



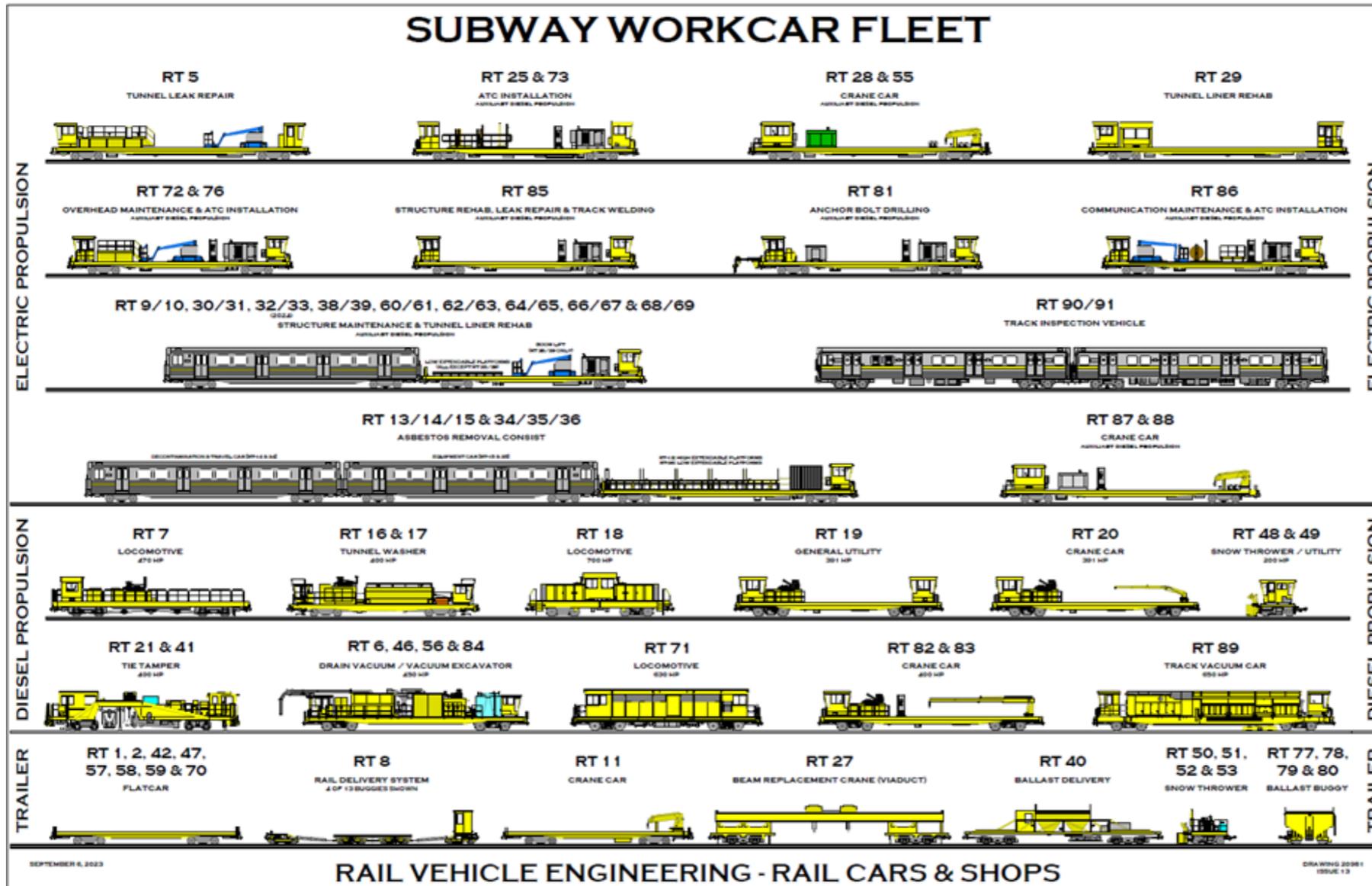
Work Car Hydraulic Leak Investigations Management Action Plans Update

March 11, 2026

ARMC Meeting – Presentation

Rich Wong – Chief Transportation and Vehicles Officer
Avi Berger – Project Manager, Rail Cars and Shops

