National Defence Défense nationale

Chief Review Services

INTERNAL AUDIT OF NATIONAL PROCUREMENT - MATERIEL REPROVISIONING

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7053-49 (CRS)

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SYNOPSIS

This report presents the results of an internal audit of the management of National Procurement (NP) which accounts for annual expenditures of about $1.5B and comprises roughly 15 per cent of the Defence Services Program. The particular focus of this audit is on the acquisition of spare parts and consumable materiel involving annual expenditures of over $390M and an accumulated inventory in excess of $7B (this latter figure includes ammunition), principally held at bases and depots.

Limited follow-up work was also performed in respect of a major internal audit and benchmarking study of Contracted Maintenance Support to the CF. A key result of that audit was to identify annual savings opportunities of about $35M attributable to excess government-owned spare parts inventories maintained in contractor facilities. Additionally, a current audit of contracted professional and technical services, includes those funded through NP.

In view of considerable budgetary pressures on the NP account to meet future program demands, this current audit and report have the objective of addressing reprovisioning and the question of whether related NP resources are devoted to the highest and best use. We have concluded that measures are necessary to address significant improvement opportunities. The annual resource implications approach, and may ultimately exceed $90M, with additional one-time savings being as high as $70M. The main benefits will require time to consolidate.

Our findings lend support to major initiatives within the Materiel Group aimed at achieving procurement reform, new Information Technology enablers, inventory rationalization as well as the Materiel Acquisition and Support (MA&S) doctrine and tools. The benefits identified by the audit pertain primarily to weaknesses in management information, to excess procurement and to accumulation of line items at the same time that other line items are affected by stock-outs. The Group needs to better maintain and capitalize upon the capabilities of the CF Supply System and to promote balanced risk-based approaches to managing inventory.

ADM(Mat) has reacted positively to the audit results and has worked with the Review Services Branch to develop appropriate recommendations for the way ahead. Corresponding action plans have been developed to respond to the issues raised. The internal audits have also pointed to the value of a strategic review of relationships with industry and the supporting rationale for a Defence Industrial Strategy. Issues pertaining to procurement and excess stock holding will also have implications for the Supply Chain Project.

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1. In accordance with the Chief Review Services (CRS) 1998/99 Review Plan, CRS initiated a review of selected elements of National Procurement (NP). The objective of the audit is to determine if the Department is achieving overall economies in the NP process; the subject of this report is the materiel-reprovisioning aspect of NP.

2. NP is that portion - approximately 15 per cent in 1997/98 - of the Defence Services Program, allocated to the acquisition of materiel and services required to sustain the performance, value and/or capability of centrally-managed equipment, services and systems within the Department. NP consists primarily of spares, engineering services and repair and overhaul (R&O) services acquired to support combat systems. Common or cross-environmental support activities such as utilities, air-charter service, air-reservation service, leased strategic transport and third-line transport are also included in the NP funding envelope. Chart 1 shows the NP Expenditure Trend for three years, ending in 1997/98.

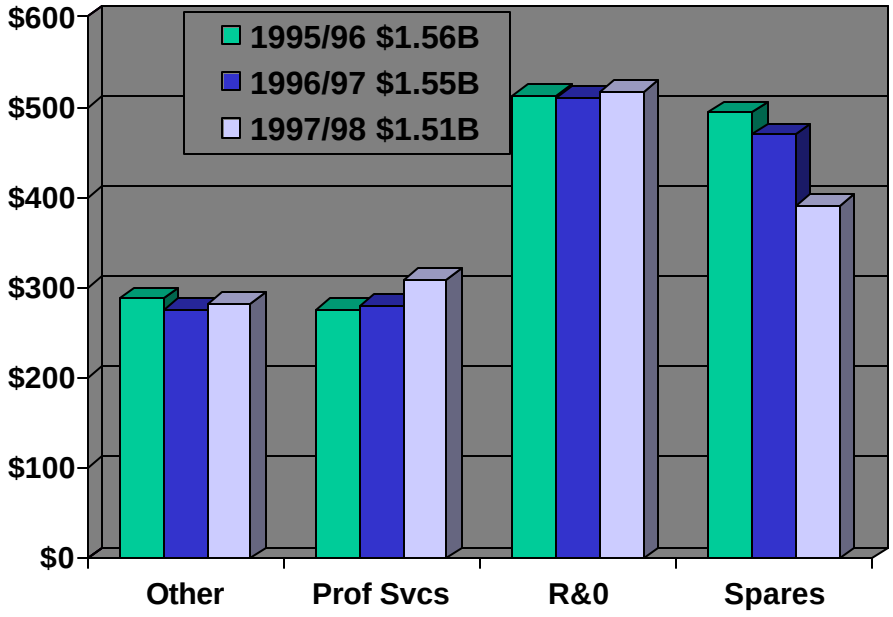

Chart 1: NP Expenditure Trend ($M)

3. With Defence Planning Guidance (DPG) '97, the NP program was divided into three environmental shares and one cross-environmental planning share. Under the Apportioned Corporate Account principles introduced in DPG '97, Environmental Chiefs of Staff (ECS) have the opportunity, in conjunction with ADM(Mat), to prioritize their share of the NP program to align expenditures with their Business Planning priorities. ECSs can propose changes to their NP shares, subject to agreement between the ECSs and ADM(Mat) on the corresponding adjustment to the range/level of support that ADM(Mat) is committed to deliver. The apportionment of NP considers the analysis of functions, historical usage and anticipated future demands. PMB 3/98 directed a Departmental zero-based review of the of the NP Corporate Account as a means to better understanding the existing demand against the funding supply within that account. That review, conducted by the Director Force Planning and Policy Co-ordination (DFPPC), was completed in 1999 and concluded that:

a. operational and training activities, costing $36M per year, should no longer be funded by NP;

b. improved criteria are necessary to support the prioritizing of the ECS NP funding demands; and

c. the NP account is under significant pressure to meet current and future program demands.

