INTERNAL AUDIT REPORT

St. John's Regional Fire Department

Mechanical Division Audit

Assignment # 24-01

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TABLE OF CONTENTS

INTRODUCTION ***1***

OBJECTIVE **1**

BACKGROUND **1**

METHODOLOGY & SCOPE **7**

CONCLUSION **8**

EXECUTIVE SUMMARY ***10***

DETAILED ANALYSIS ***14***

Section 1 – Inspections and Compliance **14**

Issue 1.1 - Vehicle Inspection Certificates 14
Issue 1.2 - Preventive Maintenance Program and Procedure 17
Issue 1.3 - Annual Maintenance Hours and Required Resources 22
Issue 1.4 - Mechanical Division Facility 27
Issue 1.5 - Outsourcing Decisions 29

Section 2 – Governance **31**

Issue 2.1 - Goals and Objectives 31
Issue 2.2 - Annual Divisional Report 32
Issue 2.3 - Fire Apparatus Committee 35
Issue 2.4 - Leave Coverage Plan 37
Issue 2.5 - Service Work Order Procedure 38

Section 3 - Occupational Health and Safety **40**

Issue 3.1 - Working Alone Risk Assessment 40
Issue 3.2 - Working Alone Procedures 41
Issue 3.3 - Divisional Risk Assessment 43
Issue 3.4 - Dating of Safe Work Procedures 44
Issue 3.5 - Welding Bay 46
Issue 3.6 - Concrete Walls of Inspection Pit 47
Issue 3.7 - Reverse Driving Safe Work Practices 48

Section 4 – Electronic Management Systems **50**

Issue 4.1 - Inventory System 50
Issue 4.2 - Fleet Management System 53

Appendix A – Internal Controls for Inventory **57**

To: Chair & Committee Members, City of St. John's Audit Committee

Area Responsible: Sherry Colford – Fire Chief, SJRFD

Copy to: Kevin Breen, City Manager

INTRODUCTION

OBJECTIVE

In accordance with the City of St. John's ("City") 2024 approved audit plan (SJMC-R-2024-04-30/197), the objective of the audit was to determine if the St. John's Regional Fire Department's Mechanical Division has efficient and effective processes in place to maintain its fleet of heavy-duty fire apparatus.

BACKGROUND

Mechanical Division

Through the office of the Fire Chief, the St. John's Regional Fire Department ("SJRFD") is responsible for providing St. John's and surrounding regions with a high standard of fire and emergency service in an efficient and economic manner. Services provided to the public include fire suppression, fire prevention, road traffic accident response, medical response, hazardous material and special teams response, and 911 communication services.

The SJRFD's Mechanical Division plays an essential role in facilitating many of these frontline services. The division is responsible for the repair, maintenance, and testing of all fire apparatus and support equipment within the SJRFD. The division is also responsible for fire apparatus procurement and disposal and ensuring all vehicles are in compliance with the Newfoundland and Labrador Highway Traffic Act.

Roles and Responsibilities

Mechanical Division, which is located at Kent's Pond Fire Station, is staffed with three members including the Manager of Mechanical Services ("MS Manager") and two fire apparatus technicians.

The MS Manager, who at the time of the audit reported directly to the Fire Chief[1], is responsible for the development, implementation, and monitoring of all programs relating to the mechanical operations of the SJRFD. Associated duties include the supervision of the fire apparatus technicians, providing technical assistance on mechanical problems, making recommendations on the purchase and disposal of SJRFD vehicles, developing policies and operational guidelines, and various other management tasks.

The two fire apparatus technicians are responsible for diagnosing vehicle malfunctions and making the associated repairs either at Mechanical Division's facility or in the field. The technicians also perform preventive maintenance work and are involved in various other Mechanical Division tasks. There were three fire apparatus technicians prior to 2017, however, a position was eliminated during the City of St. John's comprehensive program review in 2016.

Budget

Mechanical Division had a total budget of $649,755 in 2023 with approximately $390,000 being salaries and benefits. The budget also included $65,000 to cover work that is outsourced to third-party auto repair garages. Although the majority of Mechanical Division work is performed in-house, some outsourcing is required to meet divisional work demands.

[1] Subsequent to the completion of audit field work, the SJRFD reporting structure was changed to have the MS Manager report to the Deputy Chief of Support Services rather than the Fire Chief.

Fleet Composition and NFPA Standards

The SJRFD fleet is comprised of over 50 vehicles including 24 heavy-duty fire apparatus such as pumpers, rescues, aerials, and special purpose vehicles. These heavy-duty vehicles are complex pieces of machinery with many components that are highly integrated and specialized. Given this, the National Fire Protection Association ("NFPA"), which is a global nonprofit organization that is considered the world's leading resource on fire hazards, has developed various guidance documents to assist fire departments in ensuring the safety of their fleets.

NFPA Standard 1911 - Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles outlines the minimum requirements for establishing an inspection, maintenance, and testing program for in-service emergency vehicles. The standard notes that a complete inspection and diagnostic check of an emergency vehicle shall be conducted at least as frequently as recommended by the emergency vehicle manufacturer or once per year, whichever comes first. These inspections are an integral aspect of a fire departments preventive maintenance program, which aim to keep all fire apparatus in safe and reliable working condition. The standard also notes that all emergency vehicles are required to meet applicable federal and provincial laws regarding motor vehicle inspections and maintenance work.

Similarly, NFPA Standard 1071 - Emergency Vehicle Technician Professional Qualifications outlines the recommended minimum skills and knowledge a person should have to competently inspect, diagnose, and perform repairs on emergency vehicles. The standard notes that while certain mechanical tasks are generic to all motor vehicles, there are a number of diagnostic tests and repairs that are unique to emergency vehicles. As such, those qualified to work on emergency vehicles require specialized knowledge and skills that generally go beyond those of a regular mechanic.

Inventory

To facilitate the repair and maintenance process, Mechanical Division keeps an inventory of mechanical parts and consumables in an inventory storage cage at Kent's Pond Fire Station. The fire apparatus technicians and MS Manager have access to the cage as required to complete necessary repairs and maintenance on the fire apparatus. If a part is not carried in inventory, the MS Manager is responsible for sourcing and ordering the required part.

Mechanical Division personnel also obtain inventory from the City of St. John's internal inventory storage area at the City Depot. However, inventory at the City Depot is general automotive inventory and not fire apparatus specific.

Repair and Maintenance Process

Mechanical Division utilizes a standardized service work order process to complete repairs and maintenance on the vehicles. An electronic fleet management information system, Wennsoft, is utilized to help streamline the repair process. Wennsoft is integrated with the City's enterprise resource planning system Microsoft Dynamics GP.

The majority of mechanical work performed by Mechanical Division is initiated through a Request for Service Form. This form is completed by an on-duty Platoon Chief and outlines a potential mechanical issue with a SJRFD vehicle that needs to be addressed. The completed form is forwarded to the MS Manager who reviews the request for service and determines the appropriate course of action.

If service is required, the MS Manager creates a service work order in Wennsoft that includes a description of the issue. The MS manager subsequently prints the work order and physically passes it to a fire apparatus technician who road tests the vehicle to confirm or diagnose the issue. The technician then executes the required service.

Once the service is complete, the technician signs and dates the work order and returns it to the MS Manager who scans the work order into Wennsoft and attaches it to the electronic work order. The physical work order is also saved in a file at the MS Manager's office at Central Fire Station.

Preventive Maintenance Program and Annual Inspections

Mechanical Division has draft procedure in place outlining the preventive maintenance program and accompanying annual inspection process. The procedure includes reference to the standardized work order process and an example of a yearly preventive maintenance program for its fleet of heavy-duty vehicles.

As noted in the draft procedure, Mechanical Division endeavors to have each of its heavy-duty vehicles that weigh in excess of 4,500 kilograms obtain a valid inspection certificate by passing a regulated annual vehicle inspection at an Official Inspection Station pursuant to the Newfoundland and Labrador Official Inspection Station Regulations ("Regulations"). This work must be contracted out to a third party as Mechanical Division is not recognized as an Official Inspection Station under the Regulations.

As part of this process, Mechanical Division personnel performs a more comprehensive Type A Heavy-Duty vehicle inspection in-house prior to sending the vehicle to an Official Inspection Station. This process helps ensure the vehicle will pass the inspection at the Official Inspection Station without any issues or delays. Furthermore, it also provides an additional quality assurance measure as fire apparatus technicians are trained to examine unique parts of a fire apparatus that are not necessarily included in a standard vehicle inspection performed at an Official Inspection Station.

In addition to yearly Type A Heavy-Duty inspections, the draft procedure also outlines an annual Type B Heavy-Duty inspection, which, per management,

includes additional preventive maintenance work such as oil and filter changes. All preventive maintenance work is tracked through the standardized work order process.

Benefits and Importance of In-House Mechanical Division

Leading organizations including the NFPA and the Fire Underwriters Survey note that having an in-house repair and maintenance program is preferred over outsourcing all mechanical work to third-party garages.

