2008

# Report of the Auditor General of Canada to the House of Commons

MAY

## Chapter 2
Support for Overseas Deployments—
National Defence

Office of the Auditor General of Canada

*The May 2008 Report of the Auditor General of Canada comprises A Message from the Auditor General of Canada, Main Points—Chapters 1 to 8, and eight chapters. The main table of contents for the Report is found at the end of this publication.*

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Chapter

# 2

## Support for Overseas Deployments

National Defence

*All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.*

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# Support for Overseas Deployments
## National Defence

## Main Points

**What we examined**

Canada's military role in Afghanistan since the end of 2003 has been to contribute to international security and, in particular, to the stability of the area. National Defence support to the mission is essential to ensuring that troops as well as civilians working alongside the military have the supplies and services they need to conduct operations and maintain readiness.

We examined whether the National Defence supply chain has been able to respond to the needs of the mission in Afghanistan as the mission has evolved. We looked at whether the supply system has been able to maintain adequate stocks for the repair and maintenance of military equipment, to track and control supplies as they move to Afghanistan through the supply chain, and to deliver items to those who need them when they are needed.

**Why it's important**

Military operations cannot be conducted without logistical support that moves the right equipment to the right people at the right time. The ability to support operations dictates what the mission can do. The Canadian Forces' deployment to Kandahar, Afghanistan, is its largest overseas deployment since the Korean War. The supply chain needs to respond faster to more demanding situations in this mission than it has had to for previous overseas deployments. This mission has tested the ability of the Canadian Forces to support a major military operation when called upon to do so.

Canada is seen as a lead nation to the mission in Afghanistan and is self-supporting for the most part, although, like previous deployments, the Canadian Forces can also rely somewhat on support provided by allies. Canada is also providing medical services to other nations through the Canadian-led military hospital at Kandahar Air Field.

**What we found**

- National Defence has been able to deliver to troops its equipment and supplies that they need to do the job in Afghanistan. While we did note that commanders have expressed concerns over some supply chain shortcomings, we found no reports of supply chain problems that had significantly affected operations. This is largely

because the high level of dedication and hard work of Canadian Forces personnel enabled them to deliver the needed support.

- While National Defence has been able to adapt and adjust to the supply chain problems our audit identified, unless the deficiencies are addressed, the Department's ability to provide timely and appropriate support could be at risk over time. For example, we found delays in moving needed supplies to Afghanistan and found that the supply system does not provide enough information to track the arrival and whereabouts of all goods. Some key equipment has been difficult to maintain because of spare parts shortages or reduced stocks as equipment begins to wear out. Support to the mission is being supplemented by a growing number of contract personnel for maintenance and other services to help keep operations going.

**The Department has responded.** The Department agrees with all the recommendations. Its detailed responses follow the recommendations throughout the chapter.

## Introduction

**2.1** The Canadian Forces initially moved to Kandahar from Kabul during the fall of 2005 under Operation Enduring Freedom, the American-led operations in Afghanistan. With that move came the responsibility for the stabilization and security of a larger area alongside Canada's coalition and Afghan partners. As well, the Canadian Forces took on the lead role of providing hospital facilities and medical services for injured military personnel from all countries deployed to Regional Command South, one of the areas of NATO's operations in Afghanistan.

**2.2** The Canadian Navy, Army, and Air Force are contributing to the mission in Afghanistan and are working cooperatively toward its success. Within Afghanistan, most Canadian Forces personnel are stationed at the main base at Kandahar Air Field but also work out of a number of other locations, including the camp for the provincial reconstruction team and several **forward-operating bases** in Kandahar province. Although most of these personnel are members of the Army, the Air Force is providing needed air assets and personnel for operations. As well, the Navy has played a major role in the security of the Persian Gulf region and is providing personnel to the mission.

**Forward-operating base**—One of a number of small military camps outside of Kandahar Air Field from which operations can be launched.

**2.3** The Joint Task Force Afghanistan is composed of Canadian Forces military personnel and approximately 250 positions for civilian personnel and contractors. As well, there are ongoing technical assistance visit teams who supplement the military personnel in Kandahar when needed, to do such things as

- replace key personnel on leave;
- perform modifications to vehicles, such as increased armoured protection;
- introduce new equipment; and
- put warehouse stock records in order.

**2.4** The number of Canadian military personnel in Afghanistan varies significantly during a rotation cycle (the period, generally six months, when personnel are stationed in Afghanistan). On average, there were about 2,445 Canadian Forces personnel **in-theatre** as part of the Joint Task Force during the six months ending January 31, 2008.

**In-theatre**—The military's area of operation under one commander who is responsible for the mission. Theatres can comprise several sites, some of which may be located over large areas or include several countries. The Joint Task Force Afghanistan conducts its activities in one operational theatre that includes, for example, Kandahar Air Field, sites where the provincial reconstruction team is working in Kandahar, forward-operating bases where troops are located, and areas that provide logistics support to the operation.

**2.5** Before they go to Afghanistan, Canadian Forces troops prepare for the mission at a specially designed training centre in Canada where they train as a battle group. The military has actively sought out

lessons to be learned from the mission in Afghanistan and where appropriate it has incorporated these lessons into the training.

**2.6** During the summer and fall of 2005, Canadian Forces troops participated in the transition from Kabul to Kandahar to prepare for operations to officially start in Kandahar in February 2006. The Assistant Deputy Minister (Materiel) assessed requirements and ensured that the camp at Kandahar Air Field could accommodate the personnel and equipment necessary for the operation, and that the needed mechanisms for logistical support were in place.

**2.7** To prepare for the move, the Canadian Forces prepared the Table of Organization and Equipment, a document that National Defence uses for all overseas deployments to detail the personnel and equipment that the military will provide. The **Canadian Expeditionary Force Command** takes the lead on developing the Table of Organization and Equipment in consultation with other stakeholders, such as the Army, Air Force, **Canadian Operational Support Command**, and the Assistant Deputy Minister (Materiel), which, in particular, provides input on the composition of support services.

**Canadian Expeditionary Force Command**—A departmental organization created in 2005 to plan and conduct Canadian Forces international operations, with the exception of operations conducted solely by the Canadian Special Operations Forces Command.