4. In recent years, ADM(Mat) has undergone a reorganization to integrate procurement and engineering staff. The creation of maritime, land and air equipment program-management (EPM) divisions within ADM(Mat) has enabled the formation of equipment-management teams at the weapon-system and subsystem levels. More efficient life-cycle management should result through the integration of equipment life-cycle and supply managers, improving co-ordination of the engineering services, materiel reprovisioning and R&O. Over the past several years, CRS has reviewed various aspects of the NP program, resulting in the reports listed below:

a. Charter Air Service Travel Costs (1998);

b. Foreign Military Sales (1996);

c. Management of Contracted Repair and Overhaul (1995 and 1998);

d. Service Contracting (1995); and

e. The DND Ammunition Program (1994).

5. This audit addresses the materiel-reprovisioning aspect of NP typically including the acquisition of spare parts and consumable supplies. In 1997/98, the expenditure for materiel and supplies totalled $390M. This NP activity does not include locally procured materiel.

RESULTS IN BRIEF

6. Our audit concluded that action is necessary to better ensure that National Procurement resources for the procurement of spare parts and consumables, involving annual expenditures of over $390M and accumulated inventory in excess of $7B, are directed to highest and best use. Benefits and savings may be achieved over time through the improved use of management information and a balanced risk-based approach to procurement. We estimate as much as $90M annually and a one-time savings amount of about $70M could be achieved and are chiefly attributable to:

a. $28M to $58M in annual procurement which may be directed to line items of higher need;

b. $57M one-time reduction in low-value item procurement which can be obtained directly from suppliers (i.e., direct-with-trade procurement);

c. $5 - $10M annual reduction in premium costs for fast-track procurement;

d. one-time saving of $9M to $12M through the use of items held as repairable reserves;

e. $2M in freights costs through re-distribution of materiel holdings;

f. $26M reduction in annual inventory carrying charges for excess inventory holdings; and

g. $10M one-time revenue from the disposal of excess inventory.

7. It must be emphasized that certain of these benefits and savings can only be realized over time while recognizing the NP account is under significant pressure to meet demands. However, we do suggest that improved management processes for the acquisition of spare parts and consumable materiel can contribute to alleviating some of the pressure and to the sound management of funding allocations.

8. **Stock-Outs**. Although, the service level design of the CFSS is to satisfy 92 to 95 per cent of materiel demands, the current stock-out rate is 14 per cent. Effective forecasting of material demands contributes directly to an optimal stock-out rate. For some line items, we observed shortcomings to effectively forecast, both in the supply procedures and in the use of available oversight mechanisms. Stock-out may result in a loss of operational readiness. As well, cost premiums ranging from $5.3M to $10.6M may be incurred if line items are procured in small quantities on an urgent basis. Ultimately, our concern is not that stock-outs be eliminated, but that the related inventories, and corresponding performance measures, be appropriately risk-

managed such that stock-outs are concentrated in those areas of relatively lesser operational criticality.

9. **Excess Procurement**. We observed that procurement in excess of the Canadian Forces Supply System (CFSS) recommended-buy quantities (RBQ) did not have management visibility through existing reporting mechanisms or performance indicators. Our analysis recognized that there are legitimate reasons for large quantity purchases of materiel to occur (e.g., opportunity buys). However, we also concluded that an estimated $26M to $58M in annual procurement may be redirected to line items of higher need. This again emphasizes the importance of risk considerations in the management of stock-outs.

10. **Excess Inventories**. Through the application of forecasted materiel-usage criteria available in the CFSS, we identified $515M of current stock that, at current usage rates would still remain after the year 2029 - well after the expected life cycle of most presently in service combat systems. Reduction of these holdings could reduce inventory-holding costs by up to $26M annually and generate disposal revenues of up to $10M.

11. **Purchases Directly from Suppliers**. We observed opportunities to take greater advantage of procurement directly from suppliers. This has the potential to substantially reduce lead times and to reduce procurement and stocking of low-value item by $57M.

12. **Repairable Reserves**. Existing stocks of repairable reserve spares can be used to avoid new procurement and to thereby save in the order of $9M to $12M.

13. **Distribution of Materiel**. Rebalancing of depot stocks in closer alignment with the current positioning of weapon systems could result in saving up to $2.0M in third-line freight premiums.

14. **Summary Conclusions**. While much progress has been made in reforming in-service logistics support over the past several years, clear opportunities exist to improve the re-provisioning process. Better advantage must be made of the capabilities of existing information systems to manage and track procurement decisions. At the same time, standards and performance measures need to be designed to assist decision-making, and accountability, by supply managers and through successive levels of management. Steps can be taken to alleviate certain pressure on the NP account and to enhance the sound management of future funding allocations.

15. The Materiel Group has been receptive to the audit conclusions and ADM(Mat) has assisted in the formulation of recommendations for improvement. The ADM(Mat) action plan involves IT enablers, exploiting the MA&S desktop, the development of performance measures and targeted work to address excess inventories.

