

O-Train Line 1

State of Operational Readiness

February 13, 2019



State of Operational Readiness: Issues Impacting Ability to Train and Prepare for Revenue Service

- System Access
 - Lack of full system access provides limited ability to:
 - simulate regular service operations (loop operation) w/ station stops, door cycling etc
 - stress test the system under load (2-car trains operating under peak period headways for extended periods of time)
 - Identify and address operational issues prior to revenue service
 - stress the “sense of urgency” required for high quality and reliable operations
 - hone critical operating skills of EROs, ERSs and ERCs
 - test the step-back operation



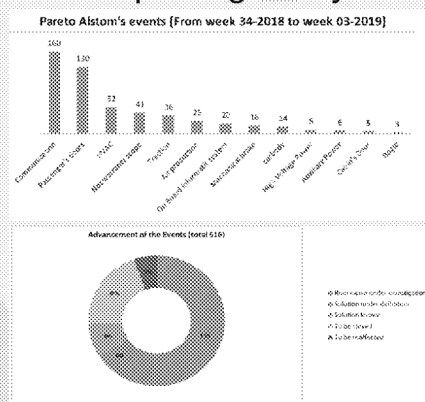
Limited exposure to 2 car train ops – one of the leading problems for service preparedness

Sense of urgency – applies to all OCT operational staff as well as RTG/RTM. And should be applying this concept now, while in T&C

State of Operational Readiness: Issues Impacting Ability to Train and Prepare for Revenue Service

- Vehicle Availability & Reliability
 - Vehicle Access
 - Limited ability to simulate and gain experience running full simulated service including system start-up, headway transitions and service shutdown
 - Limited experience with or ability to operate 2-car train operation
 - Vehicle Reliability - Concerning
 - High volume of faults and other vehicle problems
 - Climatic issues (cab & pass. compartments) –
 - Inability to reach acceptable temperature limits and defrost windshields
 - Important to address before weather changes (don't let slip off the radar)
 - Limited confidence the fleet will support sustained operation w/o problems
 - Majority of fleet not being cycled into operations (restricted to a small % of fleet)

State of Operational Readiness: Issues Impacting Ability to Train and Prepare for Revenue Service



IOS Code	Count
IOS052: Loss of two or more doors on the same side in same unit	54
IOS055: Loss of internal displaying/impaired displaying in one car	49
IOS049: Loss of one door	24
IOS034: Loss of cabin heater	20
IOS056: Loss of the two NVR in one element	15
IOS021: ATO mode Not operational	15
IOS046: Inconsistency with DPM relay of key switch	10
IOS008: Leveling system is not available or high leakage in pneumatic circuit	9
IOS063: Loss of 1 PEI (except the PEIs near driver's cab in M11 and M12)	8
IOS035: Too many HVAC cannot provide a fresh air flow in the same unit (HVAC down or fresh air dampers closed)	4
IOS007: At least one Brake is under major fault	4
IOS050: Loss of two doors	4
IOS069: Loss of internal displaying	3
IOS042: Loss of one AFS	2
IOS075: Traction major fault level 3	2
IOS075: Traction major fault level 4	2
IOS060: Loss of one audio hub (cab)	1
IOS059: Loss of one NVR	1
IOS025: Brake degraded mode level 2	1
IOS011: AF EVR recording faulty in multiple units	1
IOS024: Brake degraded mode level 1	1
Grand Total:	230



State of Operational Readiness: Issues Impacting Ability to Train and Prepare for Revenue Service

- Systems Availability & Reliability
 - Switch & Switch Heaters
 - Reliability/Effectiveness is concerning
 - “Fit for Purpose” is ????
 - TVS
 - No TOCC Control (as of now) – what is workaround solution?
 - St-Laurent Tunnel TVS Issue & potential Impact on Operations
 - RTM Snow Fighting Equipment Design/Functionality
 - Lack of urgency by RTM/RTG
 - Reliability of equipment –Refurbished Regulator, Skid Steer problems – No back-up plans
 - Platform/wing conflict
 - Back-up Plans



Switch Heater – Big design issue. Needs to be addressed and not allow to drop off the radar

TVS – Workaround issue if not fully functional (from TOCC). Need to start dialogue now and obtain assurances and commitments with appropriate stakeholders