For instance, NFPA highlights the importance of technicians having knowledge of fire department operations, the mission of the fire service, and various NFPA guidance documents. Such knowledge can only be gained through working within a fire department.

Likewise, the Fire Underwriters Survey, which is a national organization that provides data on public fire protection for insurance statistical work and underwriting purposes, awards higher credit to fire departments with in-house maintenance programs and mechanics as opposed to fire departments that outsource all work to private garages.

Internally, SJRFD management recognizes the benefits of in-house mechanical expertise and notes that the ability to immediately respond to potential frontline vehicle and equipment malfunctions is critical, especially during emergency situations. Furthermore, having an in-house repair and maintenance program facilitates better planning as repair work can be prioritized based on changing organizational conditions and demands. Given this, it is critical that Mechanical Division operates in an efficient, effective, and safe manner in order to serve internal SJRFD stakeholders and those that require emergency fire response services.

METHODOLOGY & SCOPE

The scope of the audit included a review of various repair and maintenance processes and related internal controls in place at the SJRFD's Mechanical Division.

Foremost, the audit reviewed if SJRFD's heavy-duty vehicles were obtaining valid inspection certificates by passing their regulated annual vehicle inspections at an Official Inspection Station as required by the Regulations. This involved the testing of source documentation, including an examination of vehicle inspection certificates and related service work orders generated from the Wennsoft system. The accuracy and completeness of the supporting documentation was also reviewed during this testing.

The audit also reviewed other mechanical processes in place for SJRFD heavy-duty vehicles, including both the preventive maintenance program and the request for service process, to identify potential opportunities for improvement. As part of this review, a quantitative analysis was performed to estimate the annual hours required to maintain the SJRFD fleet and an estimate of the current resource hours available. The Wennsoft system was also examined during the audit to understand its capabilities and how it is integrated into the repair and maintenance processes.

Furthermore, processes related to Mechanical Division inventory were included in the scope of the audit. Audit work included a physical inspection of the inventory area and an examination of related inventory procedures to ensure they are reflective of best practices.

Select occupational health and safety processes were also reviewed during the audit. However, the scope of OHS issues included in the audit were limited to those that were brought forward by management during the initial planning stages of the engagement.

The audit also included an evaluation of governance related internal controls. This involved assessing whether processes and structures are implemented by senior management to inform, direct, manage, and monitor Mechanical Division activities toward the achievement of its objectives.

Audit procedures included discussions with management, observation, and an inspection of relevant source documentation such as official inspection certificates and service work orders. Only documentation from the 2022, 2023, and 2024 years was reviewed during the audit to ensure the relevancy of audit observations.

Unless otherwise noted, only processes related to heavy-duty vehicles weighing in excess of 4,500 kilograms were scoped into the audit. Therefore, processes and related repair and maintenance documentation related to light-duty vehicles, boats, generators, breathing apparatus, and other firefighting equipment was outside the scope of the audit. Likewise, the audit did not confirm if specialized parts of a fire apparatus such as hoses, aerial devices, pumps, etc. undergo appropriate inspections. Such parts are not included on the standard commercial vehicle inspection form and therefore were scoped out of the audit.

CONCLUSION

The SJRFD Mechanical Division has a variety of effective and efficient processes in place to maintain its fleet of heavy-duty vehicles. These include a standardized request for service process, the use of an electronic fleet information management system to facilitate repairs and maintenance, standard supporting documentation that is mainly accurate and complete, skilled and knowledgeable management and staff, and documented safe work practices.

However, certain processes in place at Mechanical Division are ineffective and inefficient. As a result, potential legislative requirements and best practices

relating to annual vehicle inspections and preventive maintenance are not being achieved. Management should therefore take action to ensure its heavy-duty vehicles undergo an annual motor vehicle inspection at an Official Inspection Station. Similarly, management can also improve its preventive maintenance process by making updates to its corresponding procedure, which is in draft format, and formally implementing the program. The potential addition of another human resource to Mechanical Division would make these recommended improvements more feasible and improve the overall operations of Mechanical Division.

Enhancements can also be made in other areas related to governance, inventory control, occupational health and safety, and information management systems. Both senior management and Mechanical Division management have been proactive in making improvements in these areas and continue to work to ensure Mechanical Division meets the needs of both internal stakeholders and the general public.

EXECUTIVE SUMMARY

The Office of the City Internal Auditor's ("OCIA") review of the St. John's Regional Fire Department's ("SJRFD") Mechanical Division focused on whether there are efficient and effective processes in place to maintain its fleet of heavy-duty fire apparatus.

Audit testing and procedures utilized during the review identified several positive outcomes. Foremost, Mechanical Division has implemented an electronic service work order system to execute and document vehicle repairs and maintenance. These systems help streamline the repair and maintenance process and provide a standardized method for documenting mechanical work performed on the vehicles. Related audit testing indicated that supporting documentation is mainly accurate and complete as management was able to provide supporting physical documentation to substantiate the completed repairs and maintenance.

Mechanical Division also has an extensive listing of safe work practices in place outlining how to safely perform various work tasks. These practices are essential in maintaining the wellbeing of employees and greatly contribute to the overall safety of Mechanical Division.

Discussions with Mechanical Division management also indicated that management has a strong understanding of National Fire Protection Association standards relating to the repair and maintenance of fire apparatus and related best practices. Multiple individuals within Mechanical Division have also achieved the Emergency Vehicle Technician designation under the Emergency Vehicle Technician Certification Commission. This designation is the leading certification for emergency vehicle technicians and demonstrates proven knowledge and competence in diagnosing and repairing emergency vehicle mechanical problems. Consequently, Mechanical Division personnel have the necessary

education and training to execute repairs and maintenance in a competent and efficient manner.

Management also use other internal controls such as standardized forms, management review, and physical controls as part of the repair and maintenance process. The use of these controls increase the consistency and accuracy of the process and contribute to the overall effectiveness and efficiency of Mechanical Division's operations.

Nevertheless, the audit identified opportunities for management to improve its internal processes in a number of areas. Foremost, management can take immediate action to ensure compliance with the Official Inspection Station Regulations ("Regulations") by having all heavy-duty fire apparatus pass an annual vehicle inspection at an Official Inspection Station. This will help ensure the safety of the fire apparatus and reduce potential non-compliance risks as outlined in the legislation. Likewise, management can take steps to formally implement its preventive maintenance procedure to help ensure its preventive maintenance program is carried out as scheduled each year.

Furthermore, a quantitative analysis of annual repair and maintenance hours performed during the audit suggests that adding an additional human resource, potentially to help with inventory management, systems support, and/or administration tasks, would create efficiencies within Mechanical Division and better allow Mechanical Division to meet its vehicle inspection and preventive maintenance obligations. Similarly, management should undertake a cost/benefit analysis to determine if a new mechanical facility, which could potentially help Mechanical Division qualify as an Official Inspection Station under the Regulations, is required to meet the current and long-term goals of the fire department.

There is also an opportunity to improve Mechanical Division's governance processes. This includes establishing goals and objectives for the division, developing annual work plans, and improving management communication protocols. Additionally, developing a leave coverage plan will help ensure the continuity of operations when the Mechanical Division manager is on leave.

Opportunities also exist to implement a Fire Apparatus Committee. These internal committees are generally comprised of individuals from various levels of the organization and provide a formalized mechanism to discuss and address any fleet related risks that are brought forward. They also improve operations and create "buy-in" across the fire department as various stakeholders have an opportunity for input.

Improvements are also recommended regarding various occupational health and safety processes. These include undertaking a hazard risk assessment to help identify working alone situations, mitigating related risks, and developing working alone procedures. Additionally, completing a hazard risk assessment for the entire division will help ensure that all current hazards are identified, and the appropriate risk mitigation measures are taken.

Moreover, it is recommended that management engage a qualified party to inspect the welding bay in Mechanical Division's facility to ensure the fan is providing sufficient ventilation pursuant to the Occupational Health and Safety Regulations. Similarly, management should contact City Buildings Division to reexamine the issue of the spiralling on the concrete walls of the inspection pit and consider making the necessary repairs to prevent further damage.

It is also recommended that management continue investigating if Microsoft Dynamics GP can be used as Mechanical Division's electronic inventory solution. However, if this solution is unsuitable, another inventory system should be

explored with the end goal of implementing an electronic inventory system that includes appropriate inventory controls.

Likewise, it would be prudent for management to further explore the capabilities of its fleet management information system, Wennsoft, prior to potentially acquiring a new system. As Wennsoft is also extensively used by the City of St. John's Fleet Division, it would also benefit Mechanical Division to consult with Fleet Division to ensure all aspects of the system are being utilized to streamline work and create efficiencies.

These recommendations and other observations outlined in the report will assist the SJRFD Mechanical Division in its continued effort in developing an effective and efficient repair and maintenance process.

