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INTERNAL AUDIT: *OVERVIEW REPORT*

MATERIEL ACQUISITION AND SUPPORT
INFORMATION SYSTEM (MASIS)

June 2005

7053-31-2 (CRS)



Canada 

LEVEL OF AUDIT ASSURANCE

| Scope of Audit Coverage | Level of CRS Audit Assurance Provided |
|---|--|
| Attainment of Project Cost, Schedule & Performance Objectives | High—Substantiated audit opinion based on high level of evidential proof |
| Validity and Completeness of Testing Strategy & Processes | High—Substantiated audit opinion based on high level of evidential proof |
| Project Management Controls | High—Substantiated audit opinion based on high level of evidential proof |
| Appropriateness of Project Risk Management Systems | High—Substantiated audit opinion based on high level of evidential proof |
| Accuracy of Project Information for Decision-Making | Medium—Substantiated audit opinion based on medium level of evidential proof |
| Control Procedures to Manage Production Data | Medium—Substantiated audit opinion based on medium level of evidential proof |



SYNOPSIS

This report presents the results of an internal audit of the Department of National Defence (DND) Materiel Acquisition and Support Information System (MASIS) Project. This synopsis has been updated with certain information not available at the time of completion of the audit field work, in June 2004. In many aspects, we have audited a moving target. Changes have occurred regarding the Project, since the first release of a draft audit report in February 2005.

The MASIS Project is ambitious and complex. The objective is to support operational readiness by providing a single, departmental system enabling the cost-effective management of weapons/equipment systems throughout their life cycle—planning, acquisition, maintenance, repair, and disposal. The System’s purpose is to provide all levels of user—from “front-line” units to Formation/Headquarters—with integrated information on maintenance costs, scheduling, purchasing, inventory, and major equipment assets, thereby improving decision support across the Defence organization.

Risks: *The delivery of a major Enterprise Management System within a large, diverse organization is complex and comes with inherent risks and challenges, not the least of which include those pertaining to: training, interfaces with other key systems, restructuring of business processes, data conversion, and dependence on consulting resources. Lessons learned continue to be developed in both industry and government environments. From the outset of the MASIS Project, DND sought to moderate risks through stepped implementation and accountability for the early achievement of demonstrated benefits in terms of dollar savings, directly contributing to the operational readiness of the Canadian Forces. However, the notion of progressive implementation being funded through savings proved unworkable. Weighing against this metered approach were: risks of extended imbalances in service levels across the organization; the lag time required for major benefits/savings to materialize (or at least to be measurable); and the danger that intended future users of MASIS would continue to invest valuable resources in existing and interim solutions. Ultimately, it proved impractical to implement new technology in an incremental mode.*

Costs: *The MASIS Project was formally approved in 2000 and, at the time of the audit, was in the fourth of five phases of implementation. As of 31 March 2004, a total of \$209.2M had been spent on the Project (\$154.6M of approved project funds and Since project approval, the total estimated cost of MASIS from \$148M to approximately.....¹... and will well exceed when all budget sources are taken into account. What seems a major cost over-run is in fact largely attributable to a changed concept whereby user organizations will no longer be responsible for funding MASIS implementation and that the realization of offsetting savings takes time/years. Clearly, costs and effort were very much under-estimated. However, current estimates provide better visibility (accounting/reporting) of total resources to be invested in MASIS. At the same time, this audit recommended measures to reduce certain contract costs.*

¹ In August 2005, the Department endorsed a budget offor the final phase (5) of the Project and re-emphasized that legacy systems are to be “shut down” following MASIS roll-out. Theestimate excludes costs already incurred through non-project funds—e.g.,.....

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At the time of the audit, the Project Leader was attempting to complete the Project within a maximum cost of The revised project brief, presented to the Program Management Board in August 2005, states that the updated estimate of now includes functionality for all users, including deployability to ships and submarines.

Current estimates are that costs to operate and maintain the System at end state will amount to annually, much higher than the original estimate of less than \$10M. (Chief Review Services (CRS) benchmarking suggests recurring costs of approximately This is not to imply any reluctance to disclose full costs. Rather, as stated above, the lack of timely, formal reporting of full costs is very much related to incremental decisions associated with the original stepped implementation strategy.