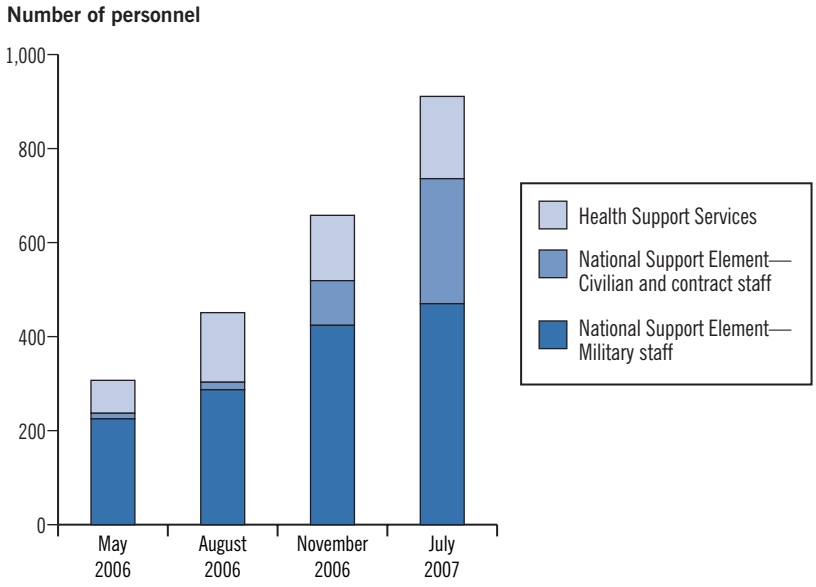
**Canadian Operational Support Command**—A departmental organization created in January 2006 to support all military operations. Headquartered in Ottawa, it is responsible for planning and delivering national-level operational support, including providing the logistics for setting up in-theatre operation, its sustainment, and for coordinating the logistic support. Its tasks include managing the main supply depots in Canada.

**2.8** As the nature of the mission in Afghanistan has evolved since operations began in Kandahar in 2005, the Canadian Forces has adapted and adjusted. The Canadian Forces recognized that it would need to learn from its experiences in Afghanistan and would identify additional requirements as the mission progressed. The Canadian Forces has responded to changes in mission requirements by adjusting the Table of Organization and Equipment and along with the Army, Air Force, and Assistant Deputy Minister (Materiel), has provided commanders with its equipment, vehicles, and weapons that they reported were needed to carry out the mission.

**2.9** Since deploying to Kandahar, the Canadian Forces has significantly increased the number of personnel deployed to Afghanistan to support the mission, as each rotation has found that additional personnel were required. Exhibit 2.1 illustrates the changes in the number of personnel making up two key organizations within the Joint Task Force Afghanistan that provide support: the **National Support Element**, and Health Support Services, which includes personnel at the Canadian-led multinational field hospital at Kandahar Air Field. These elements represent many, but not all, positions within the Joint Task Force that could be regarded as providing support.

**National Support Element**—A Canadian Forces unit, based at Kandahar Air Field, consisting of approximately 730 military, civilian, and contract personnel. It sustains the Task Force Afghanistan combat operations by providing a range of support services, including warehousing and supplies, supply convoys, equipment maintenance, and food services.

**Exhibit 2.1 The number of support staff for the Joint Task Force Afghanistan has increased**




Source: Department of National Defence

**2.10** Exhibit 2.1 shows that between May 2006 and July 2007, the number of support personnel needed for the Joint Task Force Afghanistan had tripled. Between November 2006 and July 2007, much of the increase was made up by increasing positions in health services and civilian and contractor personnel for functions such as equipment maintenance and supply functions.

## The supply chain has many components

**2.11** Supporting the mission requires personnel to manage supplies, such as truck tires, water, medical supplies, and ammunition, to name just a few items. Most everything a soldier may need comes through the supply chain. Personnel must acquire needed items and transport the goods to the users. They must maintain the overall supply chain to plan and purchase goods in advance, so that when requirements are identified in-theatre, the goods are available.

**2.12** The operation is supported in-theatre by the National Support Element at Kandahar, which purchases locally and receives shipped goods, and by the Canadian Operational Support Command, which is responsible for the supply depots, including local purchases of items in Canada, and coordinating the transportation of goods into Afghanistan. The Assistant Deputy Minister (Materiel) organization is responsible for buying materiel and ensuring that stocks on hand can meet demands.

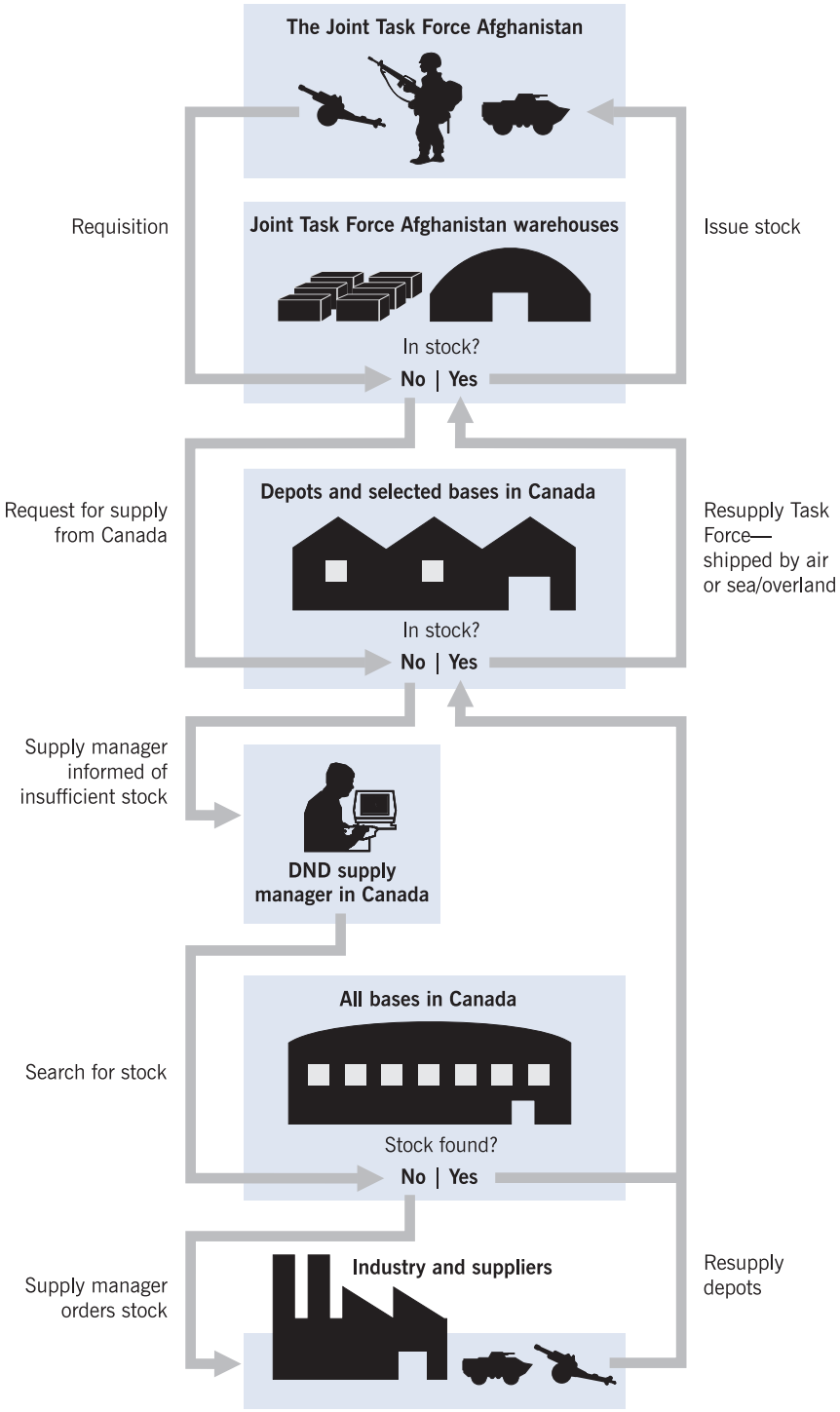
**2.13** When stocks run low in-theatre, requisitions for more are entered electronically into the Canadian Forces Supply System by the supply technicians, who code the request by priority: operationally critical, essential, routine, or replenishment. Technicians also indicate when the goods are needed in-theatre. Requisitions are received at the supply depot, where, if stock is available, items are packaged and sent for transport. Approximately half of the orders placed for Kandahar are needed quickly and are deemed operationally critical or essential. Exhibit 2.2 shows the key steps in the supply chain to send goods to Afghanistan.