DETAILED ANALYSIS

Section 1 – Inspections and Compliance

Issue 1.1 - Vehicle Inspection Certificates

Newfoundland and Labrador's Official Inspection Station Regulations ("Regulations") require all commercial vehicles to obtain a valid vehicle inspection certificate by passing an annual vehicle inspection at an Official Inspection Station. Per the Regulations, a commercial vehicle shall not be registered, operated, or permitted to be operated by the vehicle owner without a valid vehicle inspection certificate.

The Regulations define a commercial vehicle to include a truck, tractor, or trailer or a combination thereto exceeding a registered gross vehicle mass of 4,500 kilograms. Management indicated that the SJRFD has 24 heavy-duty fire apparatus that weigh in excess of 4,500 kilograms. Therefore, these vehicles could potentially be considered commercial vehicles under the Regulations due to their weight and would consequently be required to comply with the annual vehicle inspection requirement. In addition, management indicated that having these annual vehicle inspections completed on a yearly basis is a component of their draft preventive maintenance program.

During preliminary planning for the audit, Mechanical Division management indicated that several of its heavy-duty fire apparatus did not have up-to-date vehicle inspection certificates. The OCIA subsequently performed detailed audit testing that confirmed that as of April 28, 2024, 15 of the 24 heavy-duty fire apparatus did not have up-to-date vehicle inspection certificates. This could potentially lead to operational continuity issues for the SJRFD as the Regulations state that commercial vehicles cannot be operated without a valid inspection certificate. Additionally, safety risks are also increased when vehicles do not undergo an annual vehicle inspection.

During ensuing discussions management indicated that this issue can be attributed to a lack of divisional resources in Mechanical Division. Throughout the audit the OCIA also noted a number of factors that may have contributed to this issue. These factors, which are discussed throughout this audit report, include possible human resource constraints (see Issue 1.3), facility constraints (see Issue 1.4), a lack of certain governance processes (see Section 2), and underutilized electronic management systems (see Section 4).

The OCIA conducted additional audit testing on each of the 15 heavy-duty fire apparatus that did not have up-to-date vehicle inspection certificates. Testing showed that within the prior two years, Mechanical Division personnel performed a complete Type A Heavy-Duty inspection on seven of these vehicles and another three vehicles were road tested during servicing. Furthermore, two of the vehicles had extremely low utilization (e.g., only hundreds of KM driven each year), one was a spare truck, and two were trailers. Although these additional details somewhat reduce safety risks for those vehicles without up-to-date vehicle inspection certificates, potential non-compliance risks, as outlined in the Regulations, remain.

It should be noted that senior management took immediate action during the audit when it was notified of the 15 vehicles without an up-to-date vehicle inspection certificate. Management indicated this immediate action included working with Mechanical Division to ensure all outstanding vehicle inspections are completed as quickly as possible at an Official Inspection Station. Subsequent discussions with Mechanical Division management indicated that it expects to have up-to-date vehicle inspection certificates for all heavy-duty vehicles by the end of the year.

Recommendation 1.1

To mitigate potential safety and compliance risks, Mechanical Division, in consultation with SJRFD senior management, should continue to take steps to

ensure that all heavy-duty fire apparatus have up-to-date vehicle inspection certificates. This could include:

- Prioritizing Mechanical Division resources to focus on preparing applicable fire apparatus to pass their annual vehicle inspection at an Official Inspection Station (e.g., performing known repairs or maintenance that would be required to pass the inspection).

- Engaging third-party Official Inspection Stations to complete the vehicle inspections as quickly as possible.

- Leveraging City of St. John's resources to complete the vehicle inspections at the City Depot (an Official Inspection Station) with assistance from SJRFD Mechanical Division personnel.

- A combination of the above options.

- Another option, chosen by management, that will ensure all fire apparatus obtain up-to-date vehicle inspection certificates in compliance with legislation.

Management Response and Intended Course of Action 1.1

Management agrees with this recommendation. Currently there are five trucks left to be inspected (one currently at Harvey's) for 2024 and this will be part of the preventive maintenance scheduling process for 2025 onward.

Conclusion 1.1

The recommendation will be implemented as stated by management.

Action By: Manager, Mechanical Services **Action Date:** December 2024

Information Only: Fire Chief

Issue 1.2 - Preventive Maintenance Program and Procedure

Preventive maintenance and unscheduled/reactive maintenance are generally the two main types of services performed on fire apparatus at Mechanical Division. Preventive maintenance can be described as regularly and routinely performed maintenance (e.g., oil and filter changes, cleaning and lubrication of parts, replacement of parts nearing the end of their useful life before failure, etc.) that is performed on fire apparatus to help reduce the chances of equipment failure and unplanned downtime. Most vehicle and equipment manufacturers will provide a listing of preventive maintenance that should be performed on their vehicles/equipment along with an interval (e.g., kilometers driven, hours in use, etc.) of when the maintenance should be performed. Conversely, unscheduled/reactive maintenance includes mechanical work that is performed on the fire apparatus after a failure has already occurred. This can lead to unexpected downtime and the temporary loss of use of the apparatus.

Preventive maintenance is important because it keeps equipment and assets running efficiently, maintains a high safety level for employees and the general public, and helps SJRFD potentially avoid large and unexpected costly repairs in the future. Overall, a properly functioning preventive maintenance program ensures operational disruptions are kept to a minimum[2].

NFPA Standard 1911 - Standard for the Inspections, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles notes that it is important for fire departments to develop and implement a preventive maintenance program appropriate for its specific vehicles and circumstances. This involves significant planning and identifying adequate resources to ensure the program can be completed throughout the year.

[2] *What is Preventive Maintenance*. (n.d.) Fiix. https://www.fiixsoftware.com/maintenance-strategies/preventative-maintenance/

This guidance is in-line with general fleet management best practices[3] which recommend utilizing schedules and forecasts to plan and perform mechanical work each year. Furthermore, once a preventive maintenance program has been developed, it is best practice to formally document it in approved procedure to help ensure it can be consistently carried out by applicable employees.

Discussions with management indicated that SJRFD Policy and Operational Guidelines document 05-01-02, Equipment Standards, has been developed for Mechanical Division. This draft standard outlines the SJRFD preventive maintenance program and accompanying regulated annual vehicle inspection process and includes a draft preventive maintenance schedule for the SJRFD fleet. Further discussions with management indicated that this standard is in draft format and has not been formally approved or implemented.

The OCIA reviewed this draft standard during the audit and noted that all heavy-duty vehicles are scheduled to receive yearly Type A and Type B mechanical inspections and repairs. These Type A and Type B inspections and repairs are performed internally at Mechanical Division by Mechanical Division personnel. The standard also states that an independent third-party vendor (an Official Inspection Station) is contracted to complete a yearly inspection for any vehicle above 4,500 kgs, in compliance with legislation, once the SJRFD Type A inspection/repairs are completed.

It should be noted that the OCIA did not review this draft standard to determine if the preventive maintenance outlined therein is adequate to maintain the fire apparatus to an acceptable level as this is outside of the OCIA's area of expertise. Rather, the standard was reviewed to determine if Mechanical Division has a formally documented preventive maintenance program in place and if it is being adhered to.

[3] Bartole, Patrick (2023, June 18). *How to Implement A Fleet Preventive Maintenace Program*. Government Fleet. https://www.government-fleet.com/145442/how-to-implement-a-fleet-preventive-maintenance-program

Related discussions with management indicated that similar to the regulated annual vehicle inspections, the Type A and Type B preventive maintenance work is not consistently carried out annually due to resource constraints. Management further explained that the majority of its mechanical work relates to unscheduled/reactive maintenance such as completing the necessary unscheduled repairs that have been identified by frontline operators through the request for service process. Management indicated such repairs are critical to ensuring fire apparatus can safely respond to emergencies and for maintaining operational continuity. However, management further noted that completing the unscheduled repairs greatly takes away from the time available to execute the preventive maintenance program.

Ensuing discussions with management indicated that the draft standard and incorporated preventive maintenance schedule was not developed using adequate resource forecasting techniques such as determining the number of hours each vehicle inspection is expected to take and the total labour hours available to complete the inspections. As such, the number of resources required to complete the preventive maintenance work each year, including potential outsourcing resources, has not been identified. Other pertinent details, including how inspections and preventive maintenance work is monitored and tracked, related documentation requirements, oversight activities, and reference to applicable NFPA standards and legislation, are also not outlined in the procedure.

The OCIA notes that the aforementioned issues increase the risk of having an inefficient and ineffective preventive maintenance program and were contributing factors in Mechanical Division not maintaining up-to-date vehicle inspection certificates as noted in Issue 1.1.

Recommendation 1.2

To help ensure an efficient and effective preventive maintenance process, management should:

i. Update draft SJRFD Policy and Operational Guidelines document 05-01-02, Equipment Standards, to outline the SJRFD preventive maintenance program and annual inspection process. The updated procedure should include:

- An overview of the preventive maintenance and regulated annual vehicle inspection process with reference to NFPA best practices and any applicable legislation.