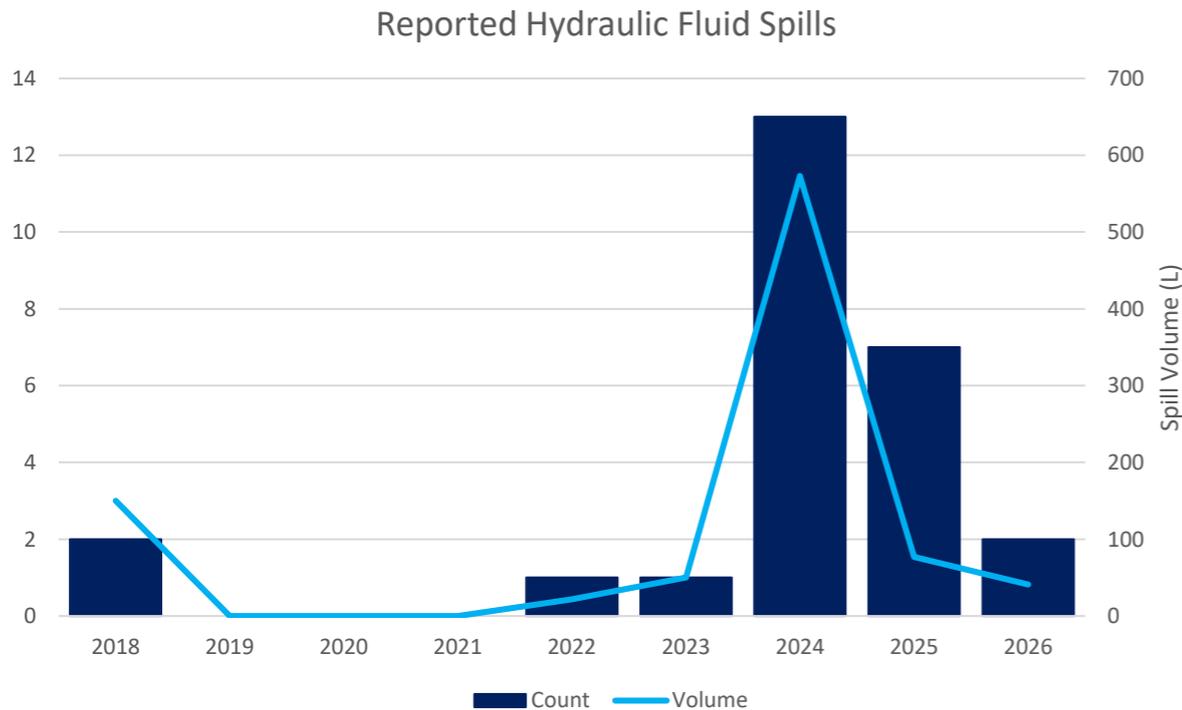
Work Car Fleet



- 77 Specialty Work Cars
- 51 of 77 (66%) are equipped with hydraulic drives and/or auxiliary equipment



Historical Trending



- Large, sudden increase in spills in 2024 prompted expert reviews from Hatch Consulting (technical analysis) and APTA (peer review)
- Spill frequency and severity has since sharply declined, despite increased vehicle utilization

Work Car Hydraulic Spills – January 2024 to February 2026

Hydraulic Leak Incidents Reviewed by Hatch & APTA 8 incidents, ~555L over 5 months (Jan to May 2024)

Date	Vehicle	Location	Service Disruption	Amount of Spill	Root Cause
January 14, 2024	RT-56	Mainline	Y	10 L	Failed hydrostatic hose
January 17, 2024	RT-17	Mainline	Y	120 L	Failed filter O-ring
February 10, 2024	RT-7	Yard	N	5 L	Failed filter housing O-ring
April 22, 2024	RT-41	Yard	N	50 L	Failed distribution block seal
May 13, 2024	RT-56	Mainline	Y	140 L	Hose abrasion, auxiliary pump pressure line
May 15, 2024	RT-84	Mainline	Y	200 L	Clutch failure, secondary hydraulic line damage
May 16, 2024	RT-41	Mainline	N	<1 L	Leaking hydrostatic pressure sensor seal
May 26, 2024	RT-18	Mainline	N	30 L	Failed hose crimp (new hose)

Hydraulic Leak Incidents Since Hatch & APTA's Review 13 incidents, ~115L over 21 months (June 2024 to Feb 2026)

