

---

# AUDITOR GENERAL

Halifax Regional Municipality

---

## A Performance Review of Risk Management: Fuel Spill at Halifax Transit<sup>©</sup>

**March 2015**

**AUDITOR GENERAL**  
Halifax Regional Municipality

**A Performance Review of Risk Management: Fuel Spill at  
Halifax Transit®**

**March 2015**

---

**Table of Contents**

**Executive Summary.....3**

**Summary of Recommendations.....12**

**Preamble.....14**

**Objectives.....14**

**Scope .....15**

**Methodology .....15**

**1.0 Risk Management Processes at Halifax Transit.....16**

**2.0 Fuel Monitoring .....20**

**Appendix A: Management Response .....25**

## Executive Summary

Halifax Transit did not know about a fuel spill on their property for months. The spill was not detected by Halifax Transit personnel or systems, rather by a business which is located almost a kilometre away. In fact, Halifax Transit advised the OAG their initial reaction was they did not believe they were the source of the problem because they had identified in-ground tanks pose a higher environmental risk and had contracted with professionals who had installed a new above-ground fuel system and removed the in-ground fuel tanks. (Any facts around the relationship between Halifax Regional Municipality (HRM) and the contracted professionals and the respective responsibilities were outside the scope of this project and were not reviewed or considered in any manner by the OAG.) The basic question is; how then did or could this issue go undetected? Using a simplistic approach, the answer appears obvious. HRM did not have processes in place to first identify all the risks and then assess the possible impact multiplier, further, Halifax Transit did not have proper processes in place to identify when physical inventory losses were in fact occurring.

**HRM did not have processes in place to first identify all the risks and then assess the possible impact multiplier or to identify when physical inventory losses were in fact occurring.**

As this report will highlight, there are various reasons an organization is required to have strong controls around the dispensing of fuel and managing fuel inventories. There are numerous operational reasons which are important including:

- To ensure a high value taxpayer asset is not being lost due to theft, misappropriation, or leakage.
- The need to have accurate consumption data to assist with management of the overall transit system and costs to operate various buses and routes.

While these are important reasons to have strong controls, the controls are also needed to manage the risk with the highest potential impact which in this case is the high cost associated with the “polluter pay” principle found in the Nova Scotia Environment Act.

As the OAG has provided significant commentary in previous reports with

respect to controls needed to assist in better managing HRM and demonstrating value for money, the focus of this report became the controls needed to ensure compliance with various legislation including the Nova Scotia Environment Act and Petroleum Management Regulations. Having said that, many of the comments apply equally to controls needed to properly manage operations.

It is the view of the OAG, organizations have to be fully aware of all components of their systems in order to be able to fully comply with regulations and the Act. It is also the view of the OAG, organizations have to be fully aware of the operation of all components of their systems and where gaps exist which may not notify them of losses which are at or above the minimum reportable amounts.

The OAG surmises this spill could have been prevented if HRM did not have fuel tanks on the property. HRM made the operational decision, likely because it is more efficient and cost effective.

Once HRM made the operational decision to accept the risks associated with fuel, it also had a direct responsibility to taxpayers to:

- control the likelihood of the risks becoming a reality,
- control the impact of the risks both from qualitative and quantitative perspectives,
- ensure appropriate professional and regulatory standards are met and
- manage potential liabilities.

Given the possible impact associated with certain risks such as environmental risks, the Province enacts regulations as it believes a risk exists and the best option to address the risk is through regulations. Regulations create a rules-based management of the risk requiring a property owner with fuel present to manage to a prescribed level. In making the decision to establish regulations with respect to environmental matters, the provincial government has likely identified there is:

- high potential for environmental damage,
- a potential for long-term effects because of damage,
- a potential risk to public safety,
- a high cost to remediate and
- required accountability for damages.

With environmental regulations in place, any business involved in prescribed operations needs to understand the legislation which defines:

- prescribed minimum standards of compliance,

- proper processes which are required to be in place to ensure compliance,
- specific actions to be taken when non-compliances occur,
- penalties for non-compliance and
- there is no option to not comply.