- Reference to a preventive maintenance schedule that must be prepared annually by Mechanical Division outlining when each heavy-duty vehicle will undergo its Type A and Type B mechanical inspections and regulated annual vehicle inspection at an Official Inspection Station during the year. The schedule should be supported by adequate forecasting techniques such as ensuring a sufficient number of labour hours and other necessary resources are available to complete the inspections as planned. If resources are unavailable internally, the projected preventive maintenance schedule should reference what work will be outsourced to ensure the schedule can be achieved while giving proper consideration to the approved budget and legislative requirements.

- Information detailing how preventive maintenance work and regulated annual vehicle inspections are tracked and monitored and related roles and responsibilities for Mechanical Division personnel.

- Further guidance on where the regulated annual vehicle inspection documentation, including the official vehicle inspection certificate, is stored and how it is retained (e.g., hard copies, electronic copies, etc.)

- Reference to any oversight and governance activities to help ensure the regulated annual vehicle inspections, Type A Heavy-Duty and Type B Heavy-Duty inspections, and other preventive maintenance work is completed as scheduled.

ii. Provide the updated procedure to senior management for formal review and approval.

iii. Implement the procedure subsequent to senior management approval.

Management Response and Intended Course of Action 1.2

Management agrees with these recommendations and will have a "working document" completed by the action date, with plans to make adjustments throughout 2025 as the preventive maintenance plan is implemented. The plan will then be a formalized document moving into 2026.

Conclusion 1.2

The recommendations will be implemented as stated by management.

Action By: Manager, Mechanical Services **Action Date:** March 2025

Information Only: Fire Chief

Issue 1.3 - Annual Maintenance Hours and Required Resources

It is critical that fleet functions have sufficient resources to ensure that preventive and unscheduled maintenance can be performed in an efficient and effective manner. Without adequate resources, preventive and unscheduled maintenance may be delayed which can have an adverse impact on operations and potentially increase safety risks for employees and the public.

SJRFD senior management indicated at the start of the audit that Mechanical Division would benefit from an additional human resource. Furthermore, senior management stated that prior to COVID-19, the fire department had approval to add a new position to Mechanical Division. However, a position was not added as other priorities arose during the pandemic that took priority. Likewise, Mechanical Division management noted repeatedly throughout the audit that insufficient divisional resources was a major factor in the division not meeting the regulated annual vehicle inspection requirement for commercial vehicles and other preventive maintenance requirements listed in the division's draft SJRFD Policy and Operational Guidelines document 05-01-02, Equipment Standards.

Given these statements by management, the OCIA performed a vehicle equivalency unit ("VEU") analysis to better understand and quantify potential resource requirements at Mechanical Division. The VEU analysis is a recognized measurement tool[4] within the fleet industry that allows managers to evaluate the workload requirements of maintaining a dissimilar fleet and justify staffing requirements through a quantitative process. The analysis involves assigning a value to an automobile class to equate the effort required to maintain dissimilar types of vehicles to a standard passenger car.

The standard car is assigned a baseline VEU of 1.0 and industry averages show that it takes approximately 10 hours of preventive and unscheduled maintenance

[4] Power, M. (2023, October 23). *The ABC's of a VEU analysis.* Supply Professional. https://www.supplypro.ca/features/the-abcs-of-a-veu-analysis/

per year to keep it properly maintained. However, several efficiency factors unique to each organization can influence the baseline VEU hours. For the SJRFD Mechanical Division, the baseline VEU was calculated at 13.5 hours. See table 1.0 for further reference.

Table 1.0 – Adjusted Baseline Hours per VEU for Mechanical Division

Efficiency Factor	Value	Explanation
Baseline hours per VEU	10	Standard starting point based on industry average.
Fleet age	+0.5	The average age of the SJRFD fleet is 11 years which exceeds the industry standard. More effort is required to maintain an older fleet which increases the baseline VEU hours.
Operating Environment	+1	The SJRFD fleet operates all year long including in periods of heavy snow, ice, and rain. Vehicles that are operated in harsher climates require more effort to maintain and increases the baseline VEU hours.
Facility	+1.5	The Mechanical Division facility has been noted in external reports (e.g., The Fire Underwriters Survey report) as a limiting factor for the amount of work that can be completed at one time. Facilities with a smaller number of bays and smaller physical space that are responsible for maintaining a large fleet increases the baseline VEU hours.
Parts Support, Inventory, and Administrative Support	+1	Mechanical Division does not have a dedicated position to help with parts support, fleet system support, inventory, or administrative tasks such as record keeping. The lack of overall support for these fleet functions increases the baseline VEU hours.

Skills and Training	-0.5	One of the two technicians holds a certification as an emergency vehicle technician ("EVT") while the other is currently enrolled in the certification program. The MS Manager is also EVT certified with over a decade of experience managing the Mechanical Division. As such, the division is comprised of highly trained and experienced personnel which should lead to efficient repair work. This decreases the baseline VEU hours.
Total Adjusted Hours per VEU	**13.5**	

Assuming 1.0 VEU equals 13.5 maintenance hours, all other types of vehicles can be allocated a VEU value based on their relationship to a passenger car. For example, industry standards suggest both pumper fire trucks and aerial fire trucks have a VEU unit of 15[5]. This means it takes 15 times the amount of effort, or 202.5[6] hours of preventive and unscheduled maintenance, to maintain one of these trucks compared to a standard car. Using this methodology, it was determined that maintaining the entire SJRFD fleet of vehicles, including all light-duty and heavy-duty vehicles, requires approximately 4,927 hours[7].

The SJRFD's two fire apparatus technicians, working at an industry standard of 70 percent mechanic productivity, have approximately 3,058[8] available hours annually to complete repairs and maintenance. As such, the OCIA calculated a deficit of approximately 1,428 work hours, or 1.28 full time equivalent fire apparatus technician positions. Although some of this deficit is made up by outsourcing work, the VEU calculation indicates that Mechanical Division would benefit from additional resources.

[5] MCG Consulting Solutions. (2021). *Fleet Review. Vaugn Fire and Rescue Services*. https://pub-vaughan.escribemeetings.com/filestream.ashx?DocumentId=90199
[6] 15 VEU x 13.5 hours per VEU = 202.5 hours.
[7] The calculated hours pertains solely to maintaining the vehicle fleet and does include the time it takes for Mechanical Division to maintain other firefighting equipment such as saws, pumps, and breathing apparatus.
[8] As calculated by the OCIA. Includes 145 hours of annual coverage from the Manager of Mechanical Division who will complete repairs if necessary.

Related discussions with Mechanical Division management indicated that adding another fire apparatus technician position may not provide the expected benefits and work capacity due to workspace constraints at the facility. Alternatively, rather than attempting to add mechanic hours to meet the estimated maintenance requirements, Mechanical Division could aim to lower its total adjusted hours per VEU by making its repair and maintenance process more efficient.

As outlined in Table 1.0, the efficiency factors which negatively impact the total adjusted hours per VEU are the operating environment, fleet age, facility, and lack of support services. However, the operating environment factor is unchangeable and improving other factors, such as the fleet age and the facility, are longer term projects that would require large capital investments (e.g., adding space to the facility, procuring newer fire trucks, etc.). As such, a practical way to increase Mechanical Division efficiencies in the shorter term would be by making improvements to support services such as inventory management, systems support, parts support, and administration. This could be done by potentially adding an additional human resource to assist in these and/or other required areas. However, prior to adding an additional human resource, it would be logical to first liaison with City Depot management who are involved in fleet operations and support services for advice and to determine if any of their staff can provide assistance.

Recommendation 1.3

To help improve Mechanical Division's overall operations, including achieving compliance with the regulated annual vehicle inspection provision for commercial vehicles and other preventive maintenance requirements listed in SJRFD's draft Policy and Operational Guidelines document 05-01-02, Equipment Standards, management should determine if an additional human resource should be considered for the division. The resource could be involved in operational support tasks including inventory support, information system support (e.g., Wennsoft),

parts support, and other administrative work. In making this determination, management should:

i. Conduct a cost-benefit analysis, that incorporates both quantitative and qualitative factors, regarding adding a human resource to Mechanical Division.

ii. Liaison with management at the Depot to see if any efficiencies can be gained through potential collaboration with Depot staff.

iii. Consider the other recommendations made throughout this report, including any potential efficiencies that could be gained through greater utilization of computerized systems as recommended in Section 4, when determining if an additional human resource is required.

Management Response and Intended Course of Action 1.3

Management agrees with these recommendations.

Conclusion 1.3

The recommendations will be implemented as stated by management.

Action By: Fire Chief
Deputy Chief, Support Services

Action Date: June 2025

Information Only: N/A

Issue 1.4 - Mechanical Division Facility

A facility that allows technicians to service all fire apparatus in an effective and efficient manner greatly contributes to the overall success of an in-house preventive and unscheduled maintenance program. As such, it is important to ensure facility components such as the number of automotive service bays, the size of the workspace, the quality and availability of support equipment and tools, and the overall condition of the facility are sufficient to perform the required mechanical work[9].

