programs is preparing a strategy for Autonomous Vehicles.	30/06/2019		
				A new Work Area Warning technology has been developed and installed on a pilot basis in two locations. Comments from use have been provided to a design-build contractor who will provide the first production unit for installation by the end of July 2019. The remaining stations system-wide are scheduled to be installed and functional by the end of 2022. This project is fully funded.	31/07/2019		
				Red signal overruns will be eliminated with the installation of the Automatic Train Control upgrade to the signal system. Phase 2.1 E is scheduled to go live in Q4 2019 Updated 16/1/2019 - ATC now operational from VMC to Dupont Station Ph 2.1E complete.	31/12/2018		06/12/2018
Component 3: Safety Assurance							
12	Safety Engineering Services 3-C	APTA suggests that Corporate Safety consider allocating its resources more as an oversight role in verifying TTC departmental safety assurance processes are being performed as prescribed and the quality of these departmental practices meets TTC expectations. **(Supplemental form page 35 #1)**	A	Safety Engineering Services (SES) provides an oversight role to areas where local controls and assurance processes exist. SES conducts assurance activities where local management does not conduct their own validation. SES continually assesses the SA Checks in its portfolio and what role the checks fill based on what departments conduct themselves. SES will continue to provide services based on risk indicators and report yearly through the Annual Review.	N/A	A. McKinnon Manager - SES	15/10/2018
13	Safety Engineering Services 3-C	APTA reviewed several PPE audits that were conducted. Non-compliance exceptions were noted on some of the audits reviewed. APTA supports this audit compliance process and encourages the TTC to continue to focus its audits on its identified high-risk activities (e.g., on-track work) across all shifts. **(Supplemental form page 35 #2)**	A	SES actively consults the annual report provided by the Risk Management Office to assist in developing, refining and allocating resources to the SA Checks / Audits being performed annually. In addition, incident data may be consulted throughout the year to identify any risks that have arisen following the RMO publishing their annual report. This item is considered closed.	complete at time of SIP response	A. McKinnon Manager - SES	19/10/2018

TTC Response to 2018 APTA Safety Initiative Report

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14	Subway Infrastructure 2-B	APTA recommends the TTC assess its current worksite planning process and initiate appropriate changes to mitigate any onsite confusion and last second changes to the approved work plans. **(Supplemental form page 35 #3)**	A	Operations sections will be undergoing a workflow review in Q4 of 2018 with a plan to continue that into 2019 and beyond to review gaps preventing efficiencies and establish ownership of assets and repairs that are intended to limit sudden changes. The emphasis placed on effective job safety briefings and crew specialization promote effective job planning. All Track work will be more effectively planned with operations and engineering staff via prioritizing of MOWIS defects and assigning work to shift Supervisors and developing repair/maintenance schedules Updated 18/4/2019 - The Track Maintenance Team has implemented some measures to assist in achieving this end goal of better planning, prioritizing and effective implementation of repairs to MOWIS defects. A Track Rehabilitation Planner has been hired and started with this group on December 2nd 2018, the Track Patrol vacancy issue has been addressed and they are now over 90% capacity. Track Patrols are being utilized on spare periods to verify and check MOWIS defect inventory to ensure accuracy and completeness. Also the Track Inspection Section, Maintenance Engineering Section and Track Maintenance Operations team have been working towards defining what the ideal defect prioritization repair schedule looks like with the aim at tackling and addressing root cause defect problems. Along with this the Front line maintenance team have been assessed for technical skills so as to identify where the technical knowledge gaps are, so we can develop an appropriate in-house training module to upgrade the skill set to close this gap. Also, with a Master sign-up in the near future (by 2019), the work groups are being aligned to be able to deliver the right maintenance at the right time with the right level of crew specialization and diversification so that we don't run into the lack of succession planning issues we have encountered within this team. This item is now considered closed	31/12/2019	~~F. Monaco~~ L. Narduzzo Acting Head- SI	18/4/2019
15	Subway Infrastructure 2-B	This maintenance information management system constraint was noted in the 2014 APTA review. APTA recommends the TTC evaluate the feasibility of updating its maintenance management information systems to more effectively support its asset management processes. **(Supplemental form page 35 #4)**	A	Department is transitioning to a MAXIMO based maintenance system. Uploading of assets has commenced but a proper maintenance management process has not been finalized yet. We anticipate a demo version to be utilized across appropriate departments by August 2019 with full departmental implementation targeted by January 2020. Further evaluation and progression toward principles of Reliability Centered Maintenance targeted for Q4 2020. Updated 18/4/2019 - The MAXIMO based asset management system is being worked on. We are investigating the best means of how we capture and download the assets in the right format for the inventory, learning from other transit authorities who have implemented MAXIMO not to repeat their 'flaws" now that we are setting it up from ground zero.	31/12/2020	~~F. Monaco~~ L. Narduzzo Acting Head- SI	