It is the view of the OAG, these regulations are written with a variety of systems in mind, but clearly the strong message is an organization has to have appropriate controls in place to be able to immediately notify the Nova Scotia Department of Environment of losses of fuel once a prescribed level is reached.

The OAG is of the strong view, the ability to detect is key.

### **HRM Failed in its Environmental Stewardship - Duties and Responsibilities**

After collecting various facts with respect to the fuel spill at Halifax Transit, as well as after discussions with individuals possessing specific expertise and reviewing provincial statutes, the OAG is of the opinion HRM failed in its stewardship of the environment.

This failure was in large part due to lack of proper attention to risk management and development of proper controls. It is also the view of the OAG, HRM did not recognize the major implications in making an operational decision to have fuel tanks on the property and by failing to comply with the prescribed legislation, failed in its environmental stewardship and its responsibilities to stakeholders.

Once HRM made the operational decision to have fuel tanks on its property, management accepted certain duties or responsibilities with no latitude as to compliance including but not limited to:

- a responsibility to be aware of risks to the environment resulting from having bulk fuel on-site,
- a duty to understand fully all aspects of environmental regulations,
- a duty to be informed of any breaches of the regulations. By this the OAG means, saying 'I did not know', or 'we had no way of knowing' is not an acceptable defense to being non-compliant,
- a responsibility to understand the duty to be informed is a statutory responsibility,
- a responsibility to understand there is a strict duty of environmental care to neighbouring properties and the public and

- a major responsibility of management at all levels for environmental stewardship. In the view of the OAG, any failings significantly impact a demonstration of due diligence.

What is often said when there is non-compliance to regulations is the regulations themselves are complicated or subject to interpretation. In reviewing the regulations, the OAG found them to be relatively straight forward and, it appears, able to be interpreted accurately by many organizations. The regulations are clear in their intended 'spirit' and in prescribing standards of care and therefore, HRM was responsible to have processes in place to ensure the standards were being met. In the most simple of terms, prescribed standards require HRM to know when there is a problem and to report, immediately, when actual fuel inventory level variances are at a prescribed level.

It is the view of the OAG, Halifax Transit did not follow the fundamental principles of the provincial environmental legislation, legislation which the Province of Nova Scotia explicitly imposed on it. It is interesting to note, this legislation is so important, the Province of Nova Scotia also saw fit to apply the legislation to itself, something that is not always done.

Systems need to be developed and functioning properly to protect the environment and HRM did not have these systems in place. Halifax Transit should have been able to say, with confidence and supported by documentation, their property was not the source of the spill. This should have been possible at the moment the spill was discovered. It should not have taken over a month and further use of taxpayer dollars to, for example, drill various 'test' holes to determine if Halifax Transit had, in fact, been leaking fuel.

---

---

**Halifax Transit should have been able to say, with confidence,  
their property was not the source of the spill at the moment  
the spill was discovered.**

---

---

In conclusion, it is the view of the OAG, any explanation which includes the following is completely unacceptable:

- Any suggestion, given a component of the system is not visible it is more difficult to identify an issue. This is precisely why the legislation is written in a strict context, with precise requirements.
- We were not aware of the legislative requirements. The OAG is of the view it is unlikely HRM would accept this as a defense to non-compliance with HRM bylaws.

- We are different with different issues. All organizations with regulated fuel tanks are subject to the same monitoring and reporting requirements.

What must always be remembered with respect to the environment is; it is not appropriate to attempt to defend one's actions by suggesting lack of knowledge or resources or to attempt to defend an action based upon a technicality.

It is the view of the OAG, environmental regulations are not enacted to find fault or punish, rather they are to protect the environment and, by default in the case of HRM, the taxpayers, from significant unnecessary expenditure.

**It is the view of the OAG, environmental regulations are not enacted to find fault or punish, rather they are to protect the environment and the taxpayers from significant unnecessary expenditure.**

#### Chief Risk Officer, Enterprise Risk Management

As noted earlier, since HRM has made the operational decision to have fuel tanks on HRM property, HRM has inherently accepted the operational risk and responsibility to manage the risks associated with this decision. This type of strategic management can be developed through the use of an Enterprise Risk Management (ERM) process. An ERM process encompasses documentation of the following:

- identification of possible risks to the organization,
- categorizations of the risks by type (strategic, environmental, regulatory, financial, etc.),
- the potential impacts of those risks,
- who is responsible for the particular risk and
- what processes are in place to manage/monitor the risks.