Mechanical Division management stated during discussions that a larger facility would allow for more efficient work processes and greater work capacity. Furthermore, a larger workspace could potentially reduce the amount of work that is outsourced which could lead to savings for the division. Management also stated that a larger facility would increase the likelihood that Mechanical Division would meet the requirements to become an Official Inspection Station which would potentially allow the vehicle inspection requirements of the Official Inspection Station Regulations to be met in-house. It was further noted by management that it considered pursuing Official Inspection Station status in 2013, however, Mechanical Division management determined its current facility did not meet the necessary size requirements.[10]

Management also provided a copy of the 2012 Fire Service Review report from the Fire Underwriters Survey to further substantiate issues with the current facility. This report, which outlined the results of a comprehensive review of SJRFD operations that occurred in 2012, stated that the number of bays and mechanics is a limiting factor for the amount of service that can be performed by Mechanical Division. The OCIA also reviewed internal memos and documentation prepared by Mechanical Division management that outlined

[9] Thomas, A. (2019, December 31). *Improving efficiency through better bay management.* Fender Bender. https://www.fenderbender.com/running-a-shop/operations/article/33027017/improving-efficiency-through-better-bay-management

[10] The OCIA did not verify the accuracy of this statement as determining Official Inspection Station status was outside the scope of the audit.

possible deficiencies with the current facility and possible locations for a new facility.

It should be noted that the OCIA are not experts in the area of facility requirements. However, information gathered internally from management and externally from the 2012 Fire Service Review report from the Fire Underwriters Survey indicates that the current facility is potentially a significant factor contributing to Mechanical Division not meeting the regulated annual vehicle inspection requirement for commercial vehicles and other preventive maintenance work outlined in the division's draft equipment standards procedure.

Potentially building or procuring a new facility would be a large project that would require extensive capital funding and planning. Nevertheless, as the SJRFD's operations expand and its fleet continues to grow, it would be prudent for senior management to consult with Mechanical Division management and examine if, and when, a larger facility is required to meet the current and long-term goals of the SJRFD. Likewise, the examination should also include the potential benefits and drawbacks of building or procuring a larger facility with the intention of having it designated as an Official Inspection Station.

Recommendation 1.4

i. Management should conduct a cost-benefit analysis to determine if a larger Mechanical Division facility is required to meet the current and future needs of the SJRFD. The analysis should incorporate both quantitative and qualitative factors and also consider the potential efficiencies gained if other recommendations made in this report are implemented.

ii. If management concludes that a larger facility is required, they should determine if it would be beneficial to pursue Official Inspection Station status for that facility.

Management Response and Intended Course of Action 1.4

Management agrees with these recommendations, and the action date below is reflective of (i) with (ii) being determined out of the recommendation of (i).

Conclusion 1.4

The recommendations will be implemented as stated by management.

Action By: Fire Chief
Deputy Chief, Support Services

Action Date: May 2025

Information Only: N/A

Issue 1.5 - Outsourcing Decisions

NFPA Standard 1911 - Standard for the Inspections, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles states that inspections, maintenance, and testing on fire apparatus shall be performed by qualified personnel who meet the qualifications of NFPA 1071 - Standard for Emergency Vehicle Technician Professional Qualification. Such qualifications include minimum skills and knowledge that is generally acquired through professional training and experience working in a fire department's in-house mechanical garage.

NFPA refers to individuals qualified to work on emergency vehicles as Emergency Vehicle Technicians and notes that such individuals are uniquely qualified to repair emergency vehicles, especially repairs that are unique to fire apparatus and integrated with other parts of the vehicle. However, the standard also notes that there are certain components on emergency response vehicles that are not considered unique and therefore a competent mechanic, who is not an Emergency Vehicle Technician, would be able to complete repairs on such components.

Discussions with Mechanical Division management indicated that it attempts to outsource mechanical work that is general in nature when making outsourcing decisions. However, management noted there is an opportunity to better align outsourcing work with the NFPA 1071 standard. For example, management noted that light bars are installed on light-duty vehicles in-house, but this is work that could be outsourced given NFPA guidance. Performing this type of work in-house, considering current resource constraints, takes time away from Mechanical Division personnel that could be better spent performing preventive maintenance and repair work that they are uniquely trained to perform.

Recommendation 1.5

When determining what mechanical work to outsource and what work to perform in-house, management should, to the extent possible, outsource work that is generic to all motor vehicles and complete work that is unique to fire apparatus in-house.

Management Response and Intended Course of Action 1.5

Management agrees with this recommendation and while outsourcing is common in the Division, a formalized document for new staff or staff covering for leave will be beneficial. It will also better streamline in-house work for future yearly planning.

Conclusion 1.5

The recommendation will be implemented as stated by management.

Action By: Manager, Mechanical Services **Action Date:** December 2024

Information Only: Fire Chief

Section 2 – Governance

Issue 2.1 - Goals and Objectives

Divisional goal and objective setting is an important governance tool as it sets the overall direction of a division. Goals are generally defined as desired outcomes to be accomplished over a number of years, while objectives provide specific, actionable targets that are to be achieved in the short-term to reach the goals. While divisional goals and objectives should relate to the operations of the applicable division, it is important that they are also aligned with the overall organizational strategy and are approved by senior management. This helps ensure that divisional accomplishments contribute to the overall success of the organization.

Discussions with management and an inspection of documentation indicated that the SJRFD has documented organizational goals in place to help ensure a high standard of firefighting service to the community. However, Mechanical Division management noted there are no divisional goals and objectives in place to guide the operations of Mechanical Division. This lack of formal goals and objectives was likely a contributing factor in the division not meeting the regulated annual vehicle inspection requirement for commercial vehicles and other preventive maintenance requirements listed in the division's draft Policy and Operational Guidelines document 05-01-02, Equipment Standards.

Recommendation 2.1

To improve the overall operations of Mechanical Division, management should:

i. Develop, document, and implement divisional goals and objectives that are aligned with the strategic direction of the SJRFD and approved by senior management.

ii. Consider developing certain goals and objectives that require the division to meet the regulated annual vehicle inspection requirement for commercial vehicles and other preventive maintenance requirements listed in the draft equipment standards procedure.

iii. Meet with senior management periodically throughout the year to discuss progress towards the achievement of the divisional goals and objectives.

Management Response and Intended Course of Action 2.1

Management agrees with these recommendations and plans to implement the audit recommendations as a footprint for the goals and objectives to be developed in 2025. For budget reasons, we actioned the date for the end of January 2025.

Conclusion 2.1

The recommendations will be implemented as stated by management.

Action By: Deputy Chief, Support Services **Action Date:** January 2025

Information Only: Fire Chief

Issue 2.2 - Annual Divisional Report

Organizations use annual divisional reports for planning and governance purposes. The reports generally include work plans that outline critical divisional activities to be completed for the upcoming year and applicable timelines for the planned work. The reports are provided to senior management for review and approval which allows senior management to understand and monitor divisional operations during the year. Divisional reports also contribute to process

improvement as they can be reviewed at year-end to help identify any lessons learned over the course of the year.

Discussions with management during the audit indicated that it does not prepare divisional reports for Mechanical Division. As such, there is a risk that critical Mechanical Division operations are not planned and/or performed during the year. The OCIA notes than an absence of divisional reports contributed to senior management not taking corrective action sooner regarding the incomplete regulated annual vehicle inspections for commercial vehicles and other preventive maintenance requirements listed in the division's draft Policy and Operational Guidelines document 05-01-02, Equipment Standards not being met.

Recommendation 2.2

To improve senior management oversight, promote accountability, and allow divisional management to better plan Mechanical Division work, management should develop an annual divisional report to be sent to SJRFD senior management for approval each year. The report, at a minimum, should include:

- A work plan for the upcoming year that is congruent with Mechanical Division's documented goals and objectives. The work plan should include:

    - Significant projects and required tasks (e.g., regulated annual vehicle inspections, preventive maintenance, etc.) that are to be performed and related roles and responsibilities of Mechanical Division personnel.
    - Applicable timelines and deadlines for the planned work to be completed.
    - Any other activities (e.g., staff training) scheduled for Mechanical Division staff in the upcoming year.

- A summary of results/activities for the past year including:

    - Reference to last year's work plan detailing if it was achieved or reasons why it was not achieved.
    - Confirmation that all preventive maintenance, regulated annual vehicle inspections and any other applicable legislative requirements were met.
    - Significant projects completed during the year or other accomplishments.
    - Challenges faced during the year.
    - Areas for improvement and lessons learned that can be incorporated into future annual plans.

- Other information that would be of benefit to senior management and allow for improved oversight such as:

    - The status of the fleet and any significant changes in apparatus condition.
    - Changes in personnel or work processes.
    - Resource deficiencies.
    - Any new or emerging risks facing the division.
    - Other information requested by senior management.

Management Response and Intended Course of Action 2.2

Management agrees with this recommendation and will develop a work plan from recommendation 2.1.

Conclusion 2.2

The recommendation will be implemented as stated by management.