PRINCIPAL CONCLUSIONS

Stock-out Risk

16. We found 57K line items at the supply depots and base- supply accounts, with a stock value of $1.0B, do not have reorder levels (ROLs) set to forecast materiel reprovisioning requirements. As well, current supply procedures prevent automated forecasted usage for 28K line items that require all demands to be referred to the supply manager - $1.1B in stock as of June 1999. We also found that supply managers did not have an overview of those line items in short supply and were not employing system-warning levels to forecast imminent stock-outs. The inability to forecast materiel demands for these line items may be a primary factor in the current stock-out rate of 14 per cent of materiel demands in the Department, although 92 to 95 per cent of all demands are to be satisfied by CFSS service level design. Stock-out of materiel results in a loss of operational readiness, and those line items procured in small quantities on an urgent basis may result in premiums ranging from $5.3M to $10.6M annually.

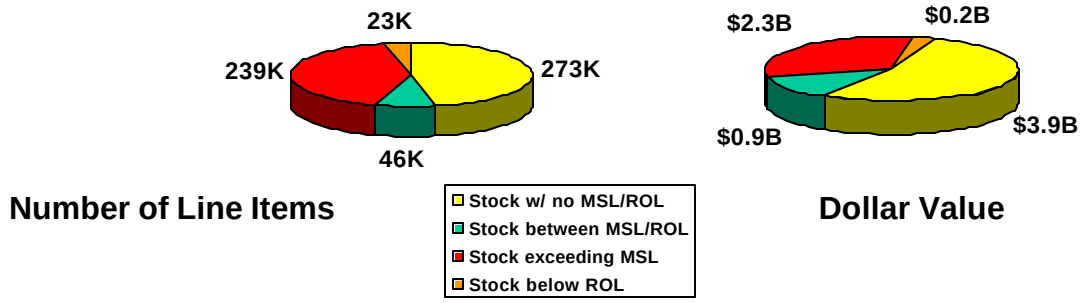

Chart 2: Depots and Base Supply Holdings - June 1999

17. A primary concern of EPM divisions is the minimizing of stock-outs in combat-systems spares. A key enabler to assist item managers in addressing this concern is the use of automated reprovisioning levels set in CFSS to initiate procurement. For those line items with no ROL, the CFSS will not generate an automated materiel requirements list (MRL) to notify supply managers to commence procurement. With a zero ROL setting, the supply manager will only be notified once all of the depot and base level holdings of that item have been consumed.

18. As depicted in Chart 2, of 581K line items with a total book value of $7.3B at depots and base supply sections, 273K line items ($3.9B) did not have an ROL assigned. It is appropriate that some line items, such as suspended line items, line items identified for no further procurement and locally procured line items not have reorder levels. However, National Inventory Control Point (NICP) line items and line items procured under the Cooperative Logistics (COLOG) program which should have been assigned ROLs are summarized in Table 1.

SSC	Description	Number of Line Items	Stock Value
90	NICP line items with CFSS automated assignment of zero ROL - Reprovision Change Level Code (RCLC) 'R'.	35K	$56M
90	NICP line items with a manual setting of zero ROL - RCLC 'Z' and 'M'.	15K	$942M
8B	Line items procured through Cooperative Logistics (COLOG) program	7K	$17M
	Total line items/stock value for materiel that should have a ROL	57K	$1,015M

Table 1: NICP/COLOG Line Items With No Reorder Level - June 1999

19. Of equal concern is the $1,053M of current Supply Status Code (SSC) 40 stock - 28K line items - that, in accordance with Materiel Management Instruction 1617, is placed in the manual reprovisioning stream 'B' with a zero ROL. All demands are referred to the supply manager for SSC 40-designated line items, which require considerable oversight. However, this policy does not allow supply managers to make use of the automated replenishment data within the CFSS. In view of the recent downsizing of NP staff, efforts should be made to optimize the use of CFSS-automated features for SSC 40 line items. As well, the number of SSC 40 line items should be limited in order to optimize the supply managers' individual workloads. We observed that 20 per cent of SSC 40 line items had a unit price under $10.00. The necessity of SSC 40 controls for these low dollar-value line items is questionable.

20. Chart 2 indicates that 23K line items were below the ROL as of June 1999. We determined that the Department had taken procurement action on only 5.7K of these line items. However, of the remaining 16.9K line items not yet contracted for delivery, there was insufficient stock for 5.2K. As well, at the time of the audit, we observed that there were 18.4K line items with a ROL that had stocked out at the depots and bases. Due to a shortfall in NP funds, one particular directorate was following a division policy to replenish line items only to satisfy immediate operational requirements (IORs) - procuring no depot or base-level stock. In this case, it may be more economical to procure small quantities of spare parts for the most

critical weapon subsystems, than to pay premiums on IOR demands as a stock-out of each item occurs. Our analysis indicated that items procured in small quantities on an urgent basis resulted in premiums ranging from 66 to 133 per cent. Based on our review of FY 1997/98 receipts, we estimated that the Department paid $5.3M to $10.6M in such premiums. We attributed these premiums primarily to the fact that the management data set by supply managers within the CFSS does not fully utilize the CFSS's automated reprovisioning features. Consequently, the Department is experiencing stock out rate of 14 per cent, although the CFSS is designed to satisfy 92 to 95 per cent of all demands.