The OAG has recommended implementing a Chief Risk Officer in previous reports but there is still no organization-wide ERM process in place. One of the functions of a Chief Risk Officer is to assist the organization in determining its' 'risk appetite'<sup>1</sup>. A well thought through determination of risk appetite aids an organization in better aligning strategy, goals and hence decision making with various risks associated with operations. HRM also has to recognize there

<sup>1</sup> Risk appetite is the amount of risk, on a broad level, an organization is willing to accept in pursuit of value. *Enterprise Risk Management – Understanding and Communicating Risk Appetite* Committee of Sponsoring Organizations of the Treadway Commission page 1

are project-specific risks which can be managed through project management processes but there are also various day-to-day operational risks which need to be identified and managed. Having an ERM process in place provides a means to identify where there are gaps in risk identification as well as management and monitoring processes which need to be developed. It also fosters a culture of risk identification and analysis throughout the organization.

An ERM process will, in most circumstances, clearly indicate which risks an organization has identified where it is prepared to accept some or all of the risk. This will be indicated in the organization's plan for risk management which includes the level of tolerance for loss. It is also reasonable to suggest a Chief Risk Officer would view risks managed by provincial regulation as requiring a higher priority for management and to at least the prescribed minimum.

**It is reasonable to suggest, a Chief Risk Officer would view risks managed by provincial regulation as requiring a higher priority for management and to at least the prescribed minimum.**

### **Risk Management – Defining Impact**

A properly defined risk management process also aims to identify the possible impact of a particular risk. Impact is the effect an event or occurrence has on something which can be positive or negative. A fuel leak has a high likelihood of a negative long-term environmental impact and as a result, as indicated above, there are provincial regulations which are required to be followed by businesses with fuel operations.

There is high risk associated with this commodity because fuel is a large expenditure at Halifax Transit; there is a high impact if environmental damage takes place and there are specific regulatory requirements. The magnitude of the negative impact of this risk being realized can be managed through monitoring and reconciliations as required by the environmental regulations. The OAG has identified this monitoring and reconciliation process was not being effectively done and even now it appears through conversations, HRM is not aware of what is required to be fully compliant with Nova Scotia Petroleum Management Regulations.

In the case of the fuel tanks, Halifax Transit was proactive in identifying in-



ground fuel tanks could pose a higher environmental risk and therefore should be removed. Unfortunately, HRM did not have proper processes in place to monitor the risks associated with the removal process. The project of removing the tanks should have had a risk analysis completed during the planning stages to identify possible risks in the various stages of the removal process. The OAG would have expected to see a physical inventory reconciliation to ensure the new system was functioning as expected.

If HRM senior management are not identifying the risks to the Municipality, management is failing in its' governance responsibilities to the taxpayers of HRM with respect to quality of stewardship of public funds.

Typically, when management is reactionary, it is more costly because when the 'unexpected' happens processes are not in place to keep it under control. In this case, management did not have a process in place to prevent the unexpected but it also did not have a process in place to detect the unexpected when it occurred. This has resulted in an estimated \$2.5 million unexpected cost to HRM. This cost is the estimated amount paid, to date (taken from SAP records), to external cleanup companies and does not include the cost of 'lost' fuel estimated at over \$200,000, any internal costs associated with the cleanup (legal, management, etc.), any possible third party compensation or any qualitative costs related to loss of reputation.

The OAG was advised HRM has cleaned up the site to levels acceptable to the Nova Scotia Department of the Environment (documentation pending).

**Typically, when management is reactionary, it is more costly because when the 'unexpected' happens processes are not in place to keep it under control.**

### Recurring Issues

In completing this project, the OAG has once again come upon many recurring issues.

- High risk items not being identified. In this case, fuel was not recognized as high risk requiring 'special treatment'.
- No documented risk analysis was prepared.
- Appears HRM employees were not fully aware of all applicable regulations.
- There was no one person in charge.