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16	Subway Infrastructure 3-C	APTA encourages the TTC to perform quality checks of the job briefings being conducted for staff to ensure they are being performed as intended. The pre-work job briefings should include a discussion of worksite JHA hazards and mitigations applicable to the work to be performed as well as reinforcing the importance of PPE compliance. Department management / supervisory staff should also periodically participate in these job briefings to reinforce the importance of the safety message. **(Supplemental form page 35 #5)**	A	Quality checks of job safety briefings commenced in Q3 2018 and are expected to continue through 2019 via our safety consultants, senior management and Senior Forepersons. It is anticipated that the job briefing audits will be evaluated via a report and the front line supervisor be given feedback of delivery and content as a means of improvement. Forepersons have participated in cross training with other departments, will be attending roll-playing sessions focused on dealing with Unionized workers and have been encouraged to participate in eDEv courses on public speaking. Audits of job safety briefings will commence by Q1 2019 Updated 4/2/2019 - "Safety consultants" have been replaced by "Construction Safety Inspector (with support from Safety Inspectors – Safety Operations)" Updated 18/4/2019 - Quality checks of Job Briefings will continue through 2019, with feedback provided to improve their quality and effectiveness. To note: Employee Relations delivered round table sessions in Q1 that focused on modernized discipline process within the Track and Structure front line management teams. They were well received and the role playing portions of these sessions were very engaging and helpful in the communication/ development of the interactive piece of the duties that fall within a front line supervisor responsibilities.	31/03/2019	~~L. Narduzzo~~ ~~Acting Senior Manager SI Operations~~ R. Poole Construction Safety Inspector - SI	18/4/2019
17	Subway Infrastructure 3-C	Creating additional opportunities for system maintenance to be performed becomes more critical with an aging infrastructure. APTA proposes the TTC also consider single rail service as an additional measure for TTC to consider in the future such as once ATC has been implemented to allow for safe and efficient single rail operations. **(Supplemental form page 36 #6)**	A	Use of single track operation will be explored further as part of early closures when working with ATC testing and construction crews pending safety review and likely SRB variance required for impassable workzone set up. Coorindation and planning to commence in early 2019 in consultation with Subway Transportation and ATC once 2019 early closure schedule has been finalized. Upon early closure completion, further re-evaluate and determine if feasible to consider as part of night to night work activities. The effectiveness of single track operations will be reviewed throughout the next few years and it is anticipated that by Q2 2021 a decision will be made as to when, where and how to utilize the single track opportunities ATC offers. Updated 18/4/2019 - Single Track Operation for early closures we believe will be an important piece of gaining more valuable track time to perform maintenance. Given the present status of ATP equipped work cars and the delivery schedule for ATP on work cars, in view of the rate at which ATC territory will be commissioned across Line 1, single Track Operation will be relied on for much needed track time to perform the much needed maintenance.	30/06/2021	~~R. Jackson~~ ~~Head Subway Transportation~~ ~~P. Tomlin~~ ~~Head ATC Project~~ ~~F. Monaco~~ ~~Acting Head- SI~~ Andrew Dixon, Head – Transit Control Leslie Wang, Deputy Project Director – ATC Lou Narduzzo, Acting Head – SI	
18	Rail Car & Shops 2-C	The audit team recommends that in addition to PM compliance rates, employee injuries should also be included as a KPI for each rail car and shop, with established targets/goals for this KPI. This KPI should be tracked and reported at the SX Committee along with the status of the other KPIs. **(Supplemental form page 36 #7)**	R	Corporate Safety currently provides RC&S with detailed OI reports on a monthly basis, which RC&S confirmed are discussed at monthly department managers' meeting. This level of granularity does not need to tracked at the SX level.	N/A	N/A	N/A