### Focus of the audit

**2.14** We conducted our audit to determine whether the logistical support to the Canadian Forces overseas deployment to Afghanistan has met the mission's needs. We examined the movement of materiel and supplies into Afghanistan, the maintenance of equipment and the supply of parts to keep equipment in service, and the provision of stocks for operations.

**2.15** The scope of the audit was limited to this overseas deployment and did not include other deployments also under way. We did not examine the economy of supply chain operations in this area, nor did we examine the mission operations or contracts for the purchases of new military equipment. More details on the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

**Exhibit 2.2** **Simplified supply chain operations**



# Observations and Recommendations

## Supply chain performance

### National Defence is supporting the operation's needs

**2.16** The logistics effort for the mission has been huge and is key to success. While we did note commanders' concerns about some supply chain shortcomings, they have reported that they are, overall, satisfied with the support and equipment that has been provided to the mission, which, in their view, has made the Canadian Forces one of the best-equipped militaries in the coalition.

**2.17** However, while the supply chain has achieved, for the most part, the desired results, it has weaknesses that, if not addressed, may threaten its ability to sustain the mission over time. With each review by the Department of its holdings in Kandahar, there have been ongoing concerns over items that have been lost track of because storage, tracking, and retrieval methods are generally less capable than those used in the supply chain in Canada. While there is little information available to quantifiably assess the supply chain's performance, our observation is that results are often achieved more by military personnel's concerted efforts than by the system's design.

**2.18** Some of the system's weaknesses are understandable given the mission's fairly sudden shift in 2005 to a combat role of relatively high intensity for Canada—an overseas mission of a scale that the Canadian Forces has not faced since the Korean War. We have reviewed the audit reports for the supply operations of the United States and British forces and they show problems similar to those experienced by the Canadian Forces. This suggests, given the long experience of both those countries in overseas combat missions, that some of the issues may be inevitable for military operations with long supply chains. Nonetheless, it is important that the problems be addressed.

**2.19** The Canadian Forces Supply System and depots are organized to supply materiel to military bases in Canada and respond to their needs in a timely way. The system also provides many of the supplies needed by the operation in Afghanistan. In order to move supplies from depots in Canada to Kandahar, the Canadian Forces has relied for the most part on chartered heavy lift aircraft from the private sector because requirements have exceeded the available capacity of the Canadian Forces' fleet of CC-150 Polaris Airbus (A310) aircraft and aging CC-130 Hercules aircraft. Supporting the operation in Kandahar requires transporting by chartered aircraft, on average, about 85 tonnes of supplies each week. During the audit, the Department's

needs ranged from chartering as many as nine aircraft per week to as few as none but, on average, the Canadian Forces needed two or three commercial aircraft per week to either fly cargo into Afghanistan or have items returned; for example, damaged vehicles or equipment for repair in Canada. During the same time, National Defence used its own aircraft to move supplies and personnel to Afghanistan from Canadian Forces Base (CFB) Trenton about once per week.

**2.20** To a lesser extent, the Department has begun using commercial ships to support its operation in Afghanistan. Ships transport some less urgent equipment and supplies. Between an ocean port in Southwest Asia and Kandahar, the items are transported by road or air.

### Transportation limitations slow the delivery of supplies

**2.21** According to the Canadian Forces, the Joint Task Force Afghanistan should expect delivery of supplies from Canada to take 10 to 20 days. Department data showed that about half of items shipped do not reach Kandahar from the main supply depot in Canada within this expected time frame.

**2.22** Most cargo travels through CFB Trenton, where it is loaded onto military or commercial aircraft. Ensuring aircraft are loaded at CFB Trenton in a timely way has depended upon aging cargo loaders to lift containers, pallets, and equipment on or off aircraft. We found that when the Department's loaders were awaiting repair, the cargo loading and flights were delayed, which added to the time it took to move supplies to Afghanistan. We found that items often arrived at CFB Trenton already late for shipment to Afghanistan, but once items did arrive, about 15 percent sat waiting to be loaded onto an aircraft for a further 20 days or more before being loaded. The shipments often included items considered operationally critical or essential.

**2.23** The proportion of some types of materiel-handling equipment that is in working order has been unacceptably low. It was reported that some materiel-handling equipment deteriorated so badly that it needed immediate replacement. Logistic reports from Kandahar showed that the shortage and lack of working equipment was affecting the ability to support day-to-day operations. Logistic reports also stated that the unavailability of working materiel-handling equipment at CFB Trenton, used to load and unload supply planes, delayed the return of various types of equipment shipped by these planes for repair. The Department has informed us that to address these problems, it has been acquiring additional materiel-handling equipment.