- Risks and impacts of the HRM silo type of administration. Multiple business units were involved (from the replacement of the fuel tanks, to the day-to-day operations of Halifax Transit to the environmental assessments) and there wasn't adequate communication between those units.
- HRM assigning employees to positions who did not have the required expertise.
- Lack of policies and procedures.
- Confusion around simple accounting calculations.
- Data being collected and not used appropriately.
- Project resources and authorities based on a dollar value instead of the risk associated with the project.

### Governance

One of the components of good governance is to have oversight over the systems and practices an organization has in place to monitor and mitigate key risks and to ensure compliance with applicable policies, laws, regulations and ethical standards. It is the view of the OAG, oversight is a critical component of governance. All organizations have various levels of oversight, but normally have one group with ultimate responsibility for this function.

The HRM Charter in Section 34(3) provides clarity around who has oversight responsibilities on behalf of taxpayers. Section 34(3) states: "The Council shall provide direction on the administration, plans, policies and programs of the Municipality to the Chief Administrative Officer".

It is the view of the OAG, with respect to the stewardship of the environment, it is an organization's current (in place at the moment) policies and procedures which should be used to:

- judge the administrator's management of risks,
- assess preparedness for risks to become a risk event,
- judge the effectiveness of communication of corporate policies and procedures with respect to environmental matters, and
- judge the quality of identification and documentation of all risks associated with operations which may harm the environment.

With the above points in mind, the OAG felt the following recommendation is more appropriately addressed to Regional Council rather than management.

**Overarching Recommendation – Addressed to Regional Council**

The OAG recommends Regional Council immediately request management's 'Environmental Protection Framework' which should include all identified risks where there is the potential for the environment to be damaged and the policies and processes in place to either mitigate the risk or deal with events where the environment may have been or was damaged.

## Summary of Recommendations

- 1.0.1 The OAG recommends HRM Administration initiate a corporate-wide risk management process (ERM – Enterprise Risk Management) starting with the acquisition of the services of a Chief Risk Officer or the equivalent external expertise to manage this initiative. (Page 18)
- 1.0.2 In conjunction with Recommendation 1.0.1, the OAG recommends HRM Administration engage Regional Council in discussions around ‘risk appetite’ to determine the level of risk the Municipality is willing to accept in pursuit of value for the taxpayers of HRM. (Page 18)
- 1.0.3 The OAG recommends, as part of Recommendation 1.0.1, a risk register be developed for Regional Council and a report provided on a regular basis (at least annually) identifying progress on the risk management process as well as the gaps in management of risks which have been identified. (Page 18)
- 1.0.4 The OAG recommends HRM Administration undertake development of an environmental policy which provides Environmental Performance Officers with the appropriate authorities and ‘cradle to grave’ involvement in projects and in operations impacting the environment. (Page 19)
- 2.0.1 The OAG recommends Halifax Transit management identify more detailed control mechanisms (such as inventory reconciliations, fuel usage per route, fuel usage per bus and week-to-week and month-to-month comparisons) to be used in monitoring fuel usage. (Page 23)
- 2.0.2 The OAG recommends HRM Administration undertake a training program to educate employees involved in fuel related projects and operations on the necessary regulatory requirements. (Page 23)
- 2.0.3 The OAG recommends Halifax Transit complete true inventory reconciliations of fuel inventory for both transit centres. A reconciliation process should include physical inventory readings either electronically or via physical dips. Even electronic readings should be validated with a dip reading, periodically, to ensure electronic readings are still working properly. This reconciliation process should be implemented as soon as possible since additional technology is not needed to complete reconciliations. (Page 24)

---

## **Detailed Findings and Recommendations**

---

## Preamble

The Office of the Auditor General (OAG) completed a review of equipment fuel management in 2014. This review specifically excluded fuel usage at Halifax Transit since the transit fleet does not fuel using Halifax Regional Municipality (HRM) fuel stations or commercial cards as is the practice for other equipment at HRM. The buses at Halifax Transit are fueled each night at either the Ragged Lake Transit Centre or the Burnside Transit Centre. Fuel inventory is maintained at both locations and there is a contract in place with a fuel supplier to deliver fuel to each location about four times per week. Halifax Transit uses approximately 40,000 litres of fuel per day which costs approximately \$16 million per year. Fuel is the largest expense of the business unit outside of wages.