TTC Response to 2018 APTA Safety Initiative Report

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19	Greenwood Yard Tour 2-B	APTA noted that the third rail wooden coverboards in need of replacement and recommends this replacement initiative be expedited. **(Supplemental form page 36 #8)**	A	There is currently no specific capital project in place to replace the coverboards however as part of the ongoing yard maintenance program, coverboards are replaced in conjunction with other maintenance activities such as tie replacements etc. Defective coverboards are attended to immediately. This item is considered closed.	complete at time of SIP response	Steve Budaci Sup – Subway & SRT Track	23/10/2018
20	Engineering & Construction 3-C	Although the COR program is an Ontario government program that is mainly only applicable to the construction industry, APTA suggests that TTC consider the EC&E Department becoming COR certified. **(Supplemental form page 37 #9)**	A	ECE Group is currently in the process of pursuing the Certificate of Recognition (COR) Certificate. COR Certificate is a nationally recognized Health and Safety Management System Certification tool commonly employed in the construction industry. COR Certification consists of 19 Health and Safety program elements. COR Certification efforts at ECE are quite advanced including review and development of new procedures, procedural safety training and implementation of various safety processes.	31/12/2020	M. Nieznalski Manager Capital Prog Safety & Security	
21	~~Engineering & Construction~~ Information Technology 2-B	It was not evident that there is one TTC group that is dedicated and accountable for asset management. APTA recommends that clear accountability for progressing the TTC asset management program is established. **(Supplemental form page 37 #10)**	A	The Enterprise Asset Management (EAM) / Maximo Deployment item is being tracked on the CEO's 2019 Priorities List priority #4. Majority of work to be complete by end of Q3, 2020 leaving only Bus & Steetcar Maintenance and M&P to be complete by end of Q4, 2021.	31/12/2021	~~J. Fraser DCOO~~ E. Mok - Chief Enterprise Architect	
22	~~Engineering & Construction~~ Safety & Environment 3-C	The ECE Department has a solid database for tracking incidents and safety issues. APTA recommends that the TTC consider expanding this program for other departmental applications. Also, the new SH&E software solution will be used to manage SH&E incidents and issues in the future, which should be helpful. **(Supplemental form page 37 #11)**	A	ECE Safety and Security will support Corporate Safety and Environment Department in providing input towards configuration of new SH&E software solution which will be used to manage incident information across TTC. Updated Feb 6/09 - contract awarded to Cority in Q3 2018; Phase 1 in progress with focus on Incident Reporting & Investigation, Correcitve Actions, and Workplace Inspections processes; will roll out software to organization in waves - 1st wave go-live Q4 2019 Updated Apr 24/09 - 1st wave go-live has been rescheduled to January 31, 2020	~~31/12/2019~~ 31/01/2020	B. Hasserjian Manager - SHE Policy & Strategy	
23	Track Engineering 3-C	Not all as-built drawings are updated for everything that is installed in the guideway areas. Major projects generally have the requirement for drawings to be updated, but smaller modifications may not be recorded. APTA recommends that TTC initiate controls to ensure all system modification are documented to include updated as-built documents. **(Supplemental form page 37 #12)**	R	For established SI assets, work with the Engineering and Operations Managers to develop a Departmental As Built Drawing standard that will outline roles and responsibilities, information to capture, the flow of information, timelines and storage and availability of accurate as-built prints. Kick off process in Q1 2019 with intent to implement by Q3 2019 and full review by Q1 2020. The installation of all guideway area assets involves a corridor protocol involving multiple groups and this would need further discussion as to how to implement and why it would belong to SI therefore we are rejecting it for now pending further discussion and review. If it does fall within SI territory this may require additional resources.	N/A	F. Monaco Acting Head- SI	N/A
24	Track Maintenance 3-C	APTA conducted a review of the Track Level Field Guide. APTA recommends that the Track Level Field Guide Section 7 be expanded to include warnings about the inswing /outswing of vehicles and the safe clearances to be maintained. **(Supplemental form page 37 #13)**	A	A review of the use and implementation of the constructed Track Level Field Guide will be under taken in Q1 2019. In this review the expansion of Section 7 will be considered including the inclusion of inswing/outswing of vehicles ad the safe clearances to be maintained. Track Level Field Guide to be updated, issued and made available to workforce by Q2 2019.	30/06/2019	~~L. Narduzzo Acting Senior Manager SI Operations~~ J. Pereira Senior Foreperson - SI Track	

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25	Track Maintenance 3-C	Night shift work can often develop its safety culture if communications and oversight are limited in practice. APTA encourages TTC assess the night shift practices and initiate appropriate measure to prevent any practical drift from desired safety practices. APTA encourages participation from representative Unions as a partner in this assessment and recommendation process. **(Supplemental form page 37 #14)**	A	As of Q2 **2018** night and sunset Track off-shifts have a dedicated Supervisor to reiterate safety and leadership. Other sections have commenced participation of section Supervisors including senior management. Senior management has actively commenced participation in the T&S JHSC as of Q3 2018.	complete at time of SIP response	F. Monaco Acting Head- SI	30/06/2018
26	Structure Engineering 2-B	APTA encourages the TTC to re-visit the cell phone and electronic device usage policy and its current application to ensure desired safety measures are consistently being applied. Training and compliance inspections should be conducted as applicable. **(Supplemental form page 38 #15)**	R	Cell phone and electronic device useage is covered for Operators in the Operating Excellence program. All other employees are bound to use their devices in accordance with all governing laws. No further action is deemed necessary.	N/A	N/A	N/A
27	Safety and Environment 3-B	Post incident debriefings are not being conducted on a consistent basis. APTA recommends that post incident de-briefings be conducted after each and every incident as an opportunity to identify lessons learned and opportunities for improvement. **(Supplemental form page 38 #16)**	A	As per item #52	31/03/2019	R. Duggan Manager FSEP	
28	Safety & Environment 3-B	The current safety data management system does not effectively support organizational-wide SMS initiatives. APTA encourages the TTC to expedite the proposed implementation of a new system. **(Supplemental form page 38 #17)**	A	In June 2018, TTC purchased a comprehensive commercial off-the-shelf SH&E software solution to effectively support the TTC's Safety, Health & Environment Management System processes, and will be implementing it in stages over the next several years. Phase 1, the initial scope of the SH&E Management System Software Project, will primarily focus on safety and environmental incident reporting, investigation, and corrective action processes (e.g. occupational injuries, customer injuries, near misses, collisions, spills) along with a workplace inspection module.	31/12/2019 ~~31/01/2020~~	B. Hasserjian Manager - SHE Policy & Strategy	
29	Human Resources 3-C	There is currently no vehicle in-cab video system installed at the TTC. APTA recommends TTC explore the feasibility of installing in-cab cameras to support the gathering of facts associated with accident and incident investigations. **(Supplemental form page 38 #18)**	A	Forward facing cameras have been installed on all new buses since 2017 and will be activated by year-end 2018. As existing buses are retired, the entire bus fleet will resultingly have forward facing cameras along with the new streetcars and Wheel-Trans vehicles. This project is being tracked elsewhere and can be considered closed.	N/A	N/A	23/10/2018