Action By: Deputy Chief, Support Services **Action Date:** January 2025

Information Only: Fire Chief

Issue 2.3 - Fire Apparatus Committee

Various trade publications including Fire Apparatus and Emergency Equipment Magazine and Firehouse Magazine note that many fire departments establish apparatus committees to discuss inspections and maintenance, apparatus related issues and concerns, specifications for new vehicles, and develop vehicle replacement schedules. These apparatus committees are generally composed of individuals from various levels of the organization and can therefore create buy-in across the fire department as different roles have an opportunity for input.

Management noted during discussions that it receives feedback regarding the operation of the fire apparatus from frontline firefighters through informal discussions and Platoon Chiefs during the request for service process. Additionally, management indicated that the MS Manager and the Deputy Chief of Operations, who oversees the Suppression Division, meet as required to discuss fleet matters related to frontline operations. Nonetheless, implementing a formalized apparatus committee would better allow Mechanical Division management to gather valuable insights from various stakeholders across the organization which could be used to improve fire apparatus performance. Additionally, the apparatus committee would provide a standardized forum to discuss and address any fleet related risks, such as incomplete vehicle inspections, which are brought forward to the committee thereby further improving Mechanical Division operations.

Recommendation 2.3

To improve oversight and allow for better planning, information sharing, and decision making, management should consider:

i. Forming an Apparatus Committee with representation from SJRFD senior management, Mechanical Division management, operations management, and frontline personnel.

ii. Holding periodic committee meetings throughout the year to discuss pertinent fleet topics such as:

- Apparatus safety and regulated annual vehicle inspections.
- Preventive maintenance and related programs.
- Operational concerns.
- Repairs and outsourcing.
- Apparatus lifecycle and replacement strategies.
- Apparatus procurement and design.
- Maintenance facilities and other related capital asset planning decisions.
- Other applicable fleet matters.

Management Response and Intended Course of Action 2.3

Management agrees with these recommendations.

Conclusion 2.3

The recommendations will be implemented as stated by management.

Action By: Deputy Chief, Support Services **Action Date:** April 2025

Information Only: Fire Chief

Issue 2.4 - Leave Coverage Plan

A leave coverage plan is a formalized plan that helps ensure operational continuity when a person goes on leave (e.g., vacation, sickness, etc.). These plans outline the applicable employee(s) who will cover the duties of the incumbent during the leave period and the associated responsibilities and duties that must be performed.

Discussions with management indicated that there is an opportunity to improve coverage gaps when the MS Manager is on leave. Although management indicated senior management provides general oversight of operations when the MS Manager is scheduled to be away, further discussions indicated that no one is directly supervising the work of the fire apparatus technicians or ensuring the service work order process (e.g., generating service work orders) is performed during the leave period. As such, the development and implementation of a leave coverage plan would help ensure key processes continue to be completed and reduce operational risks while the MS manager is on leave.

Recommendation 2.4

To ensure operational continuity, senior management should work with Mechanical Division management to develop a coverage plan that can be utilized when the MS Manager is on leave. The plan, at a minimum, should outline applicable SJRFD employees who will be responsible for providing coverage during the leave period and their assigned responsibilities.

Management Response and Intended Course of Action 2.4

Management agrees with this recommendation and plans to implement it before the holidays.

Conclusion 2.4

The recommendation will be implemented as stated by management.

Action By: Deputy Chief, Support Services **Action Date:** November 2024

Information Only: Fire Chief

Issue 2.5 - Service Work Order Procedure

It is best practice that critical recurring activities, such as generating, completing, and reviewing service work orders, are detailed in procedural documents to ensure they are conducted accurately and consistently. Without adequate procedure, employees may lack proper guidance on how to perform tasks correctly, which can lead to process deficiencies.

Discussions with management, an inspection of source documentation, and observation indicated a standardized work order process is in place to facilitate fire apparatus repairs and maintenance. Although the MS Manager is knowledgeable regarding the process, there is an opportunity to develop procedure to fully document the service work order process. This will help ensure the process can be conducted by another designated individual when the MS manager is out of the office thereby enhancing operational continuity. The procedure will also help better standardize the work order process, provide consistency to operations, and reduce the amount of process errors.

Recommendation 2.5

To provide consistency to operations management should develop a detailed procedure capturing the service work order process. The procedure should outline:

- How to create service work orders in Wennsoft and the associated fields that must be completed.
- How to assign service work orders to the fire apparatus technicians and print the physical work order.

- Pertinent information that must be recorded on the physical work order by the fire apparatus technician carrying out the work.
- Management review and signoff of the physical work order.
- How to electronically attach supporting documentation to the service work order in Wennsoft.
- Electronically closing the service work order.

Management Response and Intended Course of Action 2.5

Management agrees with this recommendation and a process will be implemented by June 2025 with plans to evaluate efficiency for the remainder of the year.

Conclusion 2.5

The recommendation will be implemented as stated by management.

Action By: Manager, Mechanical Services **Action Date:** June 2025

Information Only: Fire Chief

Section 3 - Occupational Health and Safety

Issue 3.1 - Working Alone Risk Assessment

City Policy 03-07-15, Employees Working Alone, requires all departments to identify situations where employees are required to work alone or in isolation and develop procedures to be followed in such situations. This helps ensure the safety of employees and reduce Occupational Health and Safety ("OHS") related risks.

Discussions with management noted that although Mechanical Division employees are not scheduled to work alone, circumstances such as sick leave or vacation may result in a Mechanical Division employee being alone at the facility. Ensuing discussions indicated that the MS Manager recently consulted with a City of St. John's Safety Advisor regarding potential working alone risks. The Safety Advisor recommended completing a hazard risk assessment to help identify working alone situations and subsequently take steps to mitigate the hazards. Undertaking this assessment will further protect the safety of Mechanical Division employees and ensure compliance with City policy.

Recommendation 3.1

To help identify and mitigate working alone risks and ensure compliance with policy, management, in consultation with the City's Occupational Health and Safety manager, should:

i. Continue to identify working alone situations through the hazard assessment process.

ii. Implement safe work practices including controls to either eliminate or mitigate the identified hazards.

Management Response and Intended Course of Action 3.1

Management agrees with these recommendations and while it will continue to use its informal process, it will have a formalized process implemented in its entirety by January 31, 2025.

Conclusion 3.1

The recommendations will be implemented as stated by management.

Action By: Manager, Mechanical Services **Action Date:** January 2025

Information Only: Fire Chief
Deputy Chief, Support Services
Manager, Occupational Health and Safety

Issue 3.2 - Working Alone Procedures

Section 15 of the provincial Occupational Health and Safety Regulations outlines provisions relating to working alone. Subsection 15(4) states that an employer shall develop and implement a written procedure for checking the well-being of a worker assigned to work alone or in isolation. Similarly, City Policy 03-07-15, Employees Working Alone, includes guidance relating to checking on the wellbeing of employees who work alone and outlines select tasks that are prohibited in these circumstances.

Discussions with management noted that there are informal procedures in place internally at Mechanical Division for checking on the wellbeing of employees when working alone. Additionally, Mechanical Division management prohibits the undertaking of certain work tasks, such as work in the inspection pit, unless at least two people are present at the facility. However, neither the process of checking on employees nor prohibiting certain work tasks when working alone is formally documented at Mechanical Division. Consequently, there is an opportunity for management to develop written procedure in these areas to

mitigate non-compliance risks and further protect the safety of employees when working alone.

Recommendation 3.2

To further protect the safety of Mechanical Division employees when working alone and ensure compliance with the Occupational Health and Safety Regulations and City of St. John's Policy 03-07-15, Employees Working Alone, management should:

i. Develop and implement a written procedure for checking the well-being of Mechanical Division employees when they are working alone.

ii. Develop a listing of Mechanical Division job tasks that are prohibited when working alone.

iii. Document the prohibited jobs in written procedure.

iv. Communicate the listing of prohibited job tasks and associated standard operating procedure to Mechanical Division staff.

v. Review the procedure at least annually or when new job tasks are introduced.

Management Response and Intended Course of Action 3.2

Management agrees with these recommendations and while it will continue to use its informal process, it will have a formalized process implemented in its entirety by January 31, 2025.

Conclusion 3.2

The recommendations will be implemented as stated by management.

Action By: Manager, Mechanical Services **Action Date:** January 2025

Information Only: Fire Chief
Deputy Chief, Support Services
Manager, Occupational Health and Safety

Issue 3.3 - Divisional Risk Assessment

City Policy 03-07-29, Hazard Assessment Policy, states that managers shall ensure a hazard assessment is completed for their division and safe work practices are developed and reviewed every two years. This assessment is critical in ensuring a safe workplace for employees as it involves identifying workplace hazards and either eliminating the hazards or implementing controls to mitigate corresponding risks.