During the course of the previous OAG fuel review (in May 2014), media reported a diesel spill which was traced back to the HRM Burnside Transit Centre. The diesel spill was not reported by Halifax Transit but by a car dealership approximately a kilometer away. Halifax Regional Water Commission contacted HRM after fuel was traced to a ditch adjacent to Halifax Transit property. Halifax Transit at first did not believe the leaking fuel was originating from their facilities. After an extended period of time (some six weeks) they finally determined they were in fact the source of the leak.

Based on this recent incident, the OAG believed there was also a possible lack of controls in place around fuel management at Halifax Transit as was reported in 2014 for the other fuel program at HRM.

## Objectives

- To identify the internal controls in place to manage fuel inventory at Halifax Transit and areas where improvement is needed.
- To determine compliance with petroleum management legislation.
- To understand how the environmental risks associated with petroleum at Halifax Transit were being managed.

**Scope**

The project focused on Halifax Transit bus fuel only. The focus of the project was mainly around the internal controls in place to detect fuel inventory issues as well as the controls in place to possibly prevent a spill of the magnitude which took place from happening. The project also focused on risk management processes in place around fuel management including a review of provincial regulations and the applicability to fuel stored at Halifax Transit.

Any facts around the relationship between HRM and the contracted professionals who installed a new above-ground fuel system and removed the in-ground tanks and the respective responsibilities were outside the scope of this project.

**Methodology**

- Conducted interviews with HRM staff from various business units (Halifax Transit, HRM Facilities, and HRM Energy and Environment), as well as outside expertise.
- Requested documentation and processes around fuel management.
- Enquired as to existing documented controls.
- Obtained available documentation related to inventory reconciliations.
- Researched relevant environmental regulations enacted by the Province of Nova Scotia.

## 1.0 Risk Management Processes at Halifax Transit

Halifax Transit management indicated during an interview, they had identified risks related to having fuel tanks in the ground. To mitigate these risks, even though no specific issues had been identified, and to be proactive, Halifax Transit initiated projects to install new above-ground tanks and remove the existing in-ground fuel tanks. These projects, completed in 2009 and 2013 respectively, resulted in infrastructure remaining from the old tank system. The OAG was advised, failure within this infrastructure allowed fuel to leak into the ground.

**These projects resulted in infrastructure remaining from the old tank system. The OAG was advised, failure within this infrastructure allowed fuel to leak into the ground.**

The OAG is pleased to note, HRM identified the risk of a fuel spill from fuel tanks in the ground and outside expertise had been engaged to design, construct, remove and replace the tanks. The OAG determined it was not a corporate risk management process which had identified this risk or possible responses to the risk. As well, it is not clear all risks related to having fuel equipment components had been identified. HRM does not have an Enterprise Risk Management (ERM) process in place which has been adopted at the corporate level and cascades down to the business unit level. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) defines Enterprise Risk Management as:

- *A process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.<sup>2</sup>*

During the development of COSO's Enterprise Risk Management Framework, there were a series of large business failures throughout the world. All of these failures clearly contributed to the development of the Sarbanes-Oxley Act in the United States and Bill 198 in Canada which cemented the requirements of public companies to maintain systems of internal controls and to have the effectiveness of these systems certified. These methodologies have spread to private companies and to the public sector where there is now more awareness around internal controls and risk management.

<sup>2</sup> *Enterprise Risk Management – Integrated Framework Executive Summary September 2004* Committee of Sponsoring Organizations of the Treadway Commission page 2



Generally, a risk management framework includes various types of risks such as strategic, reputational, financial, privacy (may be classified under reputational risk), legal and compliance, environmental (may be classified under legal and compliance risk), and political risks (may be classified under reputational risk). Documentation of risks is usually accomplished using a risk register which would include an identification of the risks, a risk ranking (likelihood and impact if a risk event were to happen), who is responsible for the risk and what processes are in place to manage the risk. This information is not maintained throughout HRM.