Component 4: Safety Promotion

30	Fire Safety & Emergency Planning 3-C	APTA encourages the TTC to explore the feasibility to perform training exercises with Fire Department staff on a pre-established schedule on all subway lines to account for turnover within the fire department stations and maintain familiarity with the different station layouts. **(Supplemental form page 57 #1)**	A	A continuous schedule has been developed and approved beginning in January 2019 to provide ongoing training for all Platoons in all Commands of Toronto Fire. This item is considered closed.	N/A	R. Duggan Manager FSEP	22/10/2018
31	Fire Safety & Emergency Planning 3-C	APTA suggests that hot smoke testing be incorporated into the design and training of controllers and first responders in dealing with subway fire and ventilation scenarios. **(Supplemental form page 57 #2)**	R	The training program for the fire department incorporates smoke as a means to obscure the firefighters vision. While hot smoke is more realistic when evaluating the fire ventilation system, cold smoke provides a better 'worst case' visibility scenario for responding firefighters.	N/A	R. Duggan Manager FSEP	N/A

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32	Rail Car & Shops 3-C	The success of new departmental initiatives requires the input and buy in of affected stakeholders. APTA encourages RC&S to continue working with the bargaining units to launch the core multimodal training program to realize efficiencies in maintenance practices and resources. **(Supplemental form page 57 #3)**	A	RC&S accepts the recommendation, with the following notes: • The Rail Transit Car Mechanic (RTCM) program, jointly sponsored with Streetcar Maintenance, is in its infant stages. The first recruits are expected to start in early 2019. • The current Subway Vehicle Technician (SVT) program is mature and on-going. • RC&S will continue to work with the bargaining units, as well as with other departments, to realize efficiencies by leveraging multi-modal training. This item is considered as closed	complete at time of SIP response	D. Mireanu Manager RAMS Group	19/10/2018
33	Rail Car & Shops 2-C	Formal training programs have been established for vehicle repair persons, subway vehicle technicians for the TR trains. APTA recommends that a staff training program for the T1 trains is documented and utilized to support the consistent application of desired maintenance practices. **(Supplemental form page 57 #4)**	R	Training for T1 Trains is already formalized and delivered on an on-going basis.	N/A	P. Maglietta Training & Development	N/A
34	Greenwood Yard Tour 3-B	APTA recommends that safe walk areas and work zones be clearly established for all areas in the yard and this safety provision be incorporated within the next revision of the Track Level Field Guide manual. **(Supplemental form page 58 #5)**	A	The track level field guide is currently undergoing an update with input from departments including but not limited to Subway Infrastructure, Plant Maintenance, Safety & Environment, Subway Transportation and Training & Development. An evaluation of TTC yards is being requested through the APTA Peer Review Program. Findings and actions to be considered for action will be tracked separately. Updated 4/2/2019 - "Any new rules create for yards have to be incorporated into the SRB. More discussions will be required".	30/06/2019	~~F. Monaco~~ ~~Acting Head- SI~~ R. Poole Construction Safety Inspector - SI	
35	Human Resources 3-C	APTA recommends that the TTC evaluate the feasibility of incorporating the same fitness for duty provisions applied internally to the contract requirements for contractors who may be performing safety critical tasks as defined with the contract scope of work. **(Supplemental form page 58 #6)**	A	Contractors have the same FFD expectations as TTC employees and are expected to report and remain fit for duty while performing work for the TTC. At this time, testing does not apply to contract workers, but testing is being explored for the future. Currently, there are investigative requirements, as well as consequences for any FFD violation for a contractor and/or contract worker. Consequences can be permanent removal of an employee, loss of contract, payment of damages, and/or removal from the TTC bid list. This item is considered closed.	complete at time of SIP response	P. Bartz Program Lead- FFD	26/10/2018
36	Training 3-C	TTC Plant staff indicated that recertification training is not specific to the position requirements. APTA encourages TTC assess its current recertification training modules and update the training as required to support job specific requirements. **(Supplemental form page 58 #7)**	R	The SRB Recertification Training has already been updated to include more hands-on training including the Workzone set-up, track walk, radio usage, etc,, Regular meetings have been held with Plant however no additional training requests have been provided.	N/A	P. Maglietta Training & Development	N/A
37	Training 3-C	TTC Communications staff suggested that subway rulebook training could be improved. APTA recommends the TTC reassess its recertification training program to ensure it effectively addresses departmental needs. **(Supplemental form page 58 #8)**	R	The SRB Recertification Training has already been updated to include more hands-on training including the Workzone set-up, track walk, radio usage, etc,, This item can be considered closed.	N/A	P. Maglietta Training & Development	N/A