21. We also found that, in general, reprovisioning managers could not adequately oversee inventory levels for all line items in their areas of responsibility. This is partly due to the National Materiel Information Management System (NMIMS) employed by supply managers to provide information only on an item-by-item basis. However, consolidation of CFSS electronic data by supply manager can be provided, on request, by the Directorate of Materiel Management and Distribution (DMMD) staff, to facilitate the forecasting of materiel-reprovisioning requirements. The DMMD bulk data can be manipulated by existing applications available throughout the Department. We found only one directorate that was in the early stages of performing such an analysis of their inventory. This DMMD data could also be utilized to forecast reprovisioning budgets more accurately than the current practice of estimates based on formulary adjustments of the previous year's expenditures.

Excess Procurement

22. In the absence of appropriate performance indicators and corresponding reporting systems, there is a tendency, in some instances, for procurement staffs to buy materiel quantities "just in case" rather than "just in time." In 1997/98, NP reprovisioning in excess of targeted quantities ranged from $26M to $58M. Enhanced materiel risk-management would have permitted the reallocating of this procurement to line items of higher need.

23. To determine materiel reprovisioning requirements, the CFSS has the capability to automatically forecast the demand of each line item by basing the forecast on usage history. The CFSS is programmed to determine economic order quantities (EOQs) for up to three years of stock for each line. A MSL and a ROL are set for each line item to initiate procurement action by supply managers before all the stock is consumed.

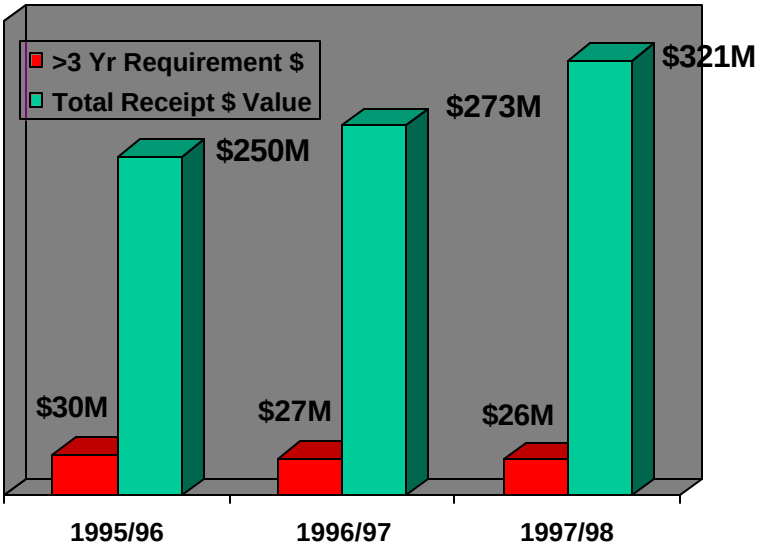

Chart 3: NP Forecasted Receipts

24. The audit team analyzed CFSS receipt transaction history to determine the extent of procurement in excess of targeted levels. We analysed only those forecasted receipts funded with NP and compared the quantity receipted at each delivery point to the annual forecasted usage of each item, thus determining the years of stock procured. As shown in Chart 3, 8 to 12 per cent of the materiel dollar value received at individual delivery points, ranging from $26M to $30M would last beyond three years. This analysis provides a conservative estimate of excess procurement because it was not possible to consolidate receipts of an item with more than one delivery point in order to consider the years of stock for the total buy quantity. We also compared the number of items that were due in as of June 1999 to the current stock levels of the same line items. For those line items with holdings that exceeded the MSL and stock levels ranging from 2 to 20 years, we observed that contracts had been awarded for 2,754 line items with a total stock value of $26M. This procurement practice does not seem to reflect the 'just in time' materiel-reprovisioning philosophy.

25. We also reviewed a sample of 332 NP contracts with a total value of $24M. At the time of our audit in 1999, we observed that 282 of the 684 sampled line items procured in 1997/98 were still surplus to the CFSS MSL. Explanations were provided for $5.5M of materiel procurements surplus to the RBQ - the difference between the MSL and the ROL, such as: life-time buy materiel of line items no longer manufactured, minimum-buy quantities, peak non-recurring demands and low dollar-value line items. However, substantiation could not be obtained for $3.5M of materiel procured in excess the RBQ - 15 per cent of the dollar value of

sampled contracts. Given $390M of NP materiel procured in 1997/98, the annual excess procurement could be as high as $59M. We observed that, excluding major equipment (Class A materiel) and serial-numbered line items, 77 per cent of all line items with an MSL held at depots, contractor accounts or bases in June 1999 were in excess of that MSL.

26. The performance indicators available to NP management to determine whether procurement levels are appropriate are limited. RMDS reports most frequently used by NP reprovisioning staff focus on stock-out referrals to supply managers, the number of IOR demands and the number of procurements pending. The primary operational concern is that there be no stock-outs of critical combat-system spares. Therefore, supply managers have little incentive to ensure that the line items they manage are within the MSL. As well, storage costs associated with excess stock are not charged against budgets controlled by the NP procurement directorates. DMMD is presently developing a prototype for a flexible performance-reporting system that will provide an inventory management overview with more detailed options of viewing by equipment type or organization. Additional performance indicators and enhanced reporting systems are required to redirect annual excess procurement of $26M to $59M to line items of higher need.

Repairable Reserves

27. The Department is not taking full advantage of repairable reserve items. The use of such items to satisfy requirements for stock currently below the ROL could result in cost reductions ranging from $9M to $12M.

