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Audit of Departmental Fuel Management

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Acronyms and Abbreviations

ADM(Fin CS)	Assistant Deputy Minister (Finance and Corporate Services)
ADM(IE)	Assistant Deputy Minister (Infrastructure and Environment)
ADM(Mat)	Assistant Deputy Minister (Materiel)
AVPOL	Aviation Petroleum, Oil and Lubricants
CF	Canadian Forces
CFB	Canadian Forces Base
CFSM	Canadian Forces Supply Manual
CFSS	Canadian Forces Supply System
CMS	Chief of the Maritime Staff
CRS	Chief Review Services
DGMSSC	Director General Materiel Systems and Supply Chain
DMMOS	Director Maritime Materiel Operational Support
DMPP	Director Materiel Policy and Procedures
DND	Department of National Defence
DRMIS	Defence Resource Management Information System
F&L	Fuels and Lubricants
FY	Fiscal Year
MOU	Memorandum of Understanding
OPI	Office of Primary Interest
PWGSC	Public Works and Government Services Canada
SOA	Standing Offer Agreement



Results in Brief

Each of the environmental commands purchase, use and store fuel as it is a key resource required to facilitate training, support and operational activities. During the five-year period ending with fiscal year (FY) 2009/10, an average of \$317 million in fuel was purchased annually by the Environments. The overwhelming majority of these expenditures are made through Public Works and Government Services Canada (PWGSC)'s National Fuel Procurement Program which negotiates regional Standing Offer Agreements (SOA) for the Government of Canada. The fuel prices in these agreements fluctuate with market prices and offer the Department of National Defence (DND) the best value for money for fuel procurement in Canada.

Overall Assessment

Overall controls and processes were in place to facilitate base-level fuel management needs; however, the implementation of a standardized system and approach to fuel management would increase the availability and integrity of information required at a corporate level in order to effectively manage this resource.

The objective of the audit was to assess the adequacy of controls and the accuracy and sufficiency of management information related to the procurement, custody and issuing of fuel.

Although base-level controls and processes appeared sufficient to meet local needs, the integrity and availability of information at a corporate level is not sufficient to effectively manage this key resource.

Since the results of the audit are based on the examination of fuel management practices at only four sites, it cannot be concluded that the same practices are occurring across the Department and the Canadian Forces (CF). However, the results do raise concerns regarding current fuel management practices and thus warrant further follow-up.

Main Findings and Recommendations

DND currently lacks clear direction and oversight of fuel acquisition, storage and recording practices.

The Fuels and Lubricants (F&L) section, in conjunction with the environmental commands, should investigate the feasibility of standardizing and implementing fuel management systems and practices that meet DND reporting and recording requirements and collaborate with Director Materiel Policy and Procedures (DMPP) to update the Canadian Forces Supply Manual (CFSM) to reflect any proposed standardized practices.

Fuel Procurement Tools. While overall, fuel procurement practices were compliant with departmental requirements, there is a need to improve certain marine fuel procurement tools and to assign the appropriate ground fuel acquisition cards to meet users' needs.

The Chief of the Maritime Staff (CMS) should ensure that terms stipulated in marine fuel-related SOAs involving ship's agents require justification for fuel prices and provide the best value for money for DND.

F&L should investigate the acquisition card acceptance issues and consider matching high fuel volume vehicles with the appropriate acquisition card product.

Storage Capacity and Supply Chain. Storage capacity and supply chain restrictions should be assessed to determine if fuel cost savings can exceed the cost of creating a capability to strategically procure fuel based on favourable fuel prices.

Fuel Inventory. The fact that fuel inventory transactions are not always recorded in the centralized inventory system has impacted the integrity of centralized commodity information and financial statement fuel inventory values.

F&L, in conjunction with the applicable environmental commands, should investigate the extent of reconciliation issues and if necessary implement requirements to improve the accuracy of fuel consumption and holding information. DMPP should consult with Assistant Deputy Minister (Finance and Corporate Services) (ADM(Fin CS)) to determine the financial reporting requirements and update the CFSM to accurately reflect departmental financial recording requirements.