### Meeting required delivery timelines is difficult

**2.24** Department data also showed that most requests for supplies to Afghanistan from the main supply depot in Canada asked for the items within 15 days or less. While we found that the supply chain did deliver almost all goods requested, we found that most did not arrive by the time they were asked for. Our analysis of data provided by the Department indicates that less than 10 percent of operationally critical or essential items requested from the main depot in Canada were received in Kandahar by the required delivery date. Nearly one quarter of all requests were already late before being shipped out of the main depot. At the time of our visit to Kandahar Air Field, the supply system showed that 3,467 requisitions were outstanding, of which 61 percent were already past the required delivery date. These requisitions were for items from the main depot in Canada for spare parts, tools, clothing, weapons, and equipment such as engines and transmissions.

**2.25** We observed that requests are identified in the system with both required delivery date and priority. Some 47 percent of requests for items from the main depot in Canada are coded as either operationally critical or essential. As well, 81 percent of these orders ask for delivery within 10 days—a cycle that has been very difficult to achieve. The supply chain is expected to use the priority code in conjunction with the required delivery date to determine the most appropriate and economic mode of transportation to meet the required delivery date. For example, less urgent items can be shipped by sea and road, which is less costly than by air. However, most items were needed within a time frame that only shipment by air could accommodate.

**2.26** We observed that while some supplies needed on a priority basis arrived quickly, often supplies listed as operationally critical or essential did not. We wanted to know if there was an impact on operations if supplies that were described as operationally critical or essential arrived late. We could find no reports of late supplies seriously affecting operations. However, we did review reports where delays in receiving parts reduced the number of military vehicles and equipment ready to be put into service.

**2.27** We also found that the system sometimes recorded required delivery dates that were the same as the date the request was made, thus making timely delivery impossible. We found that these unrealistic required delivery dates, combined with high priority coding, resulted in special handling and increased transportation costs. The Department is currently redrafting its instructions to provide better guidance on

requesting and shipping supplies and to try to minimize high priority demands.

**2.28** We found that higher priority items were generally transported faster than those of lower priority. Nevertheless, we noted that when items were identified as particularly high priority by the user in-theatre, those responsible for getting them to Kandahar did not rely on the supply chain, but instead made phone calls back to Canada to ensure that items were flagged and shipped right away.

### Goods are tracked in transit but can become lost once delivered

**2.29** We found that in many cases when supplies seemed to be arriving late, the goods had already been received but the mission in Afghanistan was unaware. The mission has a database that lets users know if items are in transit. It cannot, however, provide information on when supplies are likely to arrive. The Department is shipping 85 tonnes of goods weekly by contracted airlift to the mission, and we found that it is able to track goods while in transit, but can lose sight of supplies once they arrive at their destination. In Kandahar, it can be difficult for supply technicians who run the supply warehouses that receive shipments to know what has arrived or where to find it.

**2.30** National Defence has an established system of stock numbers, package tracking numbers, and waybills to know what the requested items are and where they are in the supply chain, but technicians receiving the planeloads of supplies are required to deal with shipments manually. Supply technicians must physically find the goods, check their condition and quantity, and write down that they have been received. Therefore, supply technicians in Kandahar may not actually know that some supplies have arrived until they find the boxes and put them on the shelves. As a result, some items may be reordered or even forgotten, which can result in surplus stocks, unnecessary delays, or wasted shipments. National Defence regularly reviews its holdings in Afghanistan to maintain control and sends in rotation support assistance teams to conduct inventory counts. During the last review of its inventory holdings, the team found that the Department had lost track of a significant amount of inventory—over $7 million of items could not be located—but it found another $6.6 million of items that were not listed as part of the mission's holdings. The mission may have been unaware that it had the items, which included spare parts to repair equipment.

**2.31** Apart from ammunition and medical supplies, there is no single warehouse for supplies. Warehousing usually involves storing items in

Supplies can become lost in these sea container warehouses in Kandahar.

one or more of hundreds of sea containers stacked around the camp. As a result, if an arriving item is put into storage without being logged in the system indicating where it is stored, it can become lost.

**2.32** The Department has recognized that it has a shortage of supply personnel to deal with the volume of goods arriving in Kandahar and, from time to time, it sends in technical assistance teams to help clear backlogs. It also increased the number of contract personnel it uses to perform supply functions. However, the technicians are using a bar coding system in a manual way, not in the electronic way they are trained to do in Canada. This slows down the receipt of goods in Afghanistan.

**2.33** **Recommendation.** National Defence should review its practices for tracking materiel once the materiel has arrived to ensure the arrival and storage is accurately recorded in a timely manner.

**The Department's response.** Agreed. The Department has initiated a project that should address this issue. The first phase of the Asset Visibility Project is to put in place a Canadian radio frequency identification capability to track consignments moving to and from Afghanistan. This capability will remove our current dependency on U.S. support and is expected to be in place by December 2008.

The second phase of the project is to develop an interim capability that will provide visibility of items in transit both within Canada and abroad. This interim capability is expected to be in place by 2009.

The third phase is to develop a comprehensive capability that will provide real time, or near-real time, visibility of assets throughout their life cycle. In other words, a system that provides visibility from the time the Department takes custody of an asset until the time we dispose of that asset.

### Supply chain performance monitoring is improving

**2.34** National Defence is starting to better monitor the performance of its supply system to determine whether it can respond to needs in a timely way. The Department does not have data on system performance and is currently working to gather data to monitor how well the system can meet user needs.

**2.35** We wanted to examine whether items not held in the supply system, such as parts shipped directly from the manufacturer or locally purchased items delivered directly to Kandahar, were received in a timely manner, but the Department could not provide us with reliable

data for analysis. The Department had also been attempting to measure the rates of stock-outs—the temporary unavailability of an item—but we found significant shortcomings in its methodology and data.

**2.36** **Recommendation.** National Defence should continue its efforts to develop the performance measurement of its supply system, including assessing whether supplies are received in a timely manner appropriate to priority and need.

**The Department's response.** Agreed. The Department has initiated a performance measurement system for the supply chain. To date, 15 key performance indicators have been developed to monitor system performance using data from the Canadian Forces Supply System. At the conclusion of a user trial, this initiative is set to roll out to a number of supply management organizations in the fall of 2008.

The 15 key performance indicators developed so far focus on a variety of key measures within the Department's Supply System, such as average cycle times, depot stock reactivation rates, requisition volumes, and requisition satisfaction.