Schedule & Delivery: *The target completion date for MASIS has also been significantly extended, from 2004 to 2011. Much progress has been achieved, including a proof of concept implemented for a large part of the Navy, a major Land maintenance facility (202 Workshop) and some portions of National Defence Headquarters. However, solutions for the Land and Air Environments have yet to be delivered, as well as important elements such as a capability that can be deployed for operational missions. Much remains to be done. For example, at June 2004, 34 percent of trained users (444) were not making regular use of the MASIS Complex Contracting module due to functionality issues.*

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Controls: *The Project Management Office (PMO) has developed controls and risk management processes; however, considerable improvement is necessary. For example, the total Project funding required to achieve a common end-to-end system was never reflected in the original project approval documentation and there is no record of an approved statement of requirement (SOR), a key document. Although this concept has proven unworkable, the business case and other project documents have not yet been revised to reflect this new reality. A recently updated (June 2005) Project Profile and Risk Assessment now classifies many of the risks reported by our audit as medium to high.*

Independent Assessment: *The requirement for an automated materiel acquisition and support (MA&S) system is not in question, nor is the effort and dedication of the personnel engaged in delivering this System. However, the value-for-money equation must be addressed by the Department of National Defence/Canadian Forces (DND/CF)—essentially, at what cost should MASIS be implemented and within what timeframe—would faster implementation produce economies? It will also be necessary to specify accountability for results. The MASIS Project is in its fourth phase of implementation and a “strategic pause” until 31 March 2006.*



During this time, the Department should complete an independent assessment of the rationale for continuing with successive phases of MASIS. Is MASIS the best option for the future? Such an assessment would have to come to grips with the availability of newer technology, as well as obtaining from the Project Management Office a clear and current definition of success in terms of the specific capability/performance to be delivered; a firm completion date; the expected number of users; estimated full costs to implement the Project; estimated support costs; and an approach to realistically identifying benefits.

As indicated earlier, decisions have been made somewhat incrementally, largely in line with the original strategy of progressive/stepped implementation of MASIS. However, the strategy has changed over time, and the implications have not been formally captured, analyzed and officially communicated to all approval authorities. If the ultimate decision is to continue with MASIS, it will be most critical that further implementation be facilitated by the full support and commitment of senior managers representing the user community. This will require a convincing presentation regarding cost, schedule and performance—as well as demonstration that MASIS is the most advantageous of available options.

Management Action: *Action plans generally acknowledge the importance of generating the types of decision-making/risk information cited by this audit and that it be developed and available for the approval cycle for the fifth phase of MASIS. The current strategic pause provides an opportunity for full assessment, updating and reporting of the continued relevance and business case for the System. All of this is timely in terms of changes associated with transformation and the new vision for the Canadian Forces.*

Of particular note is that the Strategic Planning Division and the Information Management Group are conducting a study to consider the feasibility of a single Enterprise Resource Planning (ERP) system for the DND/CF. This study is to be completed by the end of October 2005 and will assess how close DND can reasonably come to a single un-customized ERP application. Procurement and business processes will be defined and a governance mechanism for the Department's ERP will be developed. As one of the four main corporate systems, MASIS will be a key target of this study. MASIS issues, such as in-service cost affordability, enterprise security environment, and system interface will be analyzed from a corporate perspective. Further actions will be pursued based on the results.

The recommendations and corresponding management action plans are presented in matrix format, starting at page 11 of this report.



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RESULTS IN BRIEF

INTRODUCTION

The 2003/2004 Chief Review Services (CRS) Review Plan included an audit of the Materiel Acquisition and Support Information System (MASIS) Project. The audit results were initially de-briefed in May/June 2004.

BACKGROUND

The stated objectives of the MASIS Project are to provide the Department of National Defence/Canadian Forces (DND/CF) with:

- An integrated materiel acquisition and support information system for the cost-effective optimization of weapon/equipment system availability throughout the materiel life cycle;
- A suite of integrated applications that will provide timely and accurate information to enable end-to-end activities by personnel providing materiel support to operations;
- Support to engineering and maintenance functionality that includes Materiel Acquisition and Support (MA&S), Disposal of Materiel and Business Management;
- A single integrated system to link MA&S information from the front line to individual units, headquarters, other corporate systems, other government departments, and industry; and
- The necessary interfaces to allow for exchange of information between other DND corporate information systems, as well as industry, and to provide seamless access to data in a usable format.

Once fully implemented, MASIS anticipates approximately 19,000 users, comprised of procurement, repair, engineering, formation capability planning and supply staffs. It will be used from the “front-line” to individual units to Formations and Headquarters for the purposes of maintaining full asset visibility, fleet work planning and scheduling, cost accounting, and improved decision support.