Inspection procedures performed during the audit noted that Mechanical Division has an extensive list of safe work practices in place. These safe work practices are written procedural documents that provide information on how to safely perform a given work task or use a piece of equipment. Related discussions with management indicated that the procedures were developed approximately 10 years ago through an informal risk assessment. Management further noted that it would be prudent to revisit the hazard assessment process as numerous tasks and equipment have been added to Mechanical Division operations over the past decade. The OCIA agrees and notes that completing an updated hazard risk assessment for Mechanical Division will likely help identify new risks and allow management to mitigate them.

Recommendation 3.3

To identify and mitigate safety risks and ensure compliance with City Policy 03-07-29, Hazard Assessment Policy, management should:

i. Perform a formal divisional hazard risk assessment for Mechanical Division.

ii. Develop safe work practices for any new identified risks as applicable.

iii. Review all safe work practices every two years and update, as necessary.

Management Response and Intended Course of Action 3.3

Management agrees with these recommendations, and while management intends to complete them earlier, the action date is set based on potential staff availability with Occupational Health and Safety Division.

Conclusion 3.3

The recommendations will be implemented as stated by management.

Action By: Manager, Mechanical Services **Action Date:** August 2025

Information Only: Fire Chief
Deputy Chief, Support Services
Manager, Occupational Health and Safety

Issue 3.4 - Dating of Safe Work Procedures

It is a standard records management practice to include the date of issuance as well as any revision dates on all pertinent documents, such as policies and procedures, to help ensure the relevancy of the document to current business operations. Undated records increase the risk of inconsistencies and confusion as employees may be relying on an old document that has been replaced with a newer version. Additionally, it is difficult to verify when a given procedure was

implemented and reviewed if relevant dates are missing which inhibits the audit trail.

An inspection of Mechanical Division's Safe Operating Procedures noted they do not include the date of issuance and date of review. Adding these dates to the documents will help ensure they remain valid and will also provide a reference point to review the safe work practices every two years as required by the City's Hazard Assessment Policy 03-07-29.

Recommendation 3.4

To improve occupational health and safety oversight and the completeness of related documentation, management should ensure all Mechanical Division Standard Operating Procedures include pertinent dates such as the date of issuance, date of review, date of revision, etc.

Management Response and Intended Course of Action 3.4

Management agrees with this recommendation, will review all SWPs for updates and will properly date at that time.

Conclusion 3.4

The recommendation will be implemented as stated by management.

Action By: Manager of Mechanical Services **Action Date:** January 2025

Information Only: Fire Chief
Deputy Chief of Support Services
Manager, Occupational Health and Safey

Issue 3.5 - Welding Bay

Mechanical Division employees utilize a fixed welding station at the facility to fabricate necessary parts when making repairs to emergency vehicles. The welding station includes an exhaust fan to minimize air pollutants that are generated during the welding process. This is a requirement under Section 454 of the OHS Regulations which states that effective local exhaust ventilation shall be used at a fixed workstation to minimize worker exposure to harmful air contaminants produced by welding, burning, or soldering.

Mechanical Division management indicated during discussions that it has concerns about the effectiveness of the ventilation during the welding process. Although the effectiveness of the ventilation is not known at this time, this increases the risk of non-compliance with the OHS Regulations as ineffective ventilation could increase workers potential exposure to harmful air contaminants.

Recommendation 3.5

Management should engage a qualified individual to inspect the welding workstation to ensure it has adequate ventilation as required by the Occupational Health and Safety Regulations.

Management Response and Intended Course of Action 3.5

Management agrees with this recommendation, and in conjunction with City Buildings, will arrange for inspection (along with Recommendation # 3.6)

Conclusion 3.5

The recommendation will be implemented as stated by management.

Action By: Deputy Chief, Support Services **Action Date:** December 2024

Information Only: Fire Chief
Manager, Occupational Health and Safey

Issue 3.6 - Concrete Walls of Inspection Pit

Discussions with management and physical inspection procedures noted that there is deterioration of a concrete wall in one of the inspection pits at the Mechanical Division facility. Management noted that City Buildings Division, which is responsible for the maintenance of City owned buildings, was notified of this issue in 2020. City Buildings Division subsequently engaged an engineering firm to investigate the issue and prepare a corresponding report. The OCIA reviewed a copy of the report during the audit which indicated that the service pit had no immediate structural concerns but that the deterioration would continue until the cause is corrected. Consequently, the report recommended a closer review and the walls to be repaired to prevent further damage. Management indicated that the recommended repairs were never carried out.

The OCIA followed up with City Buildings Division management who noted that the repairs were not prioritized because there were no structural concerns with the pit. City Buildings Division management also noted that it was during this time discussions were occurring about moving Mechanical Division to the new Goulds Fire Station. Therefore, a decision was made to hold off on any non-critical work pertaining to Mechanical Division's facility. City Buildings Division management also stated it has not been notified of any further deterioration to the inspection pit from Mechanical Division.

The OCIA notes the potential move of Mechanical Division did not happen and there are also no immediate plans to move Mechanical Division from its current facility. Given this, and that it has been over three years since this issue was initially examined, there is a risk that the deterioration has since worsened and potentially created additional issues.

Recommendation 3.6

Management should contact City Buildings Division and request that they reexamine the deteriorating concrete in the inspection pit to determine if the recommended repairs should now be completed.

Management Response and Intended Course of Action 3.6

Management agrees with this recommendation, and in conjunction with City Buildings, will arrange for re-examination (along with Recommendation # 3.5)

Conclusion 3.6

The recommendation will be implemented as stated by management.

Action By: Deputy Chief, Support Services **Action Date:** December 2024

Information Only: Fire Chief
DCM, Public Works
Manager, City Buildings

Issue 3.7 - Reverse Driving Safe Work Practices

City Policy 03-10-14, City Reversing Policy, states that a driver shall at no time back a City vehicle into an intersection or over a crosswalk except in a non-public work area, construction area, or when guided by a spotter. The layout of Mechanical Division's automotive bays requires heavy-duty fire apparatus to be backed out of the facility onto Portugal Cove Road which is a four-lane roadway. Consequently, extreme caution must be taken when backing fire apparatus out of Mechanical Division's facility.

Management noted the potential dangers of backing fire apparatus out of the bays and indicated it takes precautions, such as the use of spotters, to do so. Although management indicated that spotters are used in compliance with the City's Reversing Policy, subsequent discussions with management noted that

there is an opportunity to perform a formal risk assessment in relation to this task to ensure all risks are identified, appropriately mitigated, and applicable precautions are formally documented in a safe work practice. This will help ensure that fire apparatus are consistently backed out of the facility in the safest manner possible and reduce the likelihood of an accident.

Recommendation 3.7

To help ensure the safety of Mechanical Division personnel, management should:

i. Complete a hazard risk assessment to identify and mitigate risks when staff are required to drive fire apparatus in reverse at Mechanical Division.

ii. Develop a corresponding safe work practice to document the identified hazards and mitigating steps that must be taken when driving fire apparatus in reverse at Mechanical Division.

Management Response and Intended Course of Action 3.7

Management agrees with these recommendations, and while management intends to complete them earlier, the action date is set based on potential staff availability with Occupational Health and Safety Division.

Conclusion 3.7

The recommendations will be implemented as stated by management.

Action By: Manager, Mechanical Services **Action Date:** March 2025

Information Only: Fire Chief
Deputy Chief, Support Services
Manager, Occupational Health and Safety

Section 4 – Electronic Management Systems

Issue 4.1 - Inventory System

Electronic inventory management systems create efficiencies by streamlining all aspects of the inventory process such as ordering, receiving, storing, and using inventory. When implemented and used correctly, these systems also help prevent and detect inventory theft and fraud by helping ensure the accuracy and completeness of inventory levels.

To help facilitate the repair and maintenance process, Mechanical Division keeps an inventory of mechanical parts and consumables in an inventory storage cage in the back room of the facility. At the beginning of the audit, senior management informed the OCIA that there is no electronic inventory system in place to control this inventory. Management understood that not having an electronic inventory system creates a myriad of risks and therefore are looking to implement such a system.

The OCIA notes that a key consideration when implementing a new inventory system is its ability to be fully integrated with the current fleet management system in order to accurately capture costing information (e.g., parts expense for each apparatus). Therefore, any potential new inventory system should be integrated with the City's financial system (Microsoft GP) and the SJRFD's fleet management system (Wennsoft).

Mechanical Division management indicated that there is an inventory functionality included in Microsoft GP that is currently used to manage inventory for the City's main stockroom at the Depot. Management further indicated that multiple inventory "sites" can be configured in Microsoft GP and therefore it may be possible to setup Mechanical Division inventory as a separate warehouse in the system. The OCIA reviewed the Microsoft GP manual to validate management's assertion and confirmed that multiple inventory sites can indeed be created in Microsoft GP.

There are advantages in attempting to utilize the inventory functionality already present in Microsoft GP including:

- The software is already used at the City and installed on the MS Manager's computer.
- Cost savings when compared with purchasing a new inventory system. However, it is likely additional hardware (e.g., barcode scanners) would still need to be purchased if leveraging Microsoft GP.
- Wennsoft is integrated with Microsoft GP meaning that inventory costs could be allocated to applicable fire apparatus which is congruent with best practice.
- Other City divisions such as Supply Chain Division are already successfully using the inventory functionality in Microsoft GP, albeit with more resources. Such divisions could potentially offer implementation guidance.
- Management is already familiar and trained on Microsoft GP.