Work is continuing to prioritize and further develop performance indicators based on the Department's strategic direction and the perceived needs of the supply chain community.

## Stock levels

### Management of stock levels needs to be improved

**2.37** The Joint Task Force Afghanistan codes the requisitions it puts into the supply system according to priority and required delivery date. Anything coded operationally critical or essential is needed for the success of the mission. We found that 19 percent of operationally critical or essential requests were delayed at the main depot in Canada for 10 days or longer due to stock-outs or other reasons the Department was unable to adequately provide. One possible explanation given was that perhaps the slips produced by the system that tell staff what items to take from the shelves for shipment had become misplaced within the depot. While the Department has not been compiling reliable stock-out statistics, stock-outs have clearly been a significant factor, but not the only factor, contributing to delays. Data obtained from the Department indicates that approximately 16 percent of items requested from the main depot in Canada for Kandahar during September 2007 were temporarily out of stock.

**2.38** The supply system has automatic reorder points for some stock held in Kandahar: when a minimum level is reached, more stock is supposed to be automatically ordered and delivered before levels on

hand reach zero. We noted that the base at Kandahar is under the same stock restrictions as other Canadian units, that is, stock to last 30 days, with some exceptions, is to be held at the supply warehouse. However, it can often take more than 30 days for the system to deliver supplies that have been ordered. Therefore, stock-outs can occur. We found that for about 12 percent of the items for which automatic reorder levels were set in Kandahar, stock on hand was zero.

**2.39** Materiel managers told us that, for spare parts, their assumptions of stock usage did not always fulfill the higher maintenance requirements in Afghanistan. Therefore, spare parts were often needed sooner than supply managers could acquire them from suppliers. As a result, stock-outs tended to occur for spare parts for combat equipment being used in Afghanistan under difficult conditions. We found that the Department had run out of some spare parts for equipment such as the light armoured vehicles and the heavy logistics trucks.

**2.40** We also noted that stock-outs tended to occur for equipment bought as an unforeseen operational requirement to provide additional resources for the Joint Task Force. Planning assumptions made when equipment was acquired underestimated the rate at which parts would need replacement and stocks ran out before they could be replenished. This occurred partly because some of these items had not been used in combat by Canada before this mission. For some of the new equipment, rapid replenishment was simply not possible because these items were not readily available from the manufacturer. The Department informed us that encountering problems in supporting new equipment is an assumed risk of these fast-tracked acquisitions and is balanced against the benefits provided by the new equipment that enhance combat effectiveness and soldier survivability.

**2.41** Materiel managers determine the appropriate stock level at which replacement orders should be made. They need to know how quickly stock is used and how quickly new stock can arrive. Therefore, materiel managers need to know how often there are stock-outs and better match these to the procurement turnaround times to ensure that the mission does not run out of needed supplies and that operationally critical or essential stock levels do not fall to zero.

### Parts shortages are delaying repairs

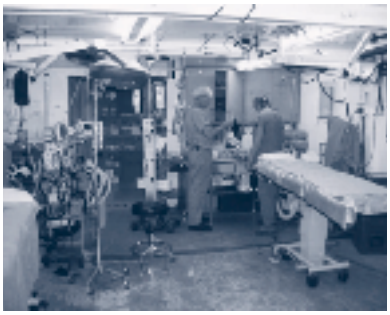
**2.42** The Canadian Forces has several maintenance shops at Kandahar Air Field and can also repair equipment both at forward-operating bases and outside the camps. Our audit found that parts availability has been a factor in making timely repairs. While several thousand

different parts are warehoused by the Canadian Forces in Afghanistan, there have been times when equipment was waiting for parts from outside Afghanistan, such as from Canada, in order to be repaired. Between December 2006 and October 2007, equipment status reports prepared in Kandahar show that for the main combat equipment awaiting repair, 65 percent of the time, on average, they were waiting for parts to be delivered from either outside theatre, such as the main depot in Canada, or within theatre, such as between a warehouse at Kandahar Airfield and a forward-operating base. The other 35 percent of time was spent waiting for available labour.

**2.43** We found that the unavailability of parts from suppliers contributed to parts shortages. For example, shortages of spare parts from the manufacturer contributed to the armoured wheeled vehicle known as the Nyala being sent back to Canada. The three Nyala in Kandahar were out of service for months and subsequently returned to Canada as the parts could no longer be acquired, due in part to obsolescence.

**2.44** Although undesirable, maintenance personnel are permitted, when necessary, to borrow parts from one piece of equipment in order to make timely repairs to another. Our audit found that borrowing was necessary on some critical fleets in order to keep enough equipment available to meet mission needs.

### The Canadian Forces Hospital is maintaining its stocks



Canadian-led multinational hospital at Kandahar Air Field.

Source: Department of National Defence

**2.45** Since February 2006, Canadian Forces medical staff has run the multinational field hospital at Kandahar Air Field. Data provided for the period February to July 2007 shows that the hospital treated several thousand coalition and Afghan soldiers as well as civilians. It is a full-care facility that needs the support any hospital would require to run trauma resuscitation, operating rooms, intensive care and critical care wards, mental health care, and physiotherapy, as well as a pharmacy, a laboratory, and a radiology unit. Hospital support has three basic requirements: qualified personnel, medical supplies in stock, and functioning medical equipment.

**2.46** Because of the specialized handling and storage needed for medical supplies and equipment, National Defence manages its medical supply chain separately from the general supply system. The Department requires enough stock to respond to mass casualties and sustain medical operations for 26 days. We found, however, that supplies from Canada can take weeks to arrive. To prevent stock from falling short, the practice in Kandahar has been to carry 90 days of

inventory. Statistical information was not available on stock levels so we were unable to determine the extent to which stock-outs occurred. However, senior staff informed us that there have been a few times where the hospital has run critically low on certain medical supplies, but that the hospital staff were able to mitigate any potential impact on patient care.

**2.47** Medical officials informed us that when stocks of medical supplies run low, it often occurs due to delays in procuring the items rather than shipping them. Medical supplies can be expensive and those that cost over $5,000 must go through a contracting process, which takes time. National Defence has been able to fast-track some items for immediate operational needs within 48 hours, and has put in place some **standing offers of agreement** to speed up the process. However, routine purchases can take several weeks to several months to complete, especially if the items cost more than the $5,000 limit (Exhibit 2.3).

**Standing offer of agreement**—An agreement between the government and suppliers to provide goods and services at prearranged prices under set terms and conditions. These are not guaranteed contracts, but suppliers with standing offers can be called upon when and if needed.