The Project is in Phase 4 of implementation. This phase, often referred to as a “strategic pause,” is expected to last until 31 March 2006, before which time a decision needs to be made to fund the next phase/complete the project.

As of 31 March 2004, \$154.6M had been spent from MASIS capital funds. The Project had expenditure authority out to April 2006 for \$182.3M.



The following provides a brief chronology of major project events:

- 1996—Synopsis sheet (Identification) SS(ID) at indicative cost of \$59.4M;
- 1997—Procurement strategy approved;
- 1998—Preliminary Project Approval (PPA). Phase 1 definition funding \$7.1M. Total indicative cost \$73.6M;
- 1999—Amended PPA for procurement of software licences; Strategic Project Pause # 1, 202 Workshop Roll-out. Total indicative cost \$119.3M;
- 2000—Effective Project Approval (EPA). Phase 2 funding \$63.7M. Total indicative cost \$147.9M;
- 2001—Change to Pan-Environmental Implementation Strategy. Phase 3 funding \$62.2M. Total substantive cost \$147.9M.;
- 2002—Complex Contracting (CC)² and Asset Accounting (AA)³ roll-outs; and
- 2003—Revised options analysis; Joint Capability Review Board (JCRB) and Program Management Board (PMB) approvals of recommended option; Special PMB and Strategic Pause # 2 decision, Amended EPA, partial rollout of Navy (e.g., Fleet Maintenance Facilities (FMFs)). Phase 4 funding \$34.4M. Total substantive funding \$182.3M⁴.

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The following represent the revised Planned Milestones (as at June 2004):

- 2005—Completion of Navy Roll-out, and CC;
- 2006—Begin Army Roll-out (not yet funded);
- 2008—Begin partial Air Force Roll-out), Assistant Deputy Minister (Information Management) ADM(IM), Defence Research Development Canada (DRDC) (not yet funded); and
- 2011—Project Closeout.

² Part of MASIS project aimed at automating the acquisition procurement process.

³ Part of MASIS project aimed at providing the information tool to implement Accrual Accounting.

⁴ Departmental Funding Budget Year \$, net of GST.



OVERALL ASSESSMENT

The MASIS project is ambitious and complex. There are inherent risks in the delivery of an Enterprise Management System, not the least of which include: training, interfaces with other key systems and business processes, data conversion, and the considerable dependence on consulting resources.

*The implementation strategy for MASIS has changed, departing from the original approach whereby all key functionalities would be delivered and proven relative to specific weapon systems. From the outset, this strategy was integral to However, functionalities are now being delivered within specific organizations, and the commitment to quantifiable benefits, as a basis for extending implementation, has much less definition. The current implementation strategy is essentially based on “Deliver-to-Cost.”
.....*

*Control and risk management processes exist in the MASIS Project Management Office, but require improvement. We are confident that the Project Office is apprising senior management of key issues affecting the project.
..... The original decision to proceed with MASIS did not demand a full view of the end-state. There are also a number of risks outside of the immediate control of the Project Office. These would include:
..... We are concerned about the current level of dependence on consultants.*

*Despite considerable challenges, much effort, dedication and resources have produced a working system, albeit not fully functional, for the Navy. DND/CF is now at the stage where decisions will need to be made on future implementation or risk losing momentum and the support of potential users. Accordingly, in our view, achievement of the full objective of providing support to CF operational activities through one end-to-end materiel acquisition and support information system is at risk.
..... At this stage, it remains unclear whether funding will be available for certain important elements, such as a deployed solution for MASIS. MASIS-related costs may exceed relative to original estimates of \$148M.*

Annex A presents an audit assessment in scorecard format. A Detailed Audit Report for use by MASIS project staff, provides an accompanying narrative discussion of the ratings assigned.

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PRINCIPAL OBSERVATIONS & CONCERNS

NOTES:

1. A Detailed Audit/Staff Report, primarily for use by MASIS Project Staff, supports this Overview Report.
2. Information in this report is current to **30 June 2004**.

Funding & Costs

Funding. From inception, the overall objective of the MASIS Project has been to provide DND with one common end-to-end Materiel Support and Information system. However, the total funding necessary to achieve this has never been completely captured in the Strategic Capability Investment Plan (SCIP). Full costs were not reflected in approval documentation, thereby affecting the visibility of necessary capital programming. This has been influenced by the original view that project implementation would be extended progressively, based on demonstrated performance and benefits. The concept that progressive implementation of MASIS could be funded through savings has proven to be unworkable.