SJRFD management indicated that they previously met with Supply Chain Division management from the Depot regarding leveraging Microsoft GP's inventory functionality. Supply Chain Division management noted Mechanical Division does not have sufficient resources to have the same inventory setup as is currently implemented at the Depot. However, assuming that a new resource will be considered for Mechanical Division (as recommended in Issue 1.3), and that Wennsoft is already integrated within Microsoft GP, it would be prudent for management to further investigate the feasibility of using GP for its inventory system.

If it is determined that it is not feasible for Mechanical Division to utilize the inventory functionality in Microsoft GP, other electronic inventory systems ought to be considered by management. However, no matter what inventory system is selected for implementation, certain internal controls should be in place when

implementing and managing the inventory system. These include controls related to policy and procedures, segregation of duties, reporting and documentation, training and awareness, inventory monitoring, and continuous improvement. For the benefit of management, further details on these controls are included in Appendix A.

Recommendation 4.1

To better manage Mechanical Division inventory and improve internal controls, management should work towards implementing an electronic inventory system. This work should include:

i. Further investigating the feasibility of using Microsoft GP as Mechanical Division's inventory solution.

ii. Evaluating other inventory system options if it is determined that Microsoft GP is not a suitable option.

iii. Ensuring inventory internal controls, including those related to policy and procedure, segregation of duties, monitoring, reporting and documentation, training, and continuous improvement are in place for the new inventory system.

Management Response and Intended Course of Action 4.1

Management agrees with these recommendations.

Conclusion 4.1

The recommendations will be implemented as stated by management.

Action By: Manager of Mechanical Services **Action Date:** March 2025
Deputy Chief of Support Services

Information Only: Fire Chief

Issue 4.2 - Fleet Management System

Fleet management information systems ("FMIS") are a critical part of fleet operations as they enable all aspects of fleet operations to be managed through a single interface. This allows for effective operational management and timely decision making as pertinent fleet information can be readily accessed.

Mechanical Division management utilizes Wennsoft as its fleet management information system. Wennsoft, which is used by other divisions at the City such as Fleet Division, is integrated with the City's enterprise resource planning system Microsoft Dynamics GP.

At the start of the audit, senior management expressed concern that Wennsoft may not meet the needs of Mechanical Division and wondered if a different fleet management system, potentially one customized specifically for fire department apparatus, would improve operations. Mechanical Division management also noted concerns with some aspects of the system, including character limits, search functionality, and costing reports.

To better understand fleet management information systems, the OCIA performed research regarding what capabilities these systems should offer. The research indicated that generally, a conventional FMIS should have the following capabilities[11]:

- Complete vehicle equipment life-cycle management including:
    - Budgeting and forecasting.
    - Acquisition and upfitting capital costs.
    - Capital improvements.
    - Disposal management.

[11] MCG Consulting Solutions. (2021, October 29). *Fleet Review – Vaughan Fire and Rescue Services.* https://pub-vaughan.escribemeetings.com/filestream.ashx?DocumentId=90199

- Comprehensive work order functionality including:
  - Repair status.
  - Repair type.
  - Repair labor hours & costs by asset.
  - Repair parts expense by asset.

- Shop repair scheduling and workflow assessments.
- Preventive maintenance scheduling.
- Regulatory safety inspection scheduling.
- Labor tracking and management.
- Productivity monitoring (KPIs).
- Inventory control and parts room management.
- Cost reporting and billing.
- Warranty and claims tracking.

Various audit procedures, including an inspection of the Wennsoft system, observations, discussions with management, and a review of pertinent Wennsoft documentation, indicated that the majority of the above capabilities are present in Wennsoft and integrated with Microsoft GP. These include core functionalities related to work orders, costing, preventive maintenance, warranty and claims, labour tracking, and scheduling. Wennsoft therefore has many of the capabilities one would expect to find in a conventional fleet management information system.

Related discussions with management noted that while it does its best to maximize the use of the software, there are additional aspects of Wennsoft, including the preventive maintenance functionality, which could be further explored. However, management noted that it would be difficult to do this without additional support and resources. The OCIA notes that assuming a new resource is being considered for Mechanical Division (as recommended in Issue 1.3), the MS Manager may have the additional resources required, in the future, to further investigate and potentially leverage the capabilities of Wennsoft.

While a new, fully customized fleet system developed specifically for the SJRFD may have advantages over Wennsoft, such advantages would have to be weighed against the financial cost of purchasing a new system, implementation and training time, and most significantly, its ability to be integrated with Microsoft GP. As such, an understanding of the full functionality of Wennsoft should be obtained prior to considering other options.

Furthermore, as Wennsoft is also extensively used by the City's Fleet Division, it would benefit Mechanical Division to consult with Fleet Division to ensure all aspects of the system are being utilized to streamline work and create efficiencies.

Recommendation 4.2

To potentially improve the efficiency and effectiveness of Mechanical Division's repair and maintenance processes, management should:

i. Investigate the capabilities of Wennsoft to ensure all aspects of the system, such as scheduled maintenance, warranty claims, labour tracking, and other functionalities, are being leveraged to create an efficient and effective repair and maintenance process.

ii. Contact the City of St. John's Fleet Division to discuss how Wennsoft's functionalities are integrated into various Fleet Division processes and use that information for possible process improvement within Mechanical Division.

Management Response and Intended Course of Action 4.2

Management agrees with these recommendations.

Conclusion 4.2

The recommendations will be implemented as stated by management.

Action By: Manager, Mechanical Services
Deputy Chief, Support Services

Action Date: March 2025

Information Only: Fire Chief

Appendix A – Internal Controls for Inventory

Internal Control Best Practices for Inventory[12]	
Electronic Inventory System	The use of an electronic inventory system helps streamline inventory operations and generally includes capabilities such as audit trails, transactional searches, and summary reports that can improve the control environment.
Inventory Management Policy	Inventory management policies provide consistency to operations and helps ensure efficient, accurate, and secure management of inventory.
Segregation of Duties	<u>Ordering</u> Only authorized personnel should have the ability to place orders, and a separate individual should approve purchase orders. <u>Receiving</u> The individual receiving the order should not have the ability to authorize payments or manipulate inventory records. Personnel independent of the ordering process should inspect the order when it is received. <u>Inventory Storage</u> Only authorized personnel should have access to inventory and related storage areas. It is critical to segregate the duties of maintaining inventory records and physical storage/access to the inventory. <u>Disposal and Inventory Write-offs</u> Procedures should be in place to segregate duties related to inventory disposal and write-offs.

[12] Developed by the OCIA with reference to Ali, Z. (2024, January 24). *Robust Inventory Internal Controls*. Linkedin. https://www.linkedin.com/pulse/robust-inventory-internal-controls-zulfiqar-mushtaq-ali-aca-cia-uuwmf/

	Senior management approval should be required for significant disposals.
Monitoring	<u>Physical Inventory Counts</u> Regular and surprise inventory counts should occur to reconcile the physical inventory on-hand with the inventory records. Any variances should be investigated. The person performing the inventory count should not have direct access to manipulate the inventory records. Best practice also notes having someone from outside Mechanical Division to periodically witness the count. <u>Inventory Reconciliation</u> Periodic reconciliation between the inventory management system and financial records. Variances should be investigated and resolved in a timely manner. <u>Audit Trails</u> An electronic audit trail should be in place to capture all inventory transactions in the system. Periodically review audit trails for variances or irregularities. <u>Key Indicators</u> Establish key performance indicators (KPIs) for inventory such as stockouts, excess inventory, write-offs, etc. Regularly review KPIs to assess the effectiveness of inventory management controls.
Reporting and Documentation	<u>Inventory Reports</u> Generate and regularly review inventory reports detailing stock levels, usage, and irregularities. <u>Documentation</u> Maintain comprehensive documentation of inventory policies, procedures, and controls. <u>Accuracy and Completeness</u> Ensure all inventory-related transactions and adjustments are entered into the system.

Training and Awareness	<u>Training Programs</u> Ensure staff involved in inventory control are trained on the inventory system, related policies and procedures, and their related roles and responsibilities. <u>Awareness</u> Ensure awareness activities are undertaken to periodically remind staff of policies, procedures, and their roles and responsibilities in inventory policy, procedures, and best practices.
Continuous Improvement	<u>Review and Update Policies</u> Periodically review and update inventory management policies and procedures to address changing needs and risks. Incorporate lessons learned from internal audits, reviews, and feedback. <u>Feedback Mechanisms and Communication Protocols</u> Establish mechanisms for collecting feedback from staff, suppliers, and other stakeholders and use the feedback to identify areas for improvement and implement corrective actions. Establish open and transparent communication protocols where staff responsible for inventory control can express their concerns or potential improvement ideas to management.