Note: For a more detailed list of Chief Review Services (CRS) recommendations and management response, please refer to [Annex A](#)—Management Action Plan.



Introduction

Background

Fuel is an essential operational resource and—with annual expenditures ranging from \$257 million to \$426 million over the last five years, as shown in Figure 1—a significant item in the DND/CF operating budget. DND procures Aviation Petroleum, Oil and Lubricants (AVPOL), marine and ground fuels (including gasoline and diesel) both domestically and worldwide and issues these fuels to CF units as well as to allied nations and other customers. DND’s centralized inventory system, the Canadian Forces Supply System (CFSS), is the system of record for fuel inventory holdings while the Defence Resource Management Information System (DRMIS) is used to record revenues and expenses associated with purchasing and issuing fuel.

Given the operational significance of fuel and recently experienced fuel price fluctuations, a robust strategy is required to ensure this vital commodity is available to support current and future operational requirements. Effective financial and administrative management is required to efficiently procure, issue and maintain fuel inventories. Recognizing this, the Fuels and Lubricants section within Assistant Deputy Minister (Materiel) (ADM(Mat)) was established in 2006 to be the departmental leader in managing the Fuels and Lubricants Program.

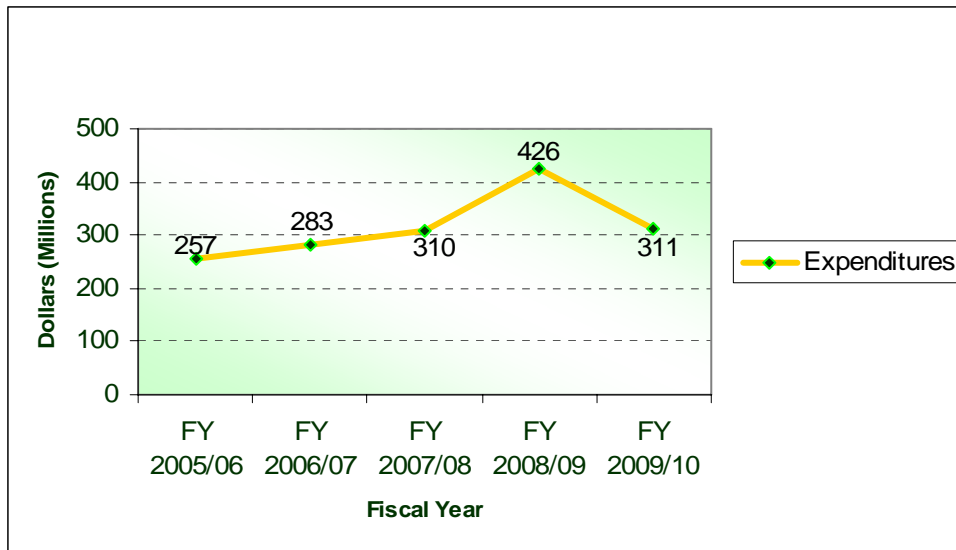


Figure 1. Fuel Expenditures¹ Five-Year Trend. Fuel expenditures ranged between \$257 million and \$426 million from FY 2005/06 to FY 2009/10. The data is summarized in Table 1.

¹ Expenditure information was obtained from the DRMIS for the three fuel types included in the audit scope. AVPOL, marine fuel and ground fuel averaged approximately 68, 18 and 14 percent, respectively, of mobile equipment fuel expenditures for the five years analyzed.

Fiscal Year	Fuel Expenditures
2005/06	\$257 million
2006/07	\$283 million
2007/08	\$310 million
2008/09	\$426 million
2009/10	\$311 million

Table 1. Fuel Expenditures.

Objectives

The objective of the audit was to assess the adequacy of controls and the accuracy and sufficiency of management information related to the procurement, custody and issuing of fuel.

For a detailed list of criteria associated with the audit objective, please refer to [Annex B](#)—Audit Criteria.

Scope

The scope of the audit included an assessment of the fuel management processes and controls in place for AVPOL, marine fuel, and ground fuel during the twelve-month period ending 30 November 2010.