Date	Vehicle	Location	Service Disruption	Amount of Spill	Root Cause
June 7, 2024	RT-55	Yard	N	2 L	Maintenance error
June 17, 2024	RT-19	Yard	N	1 L	Motor seal failure – found on inspection
July 14, 2024	RT-88	Mainline	N	1 L	Suspect user error
September 27, 2024	RT-6	Yard	N	1 L	Motor seal failure
October 22, 2024	RT-21	Mainline	Y	2 L	Suspect user error
April 30, 2025	RT-84	Mainline	N	<1 L	Defective pump replaced on warranty
June 25, 2025	RT-21	Vehicle Interior	N	<1 L	Solenoid o-ring failure
August 14, 2025	RT-81	Mainline	Y	30 L	Fatigue failure of hydraulic caliper
September 28, 2025	RT-86	Mainline	N	<1 L	Leak at shut-off valve in APU
November 16, 2025	RT-41	Mainline	Y	35 L	Suspect user error
December 22, 2025	RT-40	Yard	N	<1 L	Failed vibrator housing
January 17, 2026	RT-17	Mainline	Y	40	Auxiliary hose failure
February 25, 2026	RT-46	Mainline	N	<1 L	Under investigation

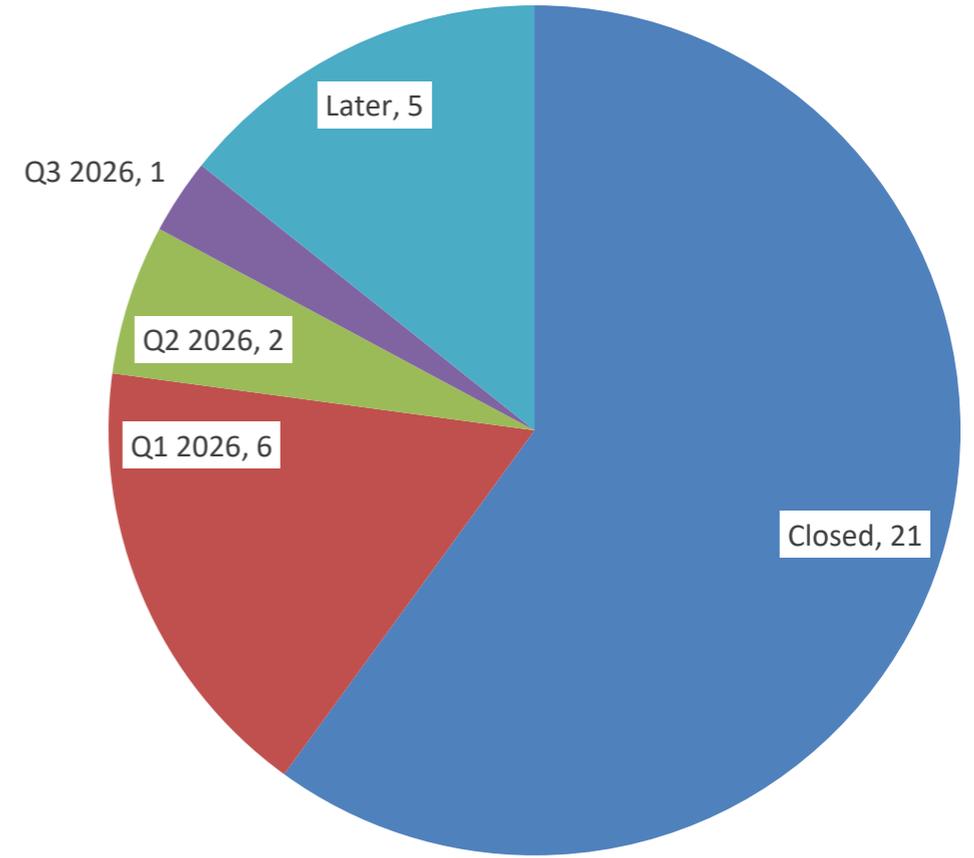
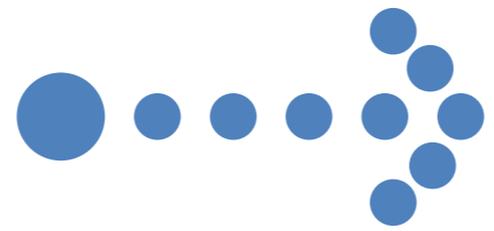