Better estimates of full capital funding requirements are now known and have been communicated, at least informally, to officials within DND and to central agencies. As it happens, funding constraints have required the Project to enter a departmentally mandated “strategic pause” which will apparently extend to end 2005. During this period, implementation of MASIS within the Navy is to be completed. Additionally, progress will be assessed against anticipated benefits, total funding estimates will be revisited and revised, and decisions will be taken on further implementation.

Estimating Capital Costs. Capital costs for MASIS have increased over time. In 2000, total costs were identified as \$148M (\$BY). The Project Office now estimates that total capital costs for the full project scope, will be roughly This does not include in expenditures that CRS has identified as having been incurred by other budgets.

The Project is currently following a *Deliver-to-Cost* approach whereby it is to implement solutions to a cost of This effectively imposes constraints on the extent of functionality to be delivered and the number of users to be accommodated. The intent is to deliver those requirements that are deemed of best value to users, based on senior management guidance. However, the *Deliver-to-Cost* approach makes it difficult to forecast the end state and whether MASIS will be sufficient to meet the objective of providing an end-to-end automated MA&S system. Currently, without funding for Phase 5, the approved expenditure authority (\$182.3M) does not include implementation for the Army, Air Force, ADM(IM), DRDC, or full implementation for Navy ships. There remains a danger that there will be orphaned systems, new stand-alone projects to replace legacy systems and continued interface shortfalls.

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Project Cost Escalation. As of the end of March 2004, Project expenditures were \$154.6M, not including related costs charged to implementing organizations. Contracted professional services have been used more extensively than originally planned, partially due to implementation delays and lack of availability of internal personnel. In fact, consultant fees represent the largest driver of costs to the Project. These costs had risen from \$45M in original approval documents, to well over \$122M at the time of audit, and were continuing to rise. As a consequence of schedule delays and the decision to roll out the Project in a series of phases, the prime contract has been amended six times, each time increasing amounts for professional service fees. CRS has identified ways to decrease this cost. It may require increased use of public servants. Benchmarks on contractor support have indicated that consultants can be contained to 10 percent of total project management resources.⁵

The extent of work and resources related to user implementations was also significantly under-estimated, putting a significant strain on users. In fact, there has been significant downloading of costs to users. For example, user operating budgets have absorbed \$10.6M in data conversion costs. Similarly, users have shouldered \$1.4M for conversion training with up to \$4M per year for regeneration training. Costs related to fixing errors in existing data would have been eventually required, regardless of MASIS implementation.

Factors Contributing to Cost Escalation, include under-estimation of costs; project schedule delays and pauses; and, the relatively extensive use of consulting resources. The MASIS baseline software (i.e., SAP) purchase price is a relatively small component of the total costs. The largest components are consultants, training, and internal staff resources. The following provides further discussion of our assessment of the key reasons/causes for the under-estimation of costs:

- Change in Delivery Concept. Based on the Benefits Driven Procurement (BDP) approach, the original project concept included only the capital funding requirements to purchase the software and the MASIS proof of concept, leaving users to fund their own implementations with operating and maintenance budgets. The cost of user implementations was neither considered nor captured in departmental estimates. The original concept was based on incremental implementation by fleet using anticipated resulting savings to finance/fund further fleet implementations. This concept proved to be untenable. When the project concept changed to centrally funding user implementations, the capital costs began to more accurately reflect true departmental costs.
- Full Identification of Funding Sources. The Project was not compliant with the Project Approval Guide (PAG) procedures in the following areas. A “Functional” Statement of Requirement (SOR) was not approved nor linked to the Statement of Capability Deficiency (SCD) document. The total project costs, while known and identified, were not officially updated (and funded) in the SCIP to reflect a change in scope (i.e., from proof of concept on a single fleet, to pan-environmental implementation, and from user funded, to capital funded). In addition to capital funding requirements, and as discussed at numerous PMB and Senior Review Board (SRB) meetings, starting in 1997, there has been no agreement on the funding source for the recurring Personnel, Operating and Maintenance (PO&M) costs. This is a departmental issue.

⁵ COMPASS Management Consulting Limited—Compendium—Application Development Insights, Resources, and Services 2002.



- Under-estimating CF/DND Staff Workload to Implement. Similar to most Enterprise Resource Planning (ERP) projects, the extensive work associated with implementing a major management information system was very much under-estimated. The extent of staff training, re-training and work disruptions necessary was not fully appreciated. In fact, this Project represents a major business transformation initiative across the DND/CF in the materiel acquisition and support area, and is not just an information system.