The scope did not include an assessment of the following:

- Environmental risks and impacts of departmental fuel management practices;
- The processes and transactions associated with heating fuel and lubricants;
- In-theatre fuel management processes; and
- The appropriateness of the accounting treatment for recording sales of fuel to foreign militaries.²

Methodology

The methodology included:

- Interviews and discussions with key fuel management personnel at bases, wings and strategic and operational levels within environmental commands;
- Review of documentation, including policies, directives, instructions, SOAs and various memoranda of understanding (MOU) between Canada and the United States;
- Review of controls associated with the procurement, issuing and custody of the three primary fuel categories;
- Analysis of CFSS and DRMIS data extracts;

² See Review of Revenue Management, May 2010 (<http://www.crs-csex.forces.gc.ca/reports-rapports/2010/141P0835-eng.aspx>).

- Sample testing of financial transactions from in-scope general ledger accounts; and
- Site visits to the following bases and wings to review the listed processes:
 1. 4 Wing Cold Lake – AVPOL and ground fuel processes
 2. Canadian Forces Base (CFB) Edmonton – ground fuel processes
 3. 8 Wing Trenton – AVPOL and ground fuel processes
 4. CFB Halifax – marine fuel and ground fuel processes



Findings and Recommendations

Governance

DND currently lacks clear direction and oversight of fuel management practices as well as the information required for strategic decision-making purposes.

Expectations

It was expected that policies and directives in the area of fuel management would provide clear direction, thereby ensuring that consistent and efficient controls and processes are applied across the DND/CF. It was further expected that a single point of responsibility would share information, best practices and emerging fuel management technology with stakeholders.

Findings

Centralized Direction. While the CFSM provides the over-arching procedures related to fuel management within DND, the direction in this manual does not always reflect current practices. Procedures have not evolved consistently with enhancements in fuel measurement and tracking technology. The CFSM refers to the use of templates and manual record keeping that have been surpassed by electronic programs and systems. As well, the CFSM contains contradictory information regarding the requirement to record fuel commodities in the CFSS.³

The sites visited have each implemented varying non-standard systems and processes based on past experience, direction from their respective environmental commands or knowledge gained from working-level colleagues. The result has been the creation of ad-hoc, location specific, electronic and manual fuel management systems with increased data integrity risks and increased system development, implementation and training costs.

This significantly impacts the ability to centrally consolidate and analyze information in support of strategic fuel decisions or to validate data integrity.

Single Point of Responsibility. The Fuels and Lubricants section was created in 2006 with a mandate to “establish institutions, policy, standards and procedures to construct, operate and maintain safe, environmentally responsible, high quality fuels and lubricants systems that meet the mission requirements of the CF while maintaining maximum standardization with other services and allied nations.”⁴

Resource challenges have limited this group’s ability to fully achieve its mandate and increase its visibility within the Department:

³ While the CFSM – Volume 3 Chapter 18 3-18F-001, Petroleum, Oil and Lubricants/Fuel Accounting Policy paragraph 6 states: “All POL/fuel shall be accounted for as a normal item of supply in accordance with the supply manual...”, later in the same paragraph it states that “because bulk POL/fuel transactions are maintained on CF 405, Stock Record Cards, in accordance with Section 2, there is no requirement for CFSS data entry. However, individual commands are encouraged to have bases continue data entry on the CFSS for historical tracking.”

⁴ ADM(Mat) Intranet site. F&L’s authority is delegated from ADM(Mat) in DAOD 3014-0.



- The section is currently staffed to 73 percent of its established resource level;
- Most individuals interviewed during site visits were unaware of F&L's complete mandate; and
- Many individuals involved in the fuel management process across DND were unaware of subject matter experts from whom to seek direction, or with whom to raise issues or voice concerns.