28. Currently the Department holds 11.2K repairable reserve line items with a book value of $459M. For each repairable reserve line item, we compared the number of repairable reserves with the number of serviceable items below the ROL. We observed that 10 per cent of the repairable reserves could be repaired, in order to bring the number of serviceable items above the ROL. We also observed that 15 per cent of repairable reserve line items could be used to raise inventory levels up to the MSL. In particular, our review determined that 320 line items were being acquired by the Department - at a cost of $19M - while $15M of repairable reserves of the same line items remained in stock. The standard maximum repair cost for repairable items is 75 per cent of the item value - a cost savings of at least 25 per cent. As demonstrated in Table 2, the Department may avoid $9M to $12M in expenditures for new materiel below the ROL or MSL as of June 1999.

Audit Criteria	Number of Repairable Reserve Line Items	Value of Repairable Reserves June 1999	Potential Cost Avoidance
Repairable reserve line items that may be repaired to bring the number of serviceable items up to the ROL	1,192	$37M	$9M
Repairable reserve line items that may be repaired to bring the number of serviceable items up to the MSL	1,710	$46M	$12M

Table 2: Repairable Reserve - Serviceable Stock Comparison

Direct With Trade Opportunities

29. The Department is not taking full advantage of the Direct With Trade (DWT) potential to improve procurement lead time and reduce procurement levels. We estimate that if DWT potential is maximized, low-value item inventory procurement may be reduced by $57M.

30. Lengthy procurement lead times add to procurement costs through higher safety stocks, added obsolescence costs and reduced procurement flexibility. The average DND procurement lead time - the length of time between an item's reaching the ROL to the delivery date of new stock - is currently 327 days. The Department is making efforts to reduce procurement lead time through several procurement tools, such as standing offers, supply arrangements with pre-qualified suppliers and pre-facilitated contracts. As well, DWT procurements up to $5K were authorized in April 1996. However, our audit indicated that not all supply managers have been taking advantage of the DWT procurement option.

31. Most materiel reprovisioning procurements are executed by requisitions through Public Works Government Services Canada (PWGSC). We observed that 18 per cent of all procurements under $5K are requisitioned through PWGSC. Our analysis as summarized in the table below indicates that 98 per cent of RBQs would generate procurement transactions less than $5K ((MSL-ROL)*Unit Price).

Criteria	Number of Line Items	Current Stock Value June 1999
Line Items with a MSL and a ROL	307K	$3.4 Billion
Line Items where the Recommended Buy Quantity is less than $5K	295K	$1.2 Billion

Table 3: Potential Direct With Trade Line Items

32. Analysis of NMIMS data by DMMD has determined that the PWGSC tendering process contributes 87 days to an average procurement lead time. For low-value materiel, there is an opportunity to reduce the average procurement lead time by 27 per cent. While additional DWT procurement would increase the current workload of supply managers, this may be alleviated through access to the electronic bidding system already existing for DND service contracts.

33. Use of DWT for 18 per cent of the materiel under $5K being procured by PWGSC contracts will reduce procurement lead-times and, correspondingly, the quantities of such stock procured to maintain safety-stock levels. Accordingly, we estimate that procurement of the low value inventory could be reduced by $57M and redirected to more urgently needed line items.

Distribution of Materiel

34. We estimate that the Department is paying third-line freight premium charges of up to $4.5M per year due to stock-distribution imbalances between the depots. Rationalization of stock distribution between depots may offset freight premiums by $2.0M.

Audit Criteria	Number of Line Items	Stock Value June 1999
No stock at the Edmonton Depot but more than two items held at the Montreal Depot	128.3K	$931M held at Montreal Depot
No Stock in Montreal Depot but more than two items held at the Edmonton Depot	83.9K	$392M held at Edmonton Depot
Special Supply Information Code (SSI) ‘KG’ - line items held at depot only	5.1K	$253M

Table 4: National Stock Distribution Imbalance

35. To determine whether procured NP materiel had been allocated to the most appropriate location, we reviewed the distribution of national stock; 423K depot line items with a book value of $3.1B, as of June 1999. As demonstrated in Table 4, we observed a stock imbalance that may be due to the CFSS-recommended delivery points for new materiel. The CFSS distribution recommendation is based on usage history, taking into consideration the current stock levels at delivery points before recommending a destination. However, some of the major equipment supported by the depot has been redistributed. For example, at one time, the bulk of Navy assets were on the East Coast of Canada. Recently there has been a redistribution of the ships to form a two-coast navy and it will take a number of years for this change to be reflected in the materiel usage history. The current stock imbalance could not be accounted for by weapon systems that are not distributed evenly across Canada. The three major weapon systems we examined in detail had similar results with respect to imbalanced unique item distribution.

36. In order to reduce freight costs associated with inter-region shipments, DMMD had considered making bulk shipments between depots, to minimize imbalances in stock distribution. Their goal was to reduce inter-region shipments from 40 per cent to 5 per cent and also to reduce associated IOR freight premiums. The Audit team provided directorates responsible for the three major weapons systems in mid-life-cycle with lists of line items that could be considered for bulk shipment. In particular, our analysis of annual forecasted usage which focused on fast-moving line items indicated that 35.3K of the depot stock-out line items had an annual forecast of three years or more - a current stock value of $246M. If one third of the fast-moving line items were moved in bulk to the other depot, the freight costs would be $2.5M. This would offset the current freight premiums, which are as high as $4.5M per year for third-line freight, resulting in savings of $2.0M.