---

---

**A risk register would include an identification of the risks, a risk ranking, who is responsible for the risk and what processes are in place to manage the risk. This information is not maintained throughout HRM.**

---

---

Even though Halifax Transit identified the risk of a fuel spill from the in-ground tanks, all risks at Halifax Transit are not documented in a risk register with a documented process to manage each of the risks and an assigned person/position to monitor/manage the defined risk. For example, there are also environmental and regulatory risks related to handling of oils, chemicals and greases in the bus maintenance area of Halifax Transit. There are likely processes in place for disposal of these hazardous materials, however they are not documented in a risk management document. The OAG is not saying there are no processes in place, however there is no risk management process to identify what is in place and any possible gaps which may exist. Most concerning is it does not exist on an organization-wide basis. There is also no monitoring or governance process in place to ensure controls are working and processes result in the prescribed level of risk management for those subject to regulations or within the accepted tolerance level (stated risk appetite) for those not subject to regulation.

There also did not appear to be a risk analysis completed during the phases of installing new fuel tanks and removing the old tanks. As such, there was no documented identification of any environmental risks associated with these undertakings. The resources assigned to the project appeared to be based on the dollar value of the project and not the associated risk.

As the OAG has identified in previous reports, HRM business units tend to operate in silos with a lack of full, appropriate communication between units. In the case of fuel projects or operations, HRM environmental personnel do not appear to get involved in a proactive manner. They appear to get involved

when environmental issues become a reality. This appears to be due, in part, to a lack of policies and procedures around environmental matters.

In the past the OAG has recommended HRM create a position of Chief Risk Officer. “Among the most critical challenges for managements is determining how much risk the entity is prepared to and does accept as it strives to create value.”<sup>3</sup> The expertise of a Chief Risk Officer would help guide the Municipality in the risk management process through development of a corporate-wide program and facilitate the adoption of the program throughout HRM. Reporting of the results of the program to Regional Council would be part of the program. Gaps identified could become part of business case development for process improvement initiatives or even capital improvements.

---

---

**“Among the most critical challenges for managements is determining how much risk the entity is prepared to and does accept as it strives to create value.”<sup>3</sup>**

---

---

**Recommendations:**

- 1.0.1 The OAG recommends HRM Administration initiate a corporate-wide risk management process (ERM – Enterprise Risk Management) starting with the acquisition of the services of a Chief Risk Officer or the equivalent external expertise to manage this initiative.
- 1.0.2 In conjunction with Recommendation 1.0.1, the OAG recommends HRM Administration engage Regional Council in discussions around ‘risk appetite’ to determine the level of risk the Municipality is willing to accept in pursuit of value for the taxpayers of HRM.
- 1.0.3 The OAG recommends, as part of Recommendation 1.0.1, a risk register be developed for Regional Council and a report provided on a regular basis (at least annually) identifying progress on the risk management process as well as the gaps in management of risks which have been identified.

---

<sup>3</sup> *Enterprise Risk Management – Integrated Framework Executive Summary September 2004* Committee of Sponsoring Organizations of the Treadway Commission page v

1.0.4 The OAG recommends HRM Administration undertake development of an environmental policy which provides Environmental Performance Officers with the appropriate authorities and 'cradle to grave' involvement in projects and in operations impacting the environment.

## 2.0 Fuel Monitoring

### Fuel Inventory Reconciliations

One way an organization can manage risks is to put internal controls in place to monitor operations. One very simplistic control to detect inventory errors or deviations is an inventory reconciliation based on quantities. This is a very common practice in any business with inventory for a number of reasons; often to manage shrinkage and cost of goods sold or to ensure other controls in place are working as intended. A quantity inventory reconciliation basically takes the inventory at the end of the previous period, adds any inventory deliveries and subtracts any inventory usage during the current period. The result should equal the inventory on hand (physical inventory) at the end of the period. A physical inventory count or measurement also takes place at the end of the period. The physical inventory is compared to the calculated inventory on hand and any variances are investigated.