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38	Training 3-C	Fatigue management concerns continue to be a focus area throughout the industry. APTA suggests the biannual recertification training program be reviewed for inclusion of modules that address fatigue management topics including how to avoid disturbed sleep patterns. **(Supplemental form page 58 #9)**	A	Training & Development Department will create a Safety Talk for front line Supervisors so they can share at their monthly safety briefings. Updated 24/1/2019 - The draft safety talk has been developed and is currently under review. Once signed off internal to Training & Development Department, the materials will be posted on the TTC intranet site (no later than March 31, 2019) for use by supervisors as part of their regularly scheduled safety talk series. Updated 17/4/2019 - The fatigue safety talk talking points and the PowerPoint presentation is available on our Track Level Safety Talks intranet site.	~~2/1/2019~~ 31/3/2019	P. Maglietta Training & Development	17/4/2019
39	Training 3-C	APTA encourages the TTC to assess the feasibility of adopting an annual on-track safety re-training module for all its on-track designated positions. **(Supplemental form page 58 #10)**	A	The SRB Recertification Training has already been updated to include more hands-on training including the Workzone set-up, track walk, radio usage, etc,, We support annual SRB Recertification.	complete at time of SIP response	P. Maglietta Training & Development	16/10/2018
40	Training 3-C	APTA recommends TTC considers all staff that are required to access the track should be given subway rulebook training once a year regardless of their years of experience. **(Supplemental form page 59 #11)**	A	The SRB Recertification Training has already been updated to include more hands-on training including the Workzone set-up, track walk, radio usage, etc,, We support annual SRB Recertification.	complete at time of SIP response	P. Maglietta Training & Development	16/10/2018
41	Bus Maintenance & Shops 3-C	APTA recommends that Corporate Safety increases its focus on workplace higher incident locations and perform quarterly reviews in partnership with the Department staff of the effectiveness of the safety program initiatives and results achieved. **(Supplemental form page 59 #12)**	A	Reviews take place for all LTIs. All injuries are reported & tracked. Sr Manager to review quarterly and develop action plans with location Manager. First quarterly review with Department Head scheduled for December 2, 2018. Updated 4/2/2019 - All LTI's and discuss with location Mangers, corrective action plans are discussed and implemented where warranted.	02/12/2018	Frank Trianni Sr Manager Garages	04/02/2019
42	Bus Maintenance & Shops 3-C	A safety briefing is performed at the beginning of each Bus Maintenance work shift. APTA encourages Bus Maintenance management staff to periodically participate in these safety briefings as a means to reinforce the safety message being provided. **(Supplemental form page 59 #13)**	A	Managers periodically attend Safety Briefings. Management to document attendance and compare against other locations. Information provided to Department Head at quarterly injury reviews. Updated 4/2/2019 - Managers and Senior of each location attend occasional safety briefings, safety meetings, JHSC meetings.	03/12/2018	Frank Trianni Sr Manager Garages	04/02/2019
43	Track Maintenance 3-C	APTA recommends that the TTC assess the training provided to Track Maintainers and update the program as appropriate. In addition, APTA encourages TTC examine succession planning opportunities for the Track Maintenance Department due to the high turnover to as a means to minimize increased vacancy rates. **(Supplemental form page 59 #14)**	A	A review of Track Maintainers competency and evaluation has commenced in Q3 2018. Entrance tests are being developed to assess competency of interested employees to make selection qualifications based and not solely seniority based (**Track Mechanics are currently planned to be tested in Q1 2019)**. **Q1 2019 will also see the introduction of** Lead Hands primarily for peer training purposes. A review of T&D curriculum will also commence in Q1 2019; **3 additional training resources were converted from Track Maintenance positions in Q2 2018 to increase the capacity of Track Training.** A review and update of all Track SOPs has commenced and is anticipated to continue until Q2 2019 and once reviewed will be distributed to workforce and reviewed at monthly safety meetings. Planning to address concern in its entirety including feedback and modifications by Q4 2019.	31/12/2019	~~F. Monaco Acting Head SI~~ M. Vella Subway SRT Track E. Lautsch Procedures and Control - SI	