Excess Stock Accumulation

37. Although the Department has taken significant steps to eliminate excess stock through the Inventory Reduction and Rationalization (IRR) initiative, considerable inventory remains in excess of projected requirements. Based on CFSS forecasts of annual usage, we estimate that $515M of current stock will be on hand beyond 30 years. Annual carrying costs attributed to retaining this stock is estimated to be $26M.

38. Procurement best practices would result in the delivery of the right items, at the right time and in the right quantity. As indicated in paragraphs 16 to 20, we observed materiel reprovisioning in excess of the RBQs based on forecasted usage. This may be attributable to a number of factors, such as minimum-buy quantities; life-time buys of obsolete items and acquisition of safety stocks to meet surge demands. As well, an analysis of future requirements based on historical usage may not reflect higher materiel usage, which could result from increased operational activity, although the DND operational tempo in recent years has been very high. With improved procurement practices and an increased emphasis on just-in-time

delivery, the Department will minimize inventory holding costs. However, our analysis indicates that there has been a significant accumulation over time of stock in excess of forecasted need; therefore there are further opportunities for resource savings through inventory rationalization.

39. ADM(Mat)'s IRR initiative has already made progress in addressing this situation. The aim of the initiative was to reduce 30 per cent by volume of the CF centrally managed line items identified as excess in a 1996 study. Line items were considered excess if there had been no demands during the previous four years. Since 1997/98, the IRR initiative has eliminated 149K line items and earmarked $687M of stock for disposal. However, the criteria could be refined so as to identify additional excess stock, thereby generating additional savings. More specifically, the criteria could address excess repairable reserve stock, shelf-life item expiry, new procurements and holdings in excess of forecasted usage.

40. Excess Repairable Reserves Stock. During our audit, we noted that significant quantities of repairable reserves were being retained despite having sufficient serviceable items on hand to meet 15 years of forecasted usage. Moreover, as demonstrated in Table 5, for many of these line items, there was enough stock of serviceable items to last 30 years. In our view, there are opportunities to reduce repairable reserve inventories, thereby contributing to inventory-rationalization savings.

Audit Criteria	No. of Repairable Reserve Line Items	Repairable Reserve Stock Value
Serviceable line items that exceed 15 years of forecasted usage	2.4K	$58M
Serviceable line items that exceed 30 years of forecasted usage	1.5K	$31M

Table 5: Comparison of Repairable Reserves to Serviceable Items - June 1999

41. Shelf Life Item Expiry. Our audit also included an analysis of line items with a prescribed shelf life commencing on the manufacturing date. The Department currently holds $96M in shelf-life materiel, or 9.4K line items. Ten per cent of shelf life line items - a stock value of $19M - lacked data integrity in that the shelf life was not specified in the CFSS. Of the remaining line items with a specified shelf life, we compared the number of years of stock, based on forecasted usage of each line item, to the item's shelf life. Conservatively assuming the shelf life commenced in June 1999, we found 3.9K line items had years of stock exceeding the shelf life representing a stock value of $17M. Not only will the Department incur annual holding costs for time expired stock, but also disposal costs associated with the $2.5M of shelf life expired stock classified as radioactive.

42. New Procurements. We also analysed new procurements having such low usage that, as of June 1999, a ROL had not yet been assigned by the CFSS. We observed that 44.2K NICP line items - a dollar value of $506M - were new stock (RCLC Code 'I' and 'S') for which the CFSS had not yet established an ROL from the usage history. Although an ROL is to be assigned to initial provisioning line items "I" after two years of use, we observed that 8.2K line items procured before 1997 - $22.4M in stock - did not have an ROL assigned. Similarly, 15.8K new 'S' line items - $203M in stock - were procured before 1998, but no ROL had been assigned, although an ROL should be assigned after one year of use. New line items procured since 1996 were not within the scope of the IRR review. However, there may be some new items that are surplus to the Department's need.

43. Holdings in Excess of Forecasted Usage. To assess the possible excessiveness of existing inventory levels, we compared the current holdings at depot, contractor and base-supply accounts to the CFSS computed forecast demand. For those line items in the CFSS with a forecasted demand - 247.9K line items with a total stock value of $3.2B, not including $4.1B of stock that has no forecasted usage data in CFSS - years of stock on-hand were computed by dividing the current stock by the annual forecast demand for each item. Chart 4 shows that the greatest portion of the holdings will be consumed in the first three years. However, there is a significant portion of materiel that will last longer than 30 years.