**One very simplistic control to detect inventory errors or deviations is an inventory reconciliation based on quantities.**

Inventory Reconciliation					
Beginning Inventory	XXX				
+ Inventory Deliveries	XXX				
- Inventory Usage	(XXX)				
Ending Inventory	XXX	Physical Inventory	XXX	Variance	XXX

Some variances can be expected depending on the type of inventory. In the case of fuel, a resulting variance may be due to condensation in the tanks or expansion/contraction due to variances in temperature. However, the OAG is of the understanding there are industry processes and standards to assist with adjusting for the variances caused by, for example, temperature and it is widely accepted accurate inventories are quite possible and in fact take place.

Upon review of the types of analysis being completed by Halifax Transit, it appears the financial analysis/processes (not reconciliations) used by Halifax Transit were more likely designed as a usage tool rather than a tool which

would ensure compliance with provincial regulations around fuel loss.

Halifax Transit staff indicated management reviews fuel usage on a monthly basis since fuel is the largest expense outside of wages. What management appeared to be doing at the time the spill took place was to attempt to monitor fuel usage in dollar terms (a formula which limited the analysis to only amounts purchased and dispensed stated as dollars). When asked by the OAG as to the reason why the management analysis prepared by Halifax Transit, and even for a time after the fuel leakage was discovered, did not alert HRM management of the fuel loss, the OAG was advised where the leak occurred during the winter months when there is typically more fuel burned any resulting variances (indications of higher use) were considered reasonable and related to winter temperatures.

Halifax Transit also indicated they review cost per kilometer, however, it is difficult for them to get a base line when there is a mixture of older and newer buses. They also advised, there are also issues with price fluctuations since the fuel price changes each week. These types of reviews are at a high level and would not necessarily identify the fuel spill variances. Unfortunately, it appears plausible management would not notice this variance when they are only reviewing the expense at such a high level and unfortunately using the wrong metrics for the analysis (dollars consumed rather than actual quantities consumed).

Therefore, HRM must understand why fuel management takes place and for the different reasons. For example, the Environment Act clearly prohibits the release of substances into the environment at rates which are in excess of those allowed by regulation. The regulations require immediate notification of the Department of the Environment of any unexplained loss or gain of 1% or more of the inventory in the case of an above ground system and .5% for an underground system. By default the OAG estimates there is a responsibility on the part of HRM to have systems or reconciliations in place which would have detected a spill in the order of 500 to 1,000 litres or more per month. The Halifax Transit spill was estimated at 40,000 – 50,000 litres per month or 200,000 litres in total.

---

---

**The OAG estimates there is a responsibility on the part of HRM to have systems or reconciliations in place which would have detected a spill in the order of 500 to 1,000 litres or more per month.**

---

---

It would appear, provincial legislation requires the use of inventory reconciliations in circumstances when other detection systems or visual inspections (as described) are not able to detect the loss of fuel. The type of reconciliation to be performed and the frequency are contained within the regulations as well. In fact the section requiring reconciliations is clear as to the formula to be used and frequency.

Inventory is defined in the regulations as “the amount of petroleum product calculated to be in a storage tank after considering the initial volume of petroleum product in the storage tank and the amount of petroleum product added to and removed from the storage tank during a period of time”<sup>4</sup>.

This formula is identical to the one described earlier which would be needed to properly manage fuel from an operational and hence value for money basis.

---

---

**This formula is identical to the one described earlier which would be needed to properly manage fuel from an operational and hence value for money basis.**

---

---

At Halifax Transit, the inventory deliveries, usage data and electronic tank readings were being collected at the Burnside Transit Centre however the reconciliation process was not completed. Data does not become information until it is processed in a manner to make it useful for management. Even after the spill was identified, Halifax Transit took some time to identify it was from the Burnside Transit Centre because the collected data was not interpreted through the proper reconciliation process or interpreted in a meaningful way.

---

---

**Data does not become information until it is processed in a manner to make it useful for management.**

---

---

Halifax Transit failed to identify large variances by not using a physical inventory reconciliation. These types of reconciliations were not done until Halifax Transit was trying to estimate the amount of fuel lost. The OAG has been advised reconciliations are now being done on a monthly basis for the Burnside Transit Centre.