The F&L section is involved in updating fuel-related policies and procedures, strengthening fuel information management and technology and ensuring people are well trained in these areas. It also ensures DND/CF operations are well provided with fuel by establishing fuel requirements and aiding bases in planning requirements. At a strategic level, F&L provides advice in regards to the establishment and management of fuel-related MOUs and other informal arrangements. The ability to perform these tasks is impacted by the number of systems being used and the lack of reliable consolidated information.

Recommendation

1. F&L, in conjunction with the environmental commands, should investigate the feasibility of standardizing and implementing fuel management systems and practices that meet the reporting and recording requirements of DND and collaborate with DMPP to update the CFSM to reflect any proposed standardized practices.

OPI: ADM(Mat)/F&L Section

Fuel Procurement Tools

While overall, fuel procurement practices were compliant with departmental requirements there is a need to improve certain marine fuel procurement tools and to assign the appropriate ground fuel acquisition cards to meet users' needs.

Expectations

The expectations were that fuel would be procured using appropriate procurement tools, and that control and monitoring processes would be in place to ensure that payments for fuel reflected the quantity received and the appropriate price. It was also expected that fuel procurement information would be tracked to aid in future strategic fuel procurement decisions.

Findings

Procurement Tools. Overall, proper procurement tools such as SOAs and MOUs were utilized where available. By pre-negotiating terms and conditions, these agreements facilitate procurement and offer the best value for money in fuel procurement. The challenge for an organization that operates worldwide is to procure fuel at competitive prices in remote locations where such arrangements are not in place.

Transactions tested indicated that fuel procured outside these arrangements cost between 20 and 50 percent more than fuel procured within such agreements. The Department needs to be proactive in ensuring that, to the extent possible, SOAs are in place to meet anticipated requirements.

In certain situations where no other option is available, marine fuel is purchased using SOAs involving a ship's agent.⁵ These SOAs do not stipulate a specific fuel price or an acceptable mark-up on market prices but rather refers to the price being the "cost" to the ship's agent. The agent is not required to include supporting documentation for this cost when invoicing the Department, and as a result there is reduced transparency and little means of confirming that the amount charged is supportable. A sample of transactions using this procurement tool was compared against fuel prices published by other fuel brokers for the same day and location. This comparison identified that DND paid on average 20 percent more than fuel prices posted by other fuel brokers. Approximately \$2.75 million or 7 percent of DND annual marine fuel expenditures are acquired using this procurement tool.

Good Practice

At one site, operation schedules were reviewed by the finance section to aid in determining the most favourable refuelling locations.

⁵ A ship's agent is a broker who facilitates access to supplies and provision for DND vessels while deployed around the world.



Invoice Payment Verification. Overall, control processes were in place to ensure invoice payments reflected the documented quantity received and the appropriate price. For the sample transactions, invoiced fuel prices reflected SOAs or other contracted prices while invoiced quantities were reconciled against verified bills of lading, delivery slips or other proof of receipt prior to payment.

Purchases using the Ground Fuel Acquisition Card. While an SOA is in place giving one acquisition card provider exclusive rights for its card to be used for off-base/wing ground fuel purchases, some vendors are unwilling to accept the card or if the card is accepted, they impose limits on its use, thus affecting DND's larger transportation vehicles. It was unclear if the payment terms or discounts negotiated by the acquisition card provider have made it a reluctant business partner with point of sale fuel providers. Interviews with various base transport section personnel indicated that this has created some inconvenient situations (such as drivers having to use personal credit cards to acquire fuel). DND does have access to another sponsored fuel acquisition card that has increased acceptability.

Recommendations

2. CMS should ensure that terms stipulated in marine fuel-related SOAs involving ship's agents require justification for fuel prices and provide the best value for money for DND.

OPI: CMS

3. F&L should investigate the acquisition card acceptance issue and consider matching high fuel volume vehicles with an appropriate acquisition card product.

OPI: ADM(Mat)/F&L Section

Storage Capacity and Supply Chain

Capacity and supply chain restrictions limit strategic bulk procurement.