Years of Stock

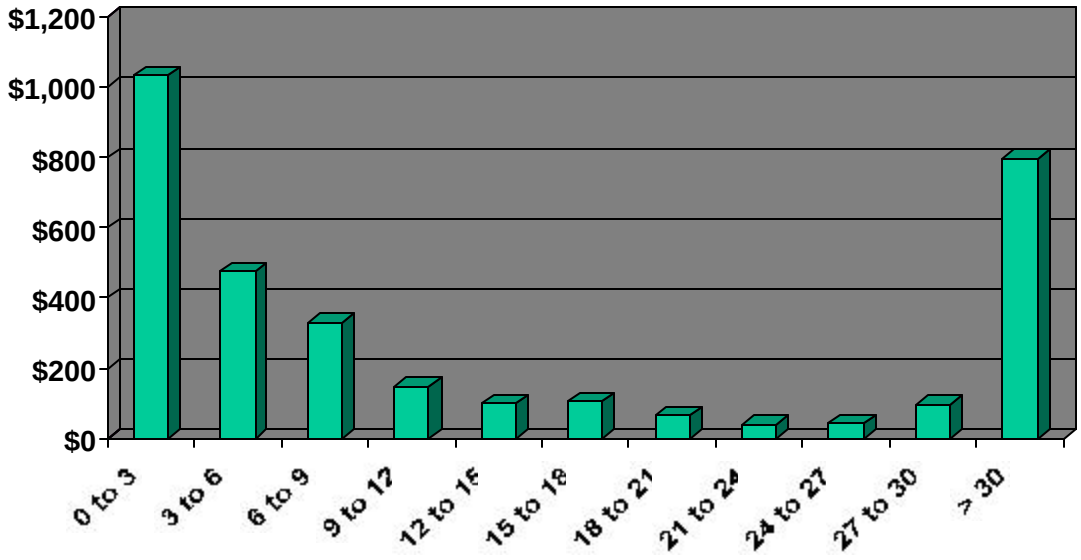

Chart 4: Forecasted Usage - June 1999 ($M)

44. We also reviewed the use of System Excess Level (SEL) warning signals within the CFSS. Depending on the line item, the SEL is two to four times the economic order quantity (EOQ) above the MSL for that item. Our analysis determined that 164.9K current line items have breached the SEL - an excess of $1.9B. We found an SEL breach date indicated in the CFSS database for 160.9K of these line items. Once the SEL for an item is breached the supply manager is to determine if the disposal action is appropriate. However, automatic notification of SEL breach to supply managers was suspended in the CFSS in 1991.

45. Materiel procured in recent years may not be consumed until major equipment repairs or overhauls are due. Our analysis also included an assessment of the age of the excess stock by examining the Date Record Established (DRE) for each line item. Chart 5 shows the year when the excess stock was first taken on CFSS inventory as well as more recent buys of the same line items. Usage of line items procured before the 1990s is well established, and they should be the first line items reviewed in future IRR endeavours. Although only 8.1K of these line items are repairable, they represent $279M in stock value because these high-value line items would remain in inventory longer than consumable line items. However, we found that 76K line items that will remain after 30 years - $281M in June 1999 stock - already had an SEL breach date. These line items may also be candidates for future IRR work.

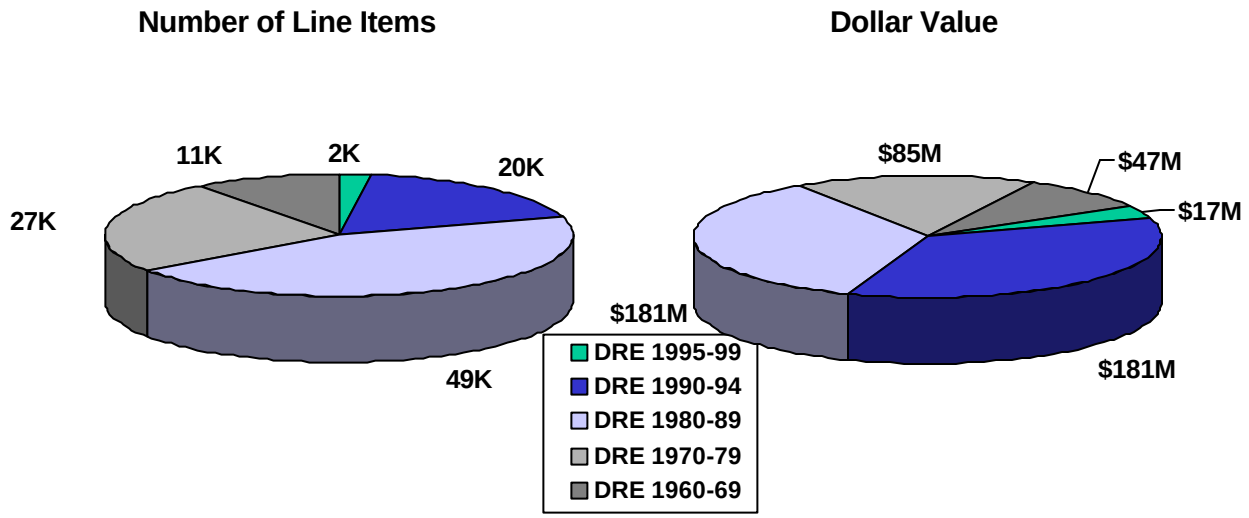

Chart 5: Depot and Base Supply Account Line items Remaining in Year 2029

46. To determine the holding costs associated with excess inventories, we developed a profile, based on current usage rates, of the stock that will remain unconsumed through ten- year intervals, as demonstrated in Chart 6. We estimated potential savings based on Departmental and industry studies of inventory carrying costs and the book value of excess or obsolete spares. We recognize that these savings can only be fully achieved gradually, as some infrastructure becomes unnecessary, leases expire and staff reductions take place. It is vital to continue fostering a cost-conscious approach to inventory warehousing, and to disposing of excess spares. We conservatively estimated the annual cost of carrying spares that will remain after 30 years at five per cent of their book value - up to $26M - and the one-time potential revenue from their sale as scrap to be up to $10M.