---

<sup>4</sup> Petroleum Management Regulations made under Sections 25 and 84 of the *Environment Act* S.N.S. 1994-95, c.1 O.I.C. 2002-139 (March 28, 2002, effective April 1, 2002), N.S. Reg. 44/2002 – Definitions 2(p)

At the Ragged Lake Transit Centre, an electronic system is not in place to record dispensing data so each fill of a bus is manually recorded and entered into the electronic system. There is also no physical dip reading taking place at the Centre. Staff indicated the tanks are very large and they do not have the training or equipment to undertake such readings. Staff also indicated reconciliations are 'done between what is delivered and what is dispensed'. Since physical readings are not taking place, this is not a true reconciliation. If a risk assessment was completed of this situation, it should indicate there is a gap in the process to manage/monitor inventory levels at the Ragged Lake Transit Centre.

If a spill had taken place at Ragged Lake, it is also unlikely it would have been detected on a timely basis. This conclusion could be used to support the need for more training of staff. The cost of the training or services compared to the cost of cleanup of a fuel spill would be minimal to close the risk exposure. Another risk is the risk of error from manual entry of fuel dispensing data. The OAG was advised this risk will be addressed through the Halifax Transit technology plan.

In March 2015, after questioning by the OAG of the type of tank monitoring information available, Halifax Transit staff determined the tank monitoring system at the Ragged Lake Transit Centre also provides the fuel level in the tank. It is interesting to note the Ragged Lake Transit Centre opened in 2010.

**Recommendations:**

- 2.0.1 The OAG recommends Halifax Transit management identify more detailed control mechanisms (such as inventory reconciliations, fuel usage per route, fuel usage per bus and week-to-week and month-to-month comparisons) to be used in monitoring fuel usage.
- 2.0.2 The OAG recommends HRM Administration undertake a training program to educate employees involved in fuel related projects and operations on the necessary regulatory requirements.

2.0.3 The OAG recommends Halifax Transit complete true inventory reconciliations of fuel inventory for both transit centres. A reconciliation process should include physical inventory readings either electronically or via physical dips. Even electronic readings should be validated with a dip reading, periodically, to ensure electronic readings are still working properly. This reconciliation process should be implemented as soon as possible since additional technology is not needed to complete reconciliations.



## Appendix A: Management Response

May 19, 2015

Larry Munroe  
HRM Municipal Auditor General  
Belmont House, Suite 620  
33 Alderney Drive  
Dartmouth, Nova Scotia B3J 3A5

**RICHARD BUTTS**  
CHIEF ADMINISTRATIVE OFFICER



**Re: A Performance Review of Risk Management: Fuel Spill at Halifax Transit**

Dear Mr. Munroe:

Thank you for the opportunity to review *A Performance Review of Risk Management: Fuel Spill at Halifax Transit*, which was sent by your office on April 29, 2015. I have read the report, and am in general agreement with the overall content. Based on the recommendations, we will develop a plan to address the primary issues identified in the report.

As noted in this report, as well as some of your previous work, risk management is an important aspect of organizational management. I agree with your focus on risk and want to assure you that HRM Administration takes this issue seriously. Administration has dedicated significant effort to examining the process of risk management and has been actively developing models and approaches to managing risk. In response to a motion of Regional Council, a detailed report on HRM's approach to risk management has been completed and is scheduled to be included on a Council meeting agenda later this month.

In terms of the recommendations which relate specifically to Halifax Transit, administration will continue to work on improvements that will help to avoid future incidents of a similar nature. Some of these mitigation strategies have already occurred or are underway, such as the relocation of the underground fuel tank at the Burnside depot and work toward implementing Transit's comprehensive technology plan.

As always, we will closely consider the material in this report and I will ensure that the municipality continues to develop and enhance effective approaches to managing risk.

Sincerely,

HALIFAX REGIONAL MUNICIPALITY

Original Signed

Richard Butts  
Chief Administrative Officer

**HALIFAX**

Halifax Regional Municipality  
City Hall, 1841 Argyle Street, PO Box 1749  
Halifax, Nova Scotia, Canada B3J 3A5

t. 902.490.4026  
f. 902.490.4044  
halifax.ca