**2.48** We also found that as the lead nation, Canadian medical personnel make up the majority of staff at the hospital. Coalition partners have also committed to providing medical staff but, in some cases, have not been able to do so. Therefore, in order to ensure patient care and cover shortfalls, National Defence has sent more medical professionals to Kandahar than initially envisioned, including civilian medical staff. In addition, the hospital has reported that it has insufficient technical staff to adequately maintain and repair the medical equipment. Due to a limited number of medical equipment technicians available from within the military, the Department is considering hiring additional staff.

**Exhibit 2.3 Purchasing expensive medical supplies can be a lengthy process**

Soldiers in Afghanistan are protected by body armour, helmets, and goggles, which has saved lives by protecting vital areas. Consequently, the hospital treats a large number of serious injuries to arms and legs. Between February and July 2007, 281 orthopaedic surgeries were performed, representing half of all the surgeries during that time. Surgeons needed large numbers of orthopaedic surgical pins to fix and correct the bone fractures on wounded soldiers and civilians.

Orthopaedic pins are expensive and since orders for pins cost more than the $5,000 procurement approval limit, any purchases of more pins had to go through the government contracting process. In April 2006, National Defence recognized the high demand for these items and initiated negotiations for a standing offer of agreement to ensure a quick supply. By October 2006, an agreement was signed with a vendor, with a purchase limit of $40,000. However, by this time the Canadian Forces medical system needed over $400,000 in surgical items from the vendor and it was not until November 2006, seven months after the need was identified, that stocks were shipped to Kandahar.

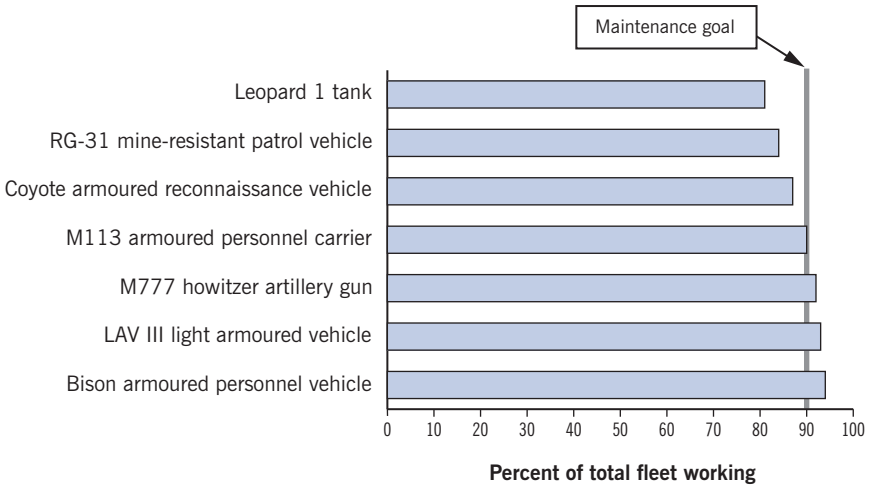
## Equipment availability

### Maintenance personnel are keeping most combat equipment fleets operational

**2.49** Our audit expected to find that the Department provided the operation with the serviceable equipment it needed. We found that the overall **serviceability** of the main combat fleets of vehicles and other **equipment** has been at or close to departmental expectations, as illustrated in Exhibit 2.4. This is despite harsh operating conditions, damage from enemy action, parts shortages, and modifications made on-site. The Department has supplemented the maintenance function with contract personnel and technical assistance teams. The commanders have established a maintenance goal of 90 percent serviceability for the combat fleets and we found that many combat fleets were close to this goal, ranging from 80 to 95 percent.

**Equipment serviceability**—The number of pieces of equipment ready to be used for their intended purpose from among those available. An item is not serviceable if it needs maintenance or repair. For example, if there were 10 trucks available, of which 7 could be put into service and 3 were undergoing repair, the serviceability rate would be 70 percent.

**Exhibit 2.4 Most fleets of combat equipment are close to or meeting the maintenance goal (December 2006–October 2007)**




Source: Department of National Defence

### Maintaining a consistent level of serviceability has been a challenge

**2.50** The Department has had difficulties maintaining a consistent level of serviceability. This has been a particular challenge for the new equipment introduced directly to Afghanistan, purchased to respond to unforeseen operational requirements. National Defence expected that unforeseen operational requirements would be encountered as the mission evolved and needs were better understood. Since deploying to Afghanistan, the Department has responded to a number of unforeseen operational requirements and acquired several pieces of equipment, including the mine-resistant RG-31 wheeled patrol vehicle, the

long-range precision M777 howitzer guns (155mm), uninhabited aerial vehicles, Leopard 2 tanks, and systems to identify, detect, and defeat improvised explosive devices. The Joint Task Force has found that some items have not been as serviceable as planned.

**2.51** Because the new equipment is being introduced directly into action, the Department is challenged to ensure that it can properly support it, such as by providing an adequate supply of parts, and solving serviceability issues that are associated with any new piece of equipment but which would normally be dealt with prior to deployment and after lengthy testing. Our audit found that the Department has had difficulties in ensuring an adequate supply of spare parts for a number of new acquisitions after the initial purchase of spare parts was used faster than expected.

**2.52** In 2003, before beginning operations in Kandahar, the Department introduced tactical uninhabited aerial vehicles into operations at Kabul. About 85 flights were flown until June 2004 when the vehicles were no longer sustainable due to crashes and failures. In February 2006, the vehicles were reintroduced into operations at Kandahar, resulting in a number of challenges, including crashes, frequent flight cancellations due to equipment problems, and shortages of spare parts, with long lead times to reorder. By September 2006, the Department recognized that the vehicles' sustainability was again at risk. A number of actions have been taken, including extensive borrowing of parts from other aircraft to keep the aircraft operating. Our review of flight data from February to August 2007 shows that Canadian Forces operators, maintenance personnel, and supply personnel managed to keep the fleet operational but serviceability and parts availability issues persisted.

**2.53** **Recommendation.** National Defence should review how it establishes stock levels for the parts it needs to keep existing and new equipment operating at expected serviceability targets, with a view to obtaining and delivering parts to users in a timely way. It should take into account changes as wear and tear to equipment increases on deployments, as better information becomes available on the performance of new equipment, or as the level of support from the manufacturers changes.