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44	Track Maintenance 3-C	The Track Maintenance Department has been conducting Safety Talks with its crews. The department is working at improving the documentation of issues raised by staff and tracking their resolution. Staff interviewed indicated that some employees tend to hold the issues back until they are in a safety meeting or union meeting. APTA recommends that Corporate Safety assess this concern in partnership with the Track Maintenance Department and develop recommendations to facilitate and improve staff communications on issues affecting safety. **(Supplemental form page 59 #15)**	A	The IRS system has been reviewed with various employees and the T&S JHSC. The IRS emphasizes raising safety concerns to front line supervisor and a method of escalation up to the JHSC and senior management. Senior management has commenced and will continue to be more present in the field **and on-shift**. **The operating groups have also started (Q3 2018) monthly Union-Management meetings that provide more opportunity to utilize the IRS.**	complete at time of SIP response	L. Narduzzo Acting Senior Manager-SI Operations	19/10/2018
45	Customer Comm. 3-C	The team observed the link to safety and security information on the current website is not obvious at the bottom of the page and difficult to find. APTA recommends that this information be prominently displayed in the top header of the new website currently under construction. **(Supplemental form page 60 #16)**	A	The TTC's new website, in beta testing now, will enhance the visibility of safety. Updated 21/1/2019 - When the new ttc.ca is launched later in 2019, Safety and Security is prominently located on the home page.	~~30/4/2019~~ 30/9/2019	D. Brown Head - Cust Comms	
46	Customer Comm. 3-C	As an opportunity to further enhance communication with its customers, APTA encourages the TTC to explore opportunities to increase TTC twitter followers for both the TTC and Corporate Communications sites. **(Supplemental form page 60 #17)**	A	The TTC continually strives to increase its online audience on all available platforms, and will continue to do so through new system maps and new information avenues now available on platforms. A digital strategy, including a way to maximize social media followers, will be developed and introduced by June 30, 2019. Updated 21/1/2019 - TTC has hired a Manager of Digital Communications. The manager is developing a digital strategy for the organization that will encourage growth in our social media channels. Updated 1/4/2019 - An initial instagram strategy along with a Digital Strategic Plan overview are in process. The full strategy is expected to be completed at the end of Q2.	30/06/2019	D. Brown Head - Cust Comms	
47	Community Relations 3-C	Community Relations would be an asset in participating more in the rollout of public safety campaigns. APTA recommends that Corporate Safety include Community Relations in future public safety outreach initiatives. **(Supplemental form page 60 #18)**	A	The Toronto Transit Commission has recently consolidated department-level safety staff into a centralized group within the Safety & Environment and will ensure Community Relations is included in any future public safety outreach initiatives, as recommended. This item is considered closed.	complete at time of SIP response	David Nagler Community Relations Manager	22/10/2018

SECURITY

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48	General 2-C	Enterprise Risk Management (ERM) is a well-established discipline. While TTC may have a robust ERM program, cybersecurity risk does not appear to be a dimension in the framework. Given the current landscape, TTC should develop a high-level cybersecurity risk framework that identifies cyber risks, develops mitigation strategies, and provides a straightforward way to respond to these cybersecurity risks. **(Supplemental form page 90 #1)**	A	**Cybersecurity risk does not appear to be a dimension in the framework.** - ITS has a documented "ITS Risk Framework" which contains an "IT Risk Model" with Likelihood and Impact scales aligned with Safety's "Corporate Risk Model" to assess Information Security risks in new and existing IT solutions. - ITS has historically worked with the Risk Management Office under the TTC Principal Risk Advisor and ITS Audit in the past to report at a high level on TTC Information Security risks. This work is ongoing to determine the appropriate level of risk communicated through the ERM tool. - The TTC Information Security Office is involved in assessing inherent and residual security risks in context of each solution acquired and implemented by ITS across TTC: - Multiple points exist in Capital program (CPIC) to identify inherent security risks in solutions e.g ITS works with business units to identify needs which become initiatives and within each initiative, multiple points of identification of security risks exist e.g. Business Cases with options analyses that consider security risks. - Once the Business Case is approved, security risks of the solution are mitigated through controls implemented at different stages throughout the project lifecycle via Information Security Office involvement in the Project Management Framework - In 2018, a Business Case for the Cybersecurity program was approved which has allocated funds and resources to execute on our Information Security Roadmap of security controls aimed at more granular identification and reduction of security risks. Also in 2018, we had engagements with two external Information Security companies who assessed different levels of security risks to assist with building and prioritizing our Information Security Roadmap of tools, processes and resources to 2021 and beyond. This item is considered closed	complete at time of SIP response	R. Persad Director - Information Security Office	25/10/2018