Action Plan and Progress

16 Hatch Recommendations



11 APTA Recommendations



- 21 Confirmed closed by ARC
- 8 expected closed before FIFA World Cup 2026™
- 6 remaining Management Action Plans (MAP) have been operationalized, started, and/or mitigated with compensating controls



HATCH Audit Recommendations

	Recommendation	Related Management Action Plan	Status As Evaluated By Internal Audit
1	Update work car recovery procedure to incorporate guidance to address hydraulic fluid leaks	MAP #1, 2, 3	MAP #1 & 2 Closed MAP #3 due 2029
2	Develop guidelines for co-ordination between TTC departments in response to spill incidents	MAP #4	Closed
3	Improve cleaning (efficiency of) cleaning protocol for hydraulic spills	MAP #5	Operationalized Due Q3 2026
4	Improve standard maintenance practices and procedures for work car maintenance tasks	MAP #6, 7	MAP #6 Closed MAP #7 due 2029
5	Quality assurance resources to oversee work car maintenance	MAP #8, 9	Closed
6	Establish a more detailed inspection regimen	MAP #10, 11	Closed
7	Determine an appropriate inspection interval for work car system components	MAP #12, 13	In Progress Estimated Completion Q2 2026
8	Implement stronger quality assurance and control processes	MAP #14	Closed
9	Update maintenance reference documentation	MAP #15	Closed



HATCH Audit Recommendations

	Recommendation	Related Management Action Plan	Status As Evaluated By Internal Audit
10	Improve inventory management protocols and configuration control guidelines	MAP #17	In progress Due Q4 2026
11	Provide on-call work car technical expert to support Transit Control Centre during non-revenue service shifts	MAP #1	Closed
12	Develop training materials and provide formal training	MAP #19	In progress Due Q1 2026
13	Update the SMS system in a timely fashion and improve the level of information in the reporting system	MAP #20	Closed
14	Consider automatically shutting down hydraulic systems on low fluid level alarm activation	MAP #21, 22	Operationalized Due Q1 2026
15	Consider coupling the above new functionality with the implementation of a data logger to record activation of the low hydraulic fluid level alarm	MAP #23, 24	Closed
16	Perform audit to evaluate the condition and labelling of the (hose crimping) tool	MAP #25	Closed



APTA Peer Review Audit Recommendations

	Recommendation	Related Management Action Plan	Status As Evaluated By Internal Audit
1	Develop maintenance instructions for work cars that are specific to the systems of the work car design	MAP #26, 27	Closed
2	Include the proper cleaning of work cars prior to all periodic maintenance intervals	MAP #28	Operationalized Due Q1 2026
3	Develop procedures for the fabrication of hydraulic hoses that are in line with the industry standards that include proper training and qualifications for personnel who fabricate hydraulic hoses	MAP #29, 30	Closed
4	Evaluate usage of work car maintenance personnel to be available to assist when Track and Structure work cars are operating on the main line in case they become disabled	MAP #32	Operationalized Provisionally 2026 Budget adjustment not supported
5	Conduct exercises/drills on work car recovery from the main line with both operators and maintenance personnel to re-enforce procedures	MAP #33, 34	MAP #34 Closed MAP #33 due Q1 2026
6	Review or revise after action review process/investigation to ensure that key facts of the incident are captured	MAP #35, 36	MAP #35 Closed Operationalized Provisionally Budget adjustment pending



APTA Peer Review Audit Recommendations

	Recommendation	Related Management Action Plan	Status As Evaluated By Internal Audit
7	Consider developing a policy for who can authorize the movement of disabled work car to ensure that it can be moved safely	MAP #37	Closed
8	Re-emphasize the scope of the Track and Structure work car operator training to students so they know what mechanical systems they are qualified to assess upon completion of the training and when to escalate mechanical problems to work car maintenance personnel	MAP #38	Closed
9	Continue current practices of revenue vehicle incident management and that policies and procedures for incident management of non-revenue vehicles be aligned with that of revenue vehicles as both present the same level of risk to service disruptions	MAP #39	Closed
10	Develop established communication expectations and protocols for incident notification and post-incident updates	MAP #40	Closed
11	Consider additional resources and/or personnel to manage public communication expectations	MAP #41	Operationalized 2026 Budget adjustment not supported