**The Department's response.** Agreed. The Department is now implementing a Distribution Resource Planning tool, complete with a modelling capability that is expected to significantly improve the ongoing identification of inventory requirements. This electronic tool will improve the Canadian Forces Supply System by addressing a

significant weakness in inventory rationalization and optimization. It will also provide the necessary information to make complex decisions regarding what to repair, and what to buy, in what quantities, and where to position it. Rollout is expected to begin in the spring of 2008.

The rapid introduction of new equipment to a theatre can be mitigated by the early identification of an initial provisioning plan for spare parts. The initial provisioning plan will be entered into the electronic Distribution Resource Planning tool and will be monitored by comparing actual usage to the estimated requirements identified in the plan. Within a few months, the Distribution Resource Planning tool will identify the optimal forecast methodologies and algorithms to use for the equipment in question. At that point, the initial provisioning plan can be subsumed into the normal day-to-day inventory management of the Distribution Resource Planning tool.

### Maintaining reserve stocks of equipment has been difficult

**2.54** The Canadian Forces in Kandahar keeps a reserve fleet of equipment, known as operational stock, to be used when the number of available vehicles declines. For example, a LAV III light armoured vehicle damaged beyond local repair could be replaced by a vehicle from the reserve if one is available. This reserve stock has also been used in Kandahar as a pool through which equipment is rotated in order to undergo upgrades, such as the installation of additional armour and protection, without affecting the number of pieces of equipment available for operations. Reserve stock has been authorized to be held in-theatre for some but not all fleets. We were informed by the Department that the decision to establish reserve stock is based on several factors, including estimates of the rates at which vehicles are damaged beyond local repair, and the fleets' sustainability.

**2.55** Through our review of equipment status reports prepared in Kandahar, we found that reserve stocks have been essential to keeping available the needed number of equipment to offset losses when a vehicle is destroyed in combat or cannot be repaired locally. However, when authorized reserve stocks become depleted, there are no more left to replace any further losses. In some instances, where reserve stock had been authorized, there was zero quantity available. As a result, in a limited number of instances, the amount of equipment available for operations in-theatre declined.

**2.56** The Department informed us that overall, reserve stocks have met its needs because the Canadian Forces can adapt and adjust according to circumstance.

### Maintaining serviceability levels of support vehicles has been more difficult

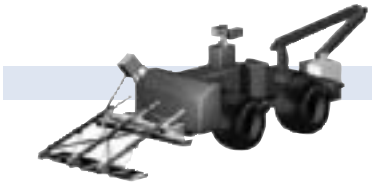
**2.57** In addition to the main combat fleets, the Canadian Forces uses several hundred support vehicles ranging from militarized logistics vehicles to non-military vehicles. These are needed to transport personnel, to move supplies to forward-operating bases, to recover damaged equipment, and to handle materiel at warehouses. The Canadian Forces has set an 85 percent serviceability goal for most of these non-combat vehicle fleets. Our audit found cases where it has been difficult to maintain serviceability of several types of logistical support equipment.

**2.58** There have been low rates of serviceability among several types of specialized heavy engineering equipment (Exhibit 2.5). Several rotations of personnel have reported concerns on the serviceability of these fleets. Problems were encountered with the aging fleet of heavy wheeled logistics vehicles used to carry cargo. The Joint Task Force also experienced problems with its materiel-handling equipment such as forklifts.

**Exhibit 2.5 Various support equipment has serviceability issues**

**Armoured Engineering Vehicle**
A variant of the Leopard tank. Average serviceability from December 2006 to October 2007 was 63%. At times there has been zero serviceability. Shortage of parts has been a factor.

**Multi-Purpose Engineer Vehicle**
A heavily armoured backhoe and loader. It was deployed for the first time in December 2006. Theatre has reported that during the first six months, the vehicle had been subject to frequent breakdowns and experienced low serviceability.



**Improved Landmine Detection System**
The equipment in-theatre had been allowed to reach a state of disrepair and was grounded. A team was sent to Kandahar Air Field in 2006 but was unable to make repairs. Equipment was returned to Canada, replaced with upgraded equipment during the fall of 2007, and placed back into service in the theatre.

**Heavy Logistic Vehicle Wheeled**
This aging fleet is used to transport cargo and is used extensively to resupply forward-operating bases. The operations have experienced reliability issues, with serviceability at 69%. The Department is in the process of procuring a replacement it believes will be better suited for operations in Afghanistan.

Source: Department of National Defence

Heavy equipment transport truck and trailer borrowed from the Government of the Netherlands.

Source: Department of National Defence

**2.59** Our audit also found that the mission experienced shortcomings in the equipment used to recover damaged vehicles and bring them back to Kandahar for repair or return to Canada. We found that the Department is addressing these concerns. As one example, it obtained and shipped directly to Kandahar several heavy equipment transport trucks borrowed from the Netherlands government, and provided the training on how to use and maintain this equipment.

## Conclusion

**2.60** National Defence is supporting the deployed operation in Afghanistan—an overseas mission of a scale the Canadian Forces has not seen since the Korean War. However, we found some shortcomings in the supply chain that need to be addressed or the Canadian Forces risks having difficulty supporting the mission over time. For example, while we found that supplies reached their destination, this was often due more to the concerted efforts of personnel rather than by the system's design. When we asked those involved in the command of, planning for, and conduct of military operations about the impact of shortcomings discussed in this report, we were told that these deficiencies had not significantly affected operations as the Canadian Forces was able to adapt and adjust.

**2.61** To meet the support requirements of the mission, the Department has needed to increase the number of support personnel in-theatre. Much of the increase has been in the number of contract personnel used to perform functions such as supply and equipment maintenance. Technical assistance teams have also been sent to Kandahar to assist support functions.

**2.62** While the supply chain has been able to respond to deliver to Kandahar the supplies needed, we found that most items do not arrive in Afghanistan by the required delivery date. We found that there have been parts shortages and stock-outs of needed parts and supplies, which affected the ability to keep some equipment serviceable. The operation has been challenging on equipment and maintenance. Some key fleets are difficult to maintain because of spare parts shortages and reduced reserve stocks as some fleets begin to wear out.

**2.63** The system has not provided sufficient information to track when supplies have arrived in Kandahar, which has resulted in some multiple ordering of goods along with surpluses and increased the difficulty in locating needed stock.

**2.64** The Department is working to improve its performance measurement of the supply system to give it better information on whether stocks are available when needed and whether supplies are arriving in a timely way. More information on requisition status and when to resupply to match the usage rates in Afghanistan would also improve performance monitoring.