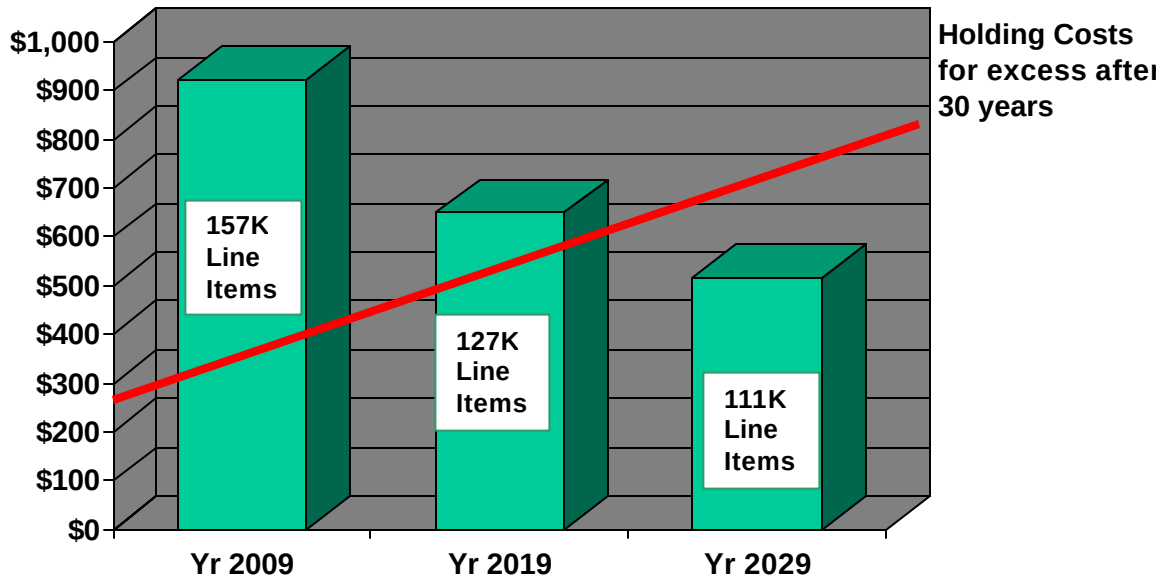

Chart 6: Materiel Remaining Based on Current Usage ($M)

ACTION PLANS

47. ADM(Mat) is in general agreement with the audit conclusions and indicated that the following steps have been or will be taken:

- Regarding the procurement of excess materiel, CFSSU will be delivered by Dec 2001 and will include the Xelus Plan forecasting module which is based on the Distributed Requirements Planning concept. This will provide a more precise forecasting capability to inventory managers both in terms of quantity to order and timings for delivery thus minimizing the risk of procurement of materiel in excess of need. This area will also be covered in the Operations and Maintenance module

of the National Inventory Control Point (NICP) course being developed and will be incorporated into the Material Acquisition and Support (MA&S) desktop.

- Director Materiel Acquisition and Support Program (DMASP) in consultation with Director Material Management and Distribution (DMMD(and the EPMs/EPS is documenting the Materiel in-Service support business processes; these processes will then be documented into the MA&S desktop along with tools, techniques, lessons learned and best practices. DMASP and DMMD are to collect lessons learned and best practices in national procurement and inventory management and include them in the MA&S desktop under the appropriate procurement and inventory management processes.

- Regarding the performance indicators and reporting systems, ADM (Mat) is developing a comprehensive performance measurement framework for equipment management processes. An element of this initiative is the development of an information tool, called ORGVIEW, that will provide an electronic reporting capability. The Performance Measurement Framework (PMF) will include performance measures and indicators for inventory management. It will download information from the CFSS into a database that will allow supply managers and their supervisors to query and view information on the performance of their line items or equipment classes. This tool should provide procurement/supply management with the additional information to help them make better decisions on potential stock-outs, procurement in excess of the Recommended Buy Quantities.

- To facilitate better decision making regarding repairable reserve to meet requirements, a new tool called the Repair and Overhaul Management Information System (ROMIS) has been developed. It provides supply managers with additional capability to make appropriate buy/repair decisions for selected repairable items. Work is underway to incorporate this tool within CFSSU to facilitate its broader application.

- Pre-Facilitated Contracts (PFC) are being put in place to provide just-in-time delivery of items, with no inventory or minimal being held where it makes sense to do so. A PFC Management Information System (PFCMIS) is in development and will provide a tool to help supply managers to identify the best candidates for a PFC contract and to manage the performance of their items on PFC and the PFC contract.

- With the delegation of 5K for procurement of goods and the use of acquisition cards, we are making buys direct with trade where it is economical and it makes sense to do so.

- New tools, performance indicators and NICP management information/reports will be taught as part of the O&M at NICP training solution being developed (Spring 2001 for pilot course).

- MA&S Desktop will include in the appropriate electronic linkages to the aforementioned tools, policy information as well as lessons learned. The MA&S desktop will be the focus tool used for O&M at NICP training solution.

- Regarding the excess of inventory, DMMD in consultation with DMASP and the EPMs/EPS will develop an action plan to implement a Materiel Management Review. The goal will be to further reduce inventory holdings and ensure the effective positioning of materiel consistent with the single tier warehousing concept developed by MCCRT C7 Inventory Management and Control team. These measures are also addressing the issue of positioning the spares in closer alignment with the weapon systems.

- In addition, performance indicators are being developed to identify excess inventory. These indicators will also be identified as part of the In-Service Performance Management Framework currently being established. As a result, the need to take action will be identified so that appropriate measures can be taken to address excess inventory with a view to reduce it, reduce holding costs and generate disposal revenues and, in particular, to identify additional excess inventory.