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				Given the current landscape, TTC should develop a high-level cybersecurity risk framework that identifies cyber risks, develops mitigation strategies, and provides a straightforward way to respond to these cybersecurity risks. - Regarding framework -- TTC leverages industry standards and frameworks for Information Security (ISO IEC 27001), TOGAF, ITIL, COBIT 5 for procurement, design and implementation of secure IT solutions which includes Risk Management. -The TTC Information Security Office leads continuous security risk management activities and outputs in ITS and across TTC with business partners: - The TTC Information Security Office works with internal ITS and external TTC project teams to ensure security and privacy controls are built into solutions, risk is assessed, and Action Plans are created and managed throughout solution lifecycle. The TTC Information Security Office performs Threat Risk Assessments, security testing, Preliminary Risk Assessments, and other reports indicating risks to Management as needed. - The TTC Information Security Office participates in externally-initiated audits (AG Office) on ITS technical infrastructure, as well as semi-annual and adhoc TTC ISO-led assessments/audits by third party Information Security consultancy firms whose services are obtained through our competitive bidding process. -Action Plans developed either by the TTC ISO as a result of findings are clearly documented and they collaborate to update activities in Actions Plans with stakeholders on their assigned tasks for remediation of risks. - Presentations and reports for technical staff and various levels of Management are standard outputs required of third party organizations in security assessment/audit engagements. The TTC ISO shares these with relevant TTC stakeholders. This item is considered closed			25/10/2018
49	SCADA 3-C	Given the broader access to the various control networks by staff and outside vendors, a full review of cyber threats and control processes is recommended. **(Supplemental form page 90 #2)**	A	A joint ITS and Industrial Computing Vulnerability and Penetration Testing is scheduled for Q4 2018/Q1 2019 which would include SCADA. Updated 10/4/2019 - Assess cyber security via joint ITS/Industrial Computing Vulnerability and Penetration Testing has slipped to Q4 2019 due to delays in the award of Penetration Testing contract by M&P.	~~3/30/2019~~ 31/12/2019	~~K. Bayley~~ M. Vignjevic Manager - Comm Eng	
50	Comm Engineering 3-B	As the fiber network expands, Wi-Fi access for the public is introduce and legacy systems are replaced. APTA recommends that TTC to assess its cyber security requirements and initiate hardening as required. **(Supplemental form page 90 #3)**	R	Wifi access for the public is not connected to the Operational networks (and is not even provided by TTC but by an outside company). Fibre expansion does not inherently create higher cyber security risks. Cyber security will be assessed via the joint ITS and Industrial Computing Vulnerability and Penetration Testing scheduled for Q4 2018/Q1 2019	N/A	K. Bayley Manager - Comm Eng	N/A

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51	ATC 3-B	The introduction of the new Alstom ATC train control system will be operating in the 5.8 GHz range. APTA encourages the TTC to assess the vulnerability of the system to potential hacking and initiate hardening measures as required. **(Supplemental form page 90 #4)**	A	KRACK vulnerability has been addressed for on-board and wayside radios. TTC continues to implement industry best practices to protect the WiFi system. ITS is planning a cyber-security audit by a third-party for the TTC and the ATC wireless network will be part of this audit. Updated 23/1/2019 - TTC has performed an audit led by the ITS group within TTC. Their findings and recommendations will be applied by the end of March 2019 with additional measures applied by the end of May 2019.	31/12/2019	R. Chhibbar Manager - TCE ATC	
52	Fire Safety & Emergency Planning 3-C	Although post incident critiques are periodically performed by TTC, there did not appear to be any formalized guidance as to when or what type of incidents that these critiques are to be performed. The audit team encourages the Emergency Planning staff to facilitate post incident critiques to evaluate the effects and effectiveness of actions of TTC personnel and first responders on the outcome of the operations for major service disruptions. **(Supplemental form page 91 #5)**	A	Informal post incident debriefings are held following major events by the lead Department responding to the emergency. The Emergency Management Program is scheduled to be republished in 2019 to be in compliance with NFPA 1600. This will mandate formal after action reporting.	30/06/2019	R. Duggan Manager FSEP	
53	Fire Safety & Emergency Planning 3-C	The audit staff recommends that TTC re-evaluate its use of the Incident Command System (ICS) to confirm that the appropriate structure to facilitate incident management activities is employed as well as to ensure that the foundations of ICS management are in place during major service disruptions. **(Supplemental form page 91 #6)**	A	The Emergency Management Program is scheduled to be republished in 2019 to be in compliance with NFPA 1600. This will reinforce the IMS structure and training and testing requirements, based on function throughout the organization.	30/06/2019	R. Duggan Manager FSEP	
54	Transit Enforcement Unit 3-C	The team suggests that the TTC evaluate technology measures designed to detect intrusions from the platform into the tunnel areas and other ancillary spaces which can be easily breached by trespassers which could result in accidents or service delays. **(Supplemental form page 91 #7)**	A	A formal study on Platform Edge Doors is being conducted that will effectively seal the subway tunnel from the platform. Further direction will be based upon recommendations of the report. Updated 16/1/2019 - Successful bidder has been selected. Contract being drawn up.	30/06/2020	J. O'Grady Chief Safety Officer	
55	~~Transit Enforcement Unit~~ Service Delivery 2-B	Although TTC's infrastructure includes video cameras throughout the system, it was not clear to the audit team whether design criteria exist for placement of the cameras. APTA recommends that agency-wide security design criteria should be developed with input from the TEU, to guide consistent and effective practices throughout the system. **(Supplemental form page 91 #8)**	A	A formal camera strategy is currently being developed for TTC camera users and Video Services. Updated 17/4/2019 - The Corporate Camera Strategy & Delivery Program is underway. Through the program, enterprise inventory of CCTV cameras will be completed. In addition, new policies are being developed which will be followed by development and/or revision of standards and specifications. Through the policies, standards and specifications it is expected that security and privacy design concerns will be addressed.	31/12/2019	C. Greenwood Chief Service Officer	
56	Transit Enforcement Unit 3-C	All requests for video data from external entities has not consistently been coordinated through the TEU. A policy/procedure should be developed that clearly outlines the process that will be followed for such requests. **(Supplemental form page 91 #9)**	A	As per item above #55	N/A	N/A	