# About the Audit

### Objectives

The overall objective of the audit was to assess whether the logistical support provided by the Department of National Defence has met the needs of the deployed operation in Afghanistan. The objectives were to examine the following:

- the support required for the deployment, including planning;
- the need for personnel for logistical support, including alternative contracting arrangements;
- whether equipment is maintained to required standards and whether spare parts are available as needed; and
- the capacity of the Department to transport materiel into theatre to meet demands in a timely manner.

### Scope and approach

The focus of the audit was on the support provided to the Canadian Forces' mission in Afghanistan since February 2006, after the operations moved to Kandahar. We examined how well the supply chain was able to meet the needs of the Joint Task Force Afghanistan. We looked at how the Department introduced and supported equipment into the mission. We examined whether the Department was able to maintain adequate stock levels for the repair and maintenance of equipment. We examined how the Department maintains accountability and visibility of items on deployed operations.

The audit team conducted field work at a number of locations: Canadian Forces Supply Depot (Montréal), Canadian Forces personnel training for Afghanistan at Canadian Forces Base Wainwright, at the Theatre Support Element and at the Joint Task Force Afghanistan (Kandahar), and the air movements unit at Canadian Forces Base Trenton. In the National Capital Region, we conducted interviews and obtained information from a number of organizational units, including Assistant Deputy Minister (Materiel), Assistant Deputy Minister (Finance), Canadian Land Staff, Canadian Air Staff, Canadian Expeditionary Force Command (CEFCOM), Canadian Operational Support Command (CANOSCOM), Chief of Military Personnel, Strategic Joint Staff, and National Defence Chief of Review Services.

The audit included analysis of operational data collected from several sources, including movement data from the National Materiel Distribution System (NMDS) and the Canadian Forces Supply System (CFSS).

The audit included a review and analysis of various internal reports, including Commander's Mid-Tour and End-of-Tour, change in command reports, site inspection visit reports, comptrollership site inspection visit reports, rotation staff assistance reports, weekly logistic reports submitted to the Canadian Expeditionary Force Command prepared by the Joint Task Force Afghanistan, daily equipment status reports, combat logistical patrol reports, and internal audit and evaluation reports.

While in Afghanistan, the audit team conducted all audit work at the Kandahar Air Field and for security reasons did not visit other sites, such as the provincial reconstruction team's operations, or forward-operating bases.

The scope of the audit was limited to deployed operations in Afghanistan and did not include other deployments under way nor did it examine the support to the operations of the Canadian Special Operations Forces Command (CANSOFCOM). The audit did not examine the economy of the supply chain operations in this area, or the contracts for new military equipment purchased to support the mission, nor did the audit examine how supporting the mission in Afghanistan may be affecting the Department back in Canada.

### Criteria

The audit was based on criteria obtained from the Department of National Defence contained in its military doctrine and instructions for international operations, including the following:

- Support functions in-theatre will be able to effectively accomplish their assigned tasks.
- The provision of support personnel will be effective and sufficient to meet operational requirements.
- The supply chain will ensure that appropriate levels of materiel are provided to the theatre of operations, including supplies, ammunition, spare parts, and equipment.
- The Canadian Forces will adequately keep track of and maintain accurate records of materiel deployed to theatres of operation.

### Audit work completed

Audit work for this chapter was substantially completed on 30 October 2007.

### Audit team

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# Appendix List of recommendations

The following is a list of recommendations found in Chapter 2. The number in front of the recommendation indicates the paragraph where it appears in the chapter. The numbers in parentheses indicate the paragraphs where the topic is discussed.

| Recommendation | Response |
|---|---|
| **Supply chain performance** | |
| **2.33** National Defence should review its practices for tracking materiel once the materiel has arrived to ensure the arrival and storage is accurately recorded in a timely manner. **(2.29–2.32)** | Agreed. The Department has initiated a project that should address this issue. The first phase of the Asset Visibility Project is to put in place a Canadian radio frequency identification capability to track consignments moving to and from Afghanistan. This capability will remove our current dependency on U.S. support and is expected to be in place by December 2008.<br><br>The second phase of the project is to develop an interim capability that will provide visibility of items in transit both within Canada and abroad. This interim capability is expected to be in place by 2009.<br><br>The third phase is to develop a comprehensive capability that will provide real time, or near-real time, visibility of assets throughout their life cycle. In other words, a system that provides visibility from the time the Department takes custody of an asset until the time we dispose of that asset. |
| **2.36** National Defence should continue its efforts to develop the performance measurement of its supply system, including assessing whether supplies are received in a timely manner appropriate to priority and need. **(2.34–2.35)** | Agreed. The Department has initiated a performance measurement system for the supply chain. To date, 15 key performance indicators have been developed to monitor system performance using data from the Canadian Forces Supply System. At the conclusion of a user trial, this initiative is set to roll out to a number of supply management organizations in the fall of 2008.<br><br>The 15 key performance indicators developed so far focus on a variety of key measures within the Department's Supply System, such as average cycle times, depot stock reactivation rates, requisition volumes, and requisition satisfaction.<br><br>Work is continuing to prioritize and further develop performance indicators based on the Department's strategic direction and the perceived needs of the supply chain community. |

| Recommendation | Response |
| --- | --- |
| **Equipment availability** | |
| **2.53** National Defence should review how it establishes stock levels for the parts it needs to keep existing and new equipment operating at expected serviceability targets, with a view to obtaining and delivering parts to users in a timely way. It should take into account changes as wear and tear to equipment increases on deployments, as better information becomes available on the performance of new equipment, or as the level of support from the manufacturers changes. **(2.50–2.52)** | Agreed. The Department is now implementing a Distribution Resource Planning tool, complete with a modelling capability that is expected to significantly improve the ongoing identification of inventory requirements. This electronic tool will improve the Canadian Forces Supply System by addressing a significant weakness in inventory rationalization and optimization. It will also provide the necessary information to make complex decisions regarding what to repair, and what to buy, in what quantities, and where to position it. Rollout is expected to begin in the spring of 2008.<br><br>The rapid introduction of new equipment to a theatre can be mitigated by the early identification of an initial provisioning plan for spare parts. The initial provisioning plan will be entered into the electronic Distribution Resource Planning tool and will be monitored by comparing actual usage to the estimated requirements identified in the plan. Within a few months, the Distribution Resource Planning tool will identify the optimal forecast methodologies and algorithms to use for the equipment in question. At that point, the initial provisioning plan can be subsumed into the normal day-to-day inventory management of the Distribution Resource Planning tool. |

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