Snow Fighting – RTM needs to have contracted resources (personnel or equipment) to be tapped into to assist in clearing guideways, snow drifts, stations, etc

May be in OCT's interest to identify internal resources that could be called in to assist

State of Operational Readiness:

- EROs
 - √ 90% Staffed
 - √ Well trained and experienced in basic vehicle operation and "Itching to get out and operate"
 - Experience operating in a revenue service environment is LACKING due to track/vehicle access issues. Critical for EROs to operate in simulated regular service ASAP to:
 - develop that rhythm and "sense of urgency"
 - verify effectiveness of operating rules and procedures (conducting live drills and exercises)
- ERSs
 - √ Energetic and "ready to roll"
 - No true experience in managing Rail field operations:
 - Terminal operations
 - Response to system, vehicle and other problems
 - Redeployment of staff following service interruptions
 - TTC Staff Exchange
 - Step back operations
- ✓ Job Aides/ Checklists Developed

State of Operational Readiness:

- ERCs
 - √ Fully Staffed
 - ATS system familiarization is strong but lacking experience in other key system elements
 - SCADA (classroom TRNG only – OJT week of 2/11)
 - Alarms and Alarm Management Plan (awaiting submittal)
 - PA/PID and Fire Panel (training being scheduled – dates not established)
 - TVS (classroom only – no hands on – not scheduled)
 - Staff unable to gain experience in managing a railroad operation in a revenue service environment
 - Staff unable to develop confidence in vehicles and systems which is hampering development
 - Move to TOCC and away from watchful eyes will force decision making
 - Ex: Concern to throw switches, afraid to lose territory.
 - Due to constant software upgrades - No timetables available for practicing regular operations (required for Trial Running- minimum 5 week period to develop)

State of Operational Readiness:

- ERCs
 - ERC certification process is vague and under current requirements and circumstances could be in jeopardy. Need for:
 - Re-evaluation of ERC certification requirements. Need to all be comfortable with whatever certification requirements that have been established or otherwise proposed
 - Addressing potential ERC training instructor issue
 - Provide affirmation that the ERCs can adequately and safely perform their functions
 - Critical system status information (ex: degraded brake rates) not fully understood or communicated
 - TOCC needs to understand what impact Thales/Alstom modifications COULD have on the vehicles/system and plan accordingly
 - Establish a prescribed method of notification
 - Educate the rest of the organization about "the worst that could happen" allowing for fact based decision making.



Degraded brake rates to compensate for lack of sand in vehicles
ERCs don't always realize criticality of issues they are dealing with (learning experience)

Needs to learn to ask the right questions to understand potential affect

State of Operational Readiness: Day-to-Day Operations – General Observations

- Lack of Coordination Between OCT/RTM and RTG
 - Within RTG - Right hand doesn't always know what the left hand is doing. OCT getting conflicting/inaccurate information
- Actions Between Rail Ops and TOCC can Appear Uncoordinated at Times (ex: Cold Weather Procedures)
 - Rail Ops. can develop/assist in development of the operating plan
 - TOCC takes the lead in executing them
 - Operational decision making needs to be clearly defined
- Multiple POC for Line 1 Operating Information From RTG/RTM
 - Need for a single POC within Rail Ops for all such information and correspondence. Flow to other Areas as determined by Dir. Transit Ops



Multiple communication paths from RTG/RTM to OCT

State of Operational Readiness: Overall Observations

- Basic Operating Rules and Procedures in Place. Some 'Holes' Identified in SOPs. Working With Staff on Resolution
 - Some SOPs do not seem to be followed to the literal letter of the law
- Evaluation of Zone Controller Failure Impacts and Development of a Decision Tree for Management of Zone Controller Failures Under Development
- Service Launch Command & Control Plan Developed and Under Final Review
- Failure Management Plans Developed but Refinement on Hold due to Constant Changing of Diversion Lines
- Rules Compliance Program Under Development.
- ✓ SCC Activation Plan Developed
- ✓ Work Instructions/ Checklists Developed
- ✓ Vehicle Troubleshooting Guides Developed (and Approved by Alstom)
- ✓ Station Management Playbooks Developed for Each Station
- ✓ TOCC Communication Plans