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57	Protective Services 3-C	In discussions with the Revenue Operations and Protective Services groups there appeared to be some overlap in functional responsibilities. TTC is encouraged to evaluate the reporting relationships and segregation of functions between the Revenue Operations team and Protective Services unit to determine whether a consolidation of similar functions can yield a more cost effective and efficient operation. **(Supplemental form page 92 #10)**	R	While there may be some minor overlap of responsibility while in the Patten Building, both the PSG's and Revenue Operations Security have different roles and responsibilities , site security vs security of the funds themselves.	N/A	W. Scott Transit Enforcement	N/A
58	Protective Services 3-C	Several contract guard service agreements are used by different departments (Protective Services and Revenue Operations). As contracts expire, consideration should be given to consolidating contracts to align qualifications, improve efficiencies and for economy of scale. **(Supplemental form page 92 #11)**	R	Different groups within the Commission require varying levels of contracted security, i.e. armed guards in Revenue Operations vs gatehouse attendants vs fire watch at a property.	N/A	W. Scott Transit Enforcement	N/A
59	Protective Services 2-B	APTA encourages TTC to develop agency wide security design criterion, based on the principles of Crime Prevention through Environmental Design (CPTED). This initiative should be coordinated with input from the TEU/Industrial Security, to guide consistent and effective practices. **(Supplemental form page 92 #12)**	A	An Industrial Security Committee exists with representation from across the Commission. A comprehensive review of the system security function is being conducted and will be presented to the Executive in Q4 2018. Updated 6/2/2019 - SPO position currently vacant. To be staffed in Q2 2019. Their first project will be to develop a new Security Management Program to dictate the security posture throughout the Commission.	~~31/12/2018~~ 31/12/2019	W. Scott & M. Verbeek - Transit Enforcement	
60	~~People Group~~ Service Delivery 2-B	The camera video retrieval program is housed in the People Group, but different departments procure and install cameras and camera video can't always be easily accessed. The audit team recommends that TTC perform a system-wide camera inventory, establish camera and video standards, develop a camera and video system strategy that includes camera and recorder performance specifications, design criteria and placement consistent with CPTED principles. **(Supplemental form page 92 #13)**	A	As per item above #55	N/A	N/A	
61	People Group 3-C	Currently one person manages the camera video retrieval program as an auxiliary task. The audit team suggests that consideration be given to having that responsibility assigned to a designated person or person(s) to meet the requests and to ensure that personnel are available to retrieve camera video footage during subway operating hours. The audit team also encourages that TTC explore an enterprise cloud WIFI solution for uploading video. **(Supplemental form page 92 #14)**	A	Updated 18/1/2019 - A request has already been made to create a new position to allow the Video Services Manager to concentrate their efforts on Video Management. Although the proposed request was supported, there was no headcount available in the 2019 budget process to support this initiative. This recommendation could be implemented but only with the provision that a single headcount become available in 2019 or through the 2020 budget process. The TTC did explore a cloud storage solution but has decided to move forward with an in-house server solution that will serve needs effectively.	31/12/2020	P. Manherz	