Storage Capacity and Supply Chain. Half of the sites visited face storage capacity or supply chain limitations affecting strategic bulk procurement decisions. These sites have only one method of fuel delivery from one supplier with a supply chain route in excess of 500 kilometres. Sites with limited storage capacity rely heavily on just-in-time inventory delivery while sites with adequate capacity are challenged with limited supplier fuel delivery vehicles. This increases the risk that minimum fuel reserve levels may not be maintained during heightened periods of operations. As well, these obstacles preclude strategically controlling the volume or frequency of fuel purchases based on fuel price changes. In FY 2010/11, there was an approximate 15 percent⁶ change in prices for the fuels within the scope of this audit.

Recommendation

4. F&L, in conjunction with the applicable environmental commands, should assess the viability of increasing fuel supply capacity and/or alternative delivery methods at strategic locations in order to increase delivery flexibility, capability and the potential to take advantage of price fluctuations.

OPI: ADM(Mat)/F&L Section

⁶ According to the DND Directorate of Strategic Finance and Costing, Quarterly Update on Energy Inflation, 1 April 2011.



Fuel Inventory

While fuel inventory transactions are tracked for local purposes, fuel inventories are not always recorded in the CFSS, thus impacting the integrity of CFSS commodity information and financial statement inventory values.

Expectations

Expectations were that fuel inventory control processes would be sufficient to ensure accurate CFSS inventory holdings and consumption information for financial reporting and management decision-making purposes.

Findings

CFSS Inventory Tracking. For the sites tested, AVPOL inventories were being recorded in the CFSS system while approximately \$3 million of marine and ground fuel inventory was not. Incomplete information regarding fuel inventories in CFSS affects the accuracy of asset holdings and fuel expenses reported in the financial statements, and impacts centralized decision making such as year-end capacity for additional fuel procurement.

CFSS is not being used because it does not readily provide all the information needed at local and command headquarters. Strategic fuel decisions at the command headquarters level require analysis of all fuel information and thus the proliferation of local systems that provide the required information.

A comparison of sample invoice data to the information contained in local fuel management systems indicated that the systems accurately reflected invoiced values and quantities. Notwithstanding, the absence of edit input checks and automated processes increases data integrity risk.

Fuel Reconciliations. Fuel is a commodity constantly expanding or contracting as a result of temperature change. Although individual fuel volume fluctuations appear insignificant they can accumulate to a tangible value when hundreds of millions of litres are received and issued. Without temperature correction calculations occurring consistently throughout the fuel management process, consumption rates and adjustments may not accurately reflect usage.

Fuel receipt and issue recording methodologies vary from location to location. The ability to electronically validate actual fuel received with the delivery slip at the time of delivery is not consistently used, resulting in some sites relying solely on the vendor-supplied fuel delivery slips. In one extreme case a ship's recorded fuel receipt was approximately 16 percent less than the fuel invoiced. There was no additional information on file to indicate the discrepancy had been investigated. The absence of a monitoring and follow-up process may result in DND paying for fuel it cannot confirm it has received.



Fuel issuing systems were controlled by non-standardized electronic means or handwritten fuel issuing slips. Either way, issuing information must be entered manually into multiple systems before these transactions are reflected in DRMIS or CFSS. Handwritten receipts and manual processes require significant monitoring and control to ensure accuracy and completeness. The fact that there are varying methodologies increases training costs and requirements and reduces knowledge transferability because posted CF members have to learn different systems in order to accomplish the same task.

Although fuel receipts and issues are reconciled against actual ending inventories, discrepancies are rarely investigated to determine if they relate to unrecorded transactions or can be attributed to temperature corrections. Most of the reconciliation discrepancies that were tested were less than the CFMS stipulated tolerance threshold of half of one percent.

Recommendations

5. ADM(Mat) should consult with ADM(Fin CS) to determine the financial reporting requirements and update the CFMS to accurately reflect departmental financial recording requirements.

OPI: ADM(Mat)/F&L Section

6. F&L, in conjunction with the applicable environmental commands, should investigate the extent of reconciliation issues and if necessary implement requirements to improve the accuracy of fuel consumption and holding information.