State of Operational Readiness: Priority Actions Moving Forward

- Establishing a Realistic RSD.
 - Too many unrealistic milestones causing staff burn-out
- Gaining Access to the Full Alignment and Fleet to Fully Test System and Operate Simulated Revenue Service (regular revenue service hours)
 - Testing and verifying system capability under full load for extended periods of time
 - Early identification and resolution of operating problems (terminals, pull-out/in operation)
 - Pushing for and establishing the operating rhythm with 2 car trains
 - Instilling that 'sense of urgency' in the operating and RTM staff
 - Getting staff accustomed to performing and comfortable in their regular job duties
 - Fine tuning the coordination between RTM and OCT
- Determining a Minimum "Practice Running Period" Requirement for Entry into Revenue Service (8 weeks minimum)



State of Operational Readiness:

Priority Actions Moving Forward

- Continue to Close Gaps in SOPs and Finalize Operating Rules & Procedures and the Rules Compliance Program
 - ROW Policy
 - Work with RTM to clarify roles and responsibilities. Clearly defining who is responsible for what (clearing/throwing switches, directing troubleshooting of trains, etc, response to other issues and problems)
 - Maintenance of OCS Power on weekends during T&C when OC needs access to the ROW for training or other (snow clearing) purposes
- Address ERC final training and certification issues. Identification of workaround solution to address any potential issue
- Finalize Operating Schedule and Diversion Routes in Thales Timetabler
- End the Practice of Storage Trains on the Mainline. Return all Trains to the Yard (if in an Operational State and in Accordance With VMOS)



State of Operational Readiness: Priority Actions Moving Forward

- RTM Initial Winter Weather Plan Inadequate.

Further development of coordinated winter weather plan between RTM and OC Transpo that:

- Assures all parties fully understand winter weather/snow clearing events take priority over all other activities (T&C, Maintenance, etc) and includes
 - Weather monitoring and notification (single source!)
 - Establishment of conditions warranting operation of “snow” trains to clear the mainline. Cancellation of T&C (prior to RSAD) construction, and maintenance work to allow Operations access to the mainline
 - Snow fighting equipment – observation of effectiveness and research of additional equip
 - Personnel – and their duties and responsible parties
 - Pre-determined communications streams back to the TOCC (designated parties providing updates on an interval basis/or as required)
 - After action review – “how’d we do? What can we do better?” – somehow documented for posterity and basis for changes to existing rules, procedures, plans, etc



State of Operational Readiness: Priority Actions Moving Forward

- Vehicle Acceptance
 - PA limits the acceptance to substantial completion
 - More robust process is required to be developed/executed
- Stress to TOCC staff – Focus on Line 1 Safety, Service and Protecting OCT Interest. Leave Contractual Provisions/Details to Others. Inform decision makers as required
- Finalizing the IMIRS System



Engineering hours – afraid to take the railroad back

Management of vehicle and system delays – do what's best for the customers – don't worry about affects on penalties et

State of Operational Readiness: Low Priority or Items That Can Be Deferred

- Defer Non-essential Drills. Focus on:
 - Drills that test the abilities of staff; especially ERCs
 - Train & system problems
 - Implementation of delay management strategies
 - OCS Power outages
 - Medical emergencies on board trains
 - Drills that verify effective coordination between OCT and RTM
 - Service launch & service shutdown (handover of trains)
 - Removal of and replacing trains during revenue service
 - Establishment of work zones (during revenue service and engineering hours)
 - Movement of non-revenue vehicles on the mainline
 - OCS power removal and restoration

State of Operational Readiness: Low Priority or Items That Can Be Deferred

- Defer Non-essential Drills. Focus on:
 - Drills that verify operating rules and procedures
 - Continue using table tops and other activities to ensure that ERCs, field staff, EROs and RTM staff know what they are responsible for
 - Establish documentation stream and updates with regulatory monitor to ensure they are knowledgeable of OCT efforts at safety assurance activities.



Enhancing the dialogue and transparency between OCT Ops and the regulatory monitor to demonstrate compliance with the SMS – providing bi-weekly or monthly updates on efforts to finalize documentation (Rules and procedures) completion or drills and etc