OPI: ADM(Mat)/F&L Section

Annex A—Management Action Plan

Governance

CRS Recommendation

1. F&L, in conjunction with the environmental commands, should investigate the feasibility of standardizing and implementing fuel management systems and practices that meet the reporting and recording requirements of DND and collaborate with DMPP to update the CFSM to reflect any proposed standardized practices.

Management Action

ADM(Mat) recognizes that the CFSM and its policies have not kept pace with the technological advances of recent years. A complete review of all policies related to fuels and lubricants has begun and all necessary modifications will be included in CFSM. ADM(Mat), in partnership with ADM(IE), has proposed to the Defence Management Committee the creation of an energy organization to oversee and lead all aspects of this critical asset.

OPI: ADM(Mat)/F&L Section

Target Date: July 2013

Fuel Procurement Tools

CRS Recommendation

2. CMS should ensure that terms stipulated in marine fuel-related SOAs involving ship's agents require justification for fuel prices and provide the best value for money for DND.

Management Action

The Commander Royal Canadian Navy will review fuel purchases against its deployed standing offers with a view to establishing bulk fuel standing offers and appropriate vendor compensation through PWGSC. This could include an increase in call-up values more suited for ships' requirements. In the meantime, when fuel agreements do not exist to satisfy requirements, purchases against deployed logistics support standing offers will be monitored against published fuel pricing to ensure the Crown obtains value for money. Furthermore, procedures and oversight mechanisms will be put in place to ensure appropriate documentation to support prices paid is obtained.

OPI: CMS

Target Date: December 2012

CRS Recommendation

3. F&L should investigate the acquisition card acceptance issue and consider matching high fuel volume vehicles with an appropriate acquisition card product.

Management Action

A card which is more universally accepted and with a high daily limit has been identified and a pilot project with Canada Command using this card is being developed. Upon successful completion of the pilot, its applicability across the CF will be evaluated.

OPI: ADM(Mat)/F&L Section

Target Date: July 2012

Storage Capacity and Supply Chain**CRS Recommendation**

4. F&L, in conjunction with the applicable environmental commands, should assess the viability of increasing fuel supply capacity and/or alternative delivery methods at strategic locations in order to increase delivery flexibility, capability and the potential to take advantage of price fluctuations.

Management Action

ADM(Mat) is developing a strategy for the implementation of a strategic fuel reserve for the CF. Investigation of the operational fuel use and normal holdings of CF units is under way in order to initiate calculations on possible locations and sizes for fuel reserves. The Director Materiel Group Operational Research has initiated a study into the feasibility of purchasing fuel for the CF using a hedging strategy to take advantage of price fluctuations.

OPI: ADM(Mat)/F&L Section

Target Date: January 2013

Fuel Inventory

CRS Recommendation

5. ADM(Mat) should consult with ADM(Fin CS) to determine the financial reporting requirements and update the CFMS to accurately reflect departmental financial recording requirements.

Management Action

ADM(Mat) is in the process of reviewing and updating all DND/CF policy related to fuels and lubricants. The policy components related to financial reporting will be updated as part of this review.

OPI: ADM(Mat)/F&L Section

Target Date: July 2013

CRS Recommendation

6. F&L, in conjunction with the applicable environmental commands, should investigate the extent of reconciliation issues and if necessary implement requirements to improve the accuracy of fuel consumption and holding information.

Management Action

Investigation of a commercial-off-the-shelf fuel management system software package is under way. This system would allow total visibility of fuel delivered and held at all CF bases from acquisition to usage.

OPI: ADM(Mat)/F&L Section

Target Date: September 2012

Annex B—Audit Criteria

Objective

Assess the adequacy of controls and the accuracy and sufficiency of management information related to the procurement, custody and issuing of fuel.

Criteria

- Policies provide clear direction to ensure consistent and efficient controls and processes are applied.
- Appropriate fuel procurement methods are utilized, controls and monitoring ensure fuel quantity, and price is accurate.
- Fuel issues are consistently controlled and monitored; costs are appropriately allocated.
- Fuel inventory control processes are sufficient to ensure accurate inventory and consumption information is maintained for financial reporting and management decision making.