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Steady State Personnel, Operating and Maintenance (PO&M). The Project Office now estimates recurring costs, originally estimated in approval documents at \$6.6M annually, to be There has been no agreement on the funding of these costs. When all Level 1 resources are included, and according to benchmarking work⁶, PO&M could be as high as annually.

Lessons to Be Learned for ERP Projects. Many of the lessons being learned in this project are common to the implementation of Enterprise Management Systems. Experts identify the following five areas as most likely to result in a budget overrun:⁷

- Training—cost and time for training to use an ERP is much greater than anticipated. New processes must be learned, as well as learning how to use the new information system;
- Integration and testing—an ERP is complex, and interfacing with it is not easy. Testing ERP integration has to be done from a process-oriented perspective, using real data;
- Data conversion—Moving corporate information from legacy systems to the new system is susceptible to being under-estimated, including the additional effort to correct the dirty data from old systems;
- Data analysis—ERP vendors perpetuate a view that you can do all you want with their product. ERP systems often must be combined with data from external systems for analysis, and the work to analyze and produce reports is under-estimated; and
- Uses of consultants—Consultants are often a necessity to plan for, and begin implementation, but weaning from consultants and knowledge transfer is a difficult process.

⁶ COMPASS Management Consulting Limited—Illustrative SAP Metrics, September 2004.

⁷ Slater, Derek, The Hidden Cost of Enterprise Software, CIO Magazine, 15 January 1998.



Requirements & Accomplishments

This audit does not question the validity of the requirement for an automated MA&S system/capability. Supporting weapons systems with the business processes, and information, to ensure timely and cost-effective repair, affects the capacity to manage the availability of equipment. While there has been significant progress, there is considerable work to be completed.

The objective of increasing readiness by optimizing equipment availability with one end-to-end materiel acquisition and support system has been partially achieved, but there are important elements still to be resolved (e.g., deployed solution, end-to-end support, full implementation). It is ultimately difficult to ascertain the percentage completion for the MASIS project. There has been significant progress made. The proof of concept has been implemented for a large portion of the Navy, 202 Workshop, and some National Defence Headquarters (NDHQ) directorates. However, only 1,900 of 19,000 (i.e., 10 percent) eventual users are using the system, and without full functionality. Currently, full implementation of the Project is not expected to occur before 2011. There are major risks associated with taking ten years to implement an information system (e.g., technical obsolescence, user fatigue, users searching for alternatives). There are trade-offs between the speed of implementation and addressing the near-term requirements of users, particularly the Army and Air Force.

Based on CRS discussions with users, there is subjective evidence that MASIS will significantly improve the efficiency and effectiveness of materiel planning, acquisition, maintenance and reporting. Departmental efforts to implement accrual accounting are also tied to MASIS implementation. However, the full benefits will not be achieved for several years and only after concerted effort to implement all aspects of the project—including, data conversion, system interfaces, a deployed solution, automated data capture, establishing a performance baseline, and technical documentation management.

A Statement of Requirement (SOR) was never written for MASIS. A broad functional SOR was produced, but the technological solution effectively drove the requirement. Several requirements, originally planned for delivery in Phases 1–4, have been deferred. Software, business process definition or organizational readiness has been insufficient to proceed (particularly the case for deployability). A re-scoping exercise was under way to re-define the requirements for end-to-end interfaces with Public Works Government Services Canada (PWGSC) and industry—possibly an interface capability that will be implemented by end-users. Although the Complex Contracting (CC) initiative is functional and has been conditionally accepted, only 292 of the 444 trained users are making use of the application. In our opinion, this is due to several reasons, including: outstanding deficiencies (to be corrected by the Project Office) related to service contracts and acquisition cards, and user unfamiliarity/culture changes respecting the use of a new system. CRS is also concerned that some requirements are being reported as completed when they are only partially completed/accepted conditionally. At the time of audit de-briefing (June 2004), the Project Office reported that a full re-write of the Project Charter and SOR was under way. This is important to understanding what is to be delivered and in making any trade-off decisions based on recognized priorities.



The project is currently using a “Deliver to Cost” approach and, if continued, will not fully meet the original MASIS objectives of having an end-to-end automated MA&S system. Currently, the approved expenditure authority (e.g., \$182.3M) for the project does not include implementation of Army, Air Force, ADM(IM), DRDC, and full implementation of Navy (e.g., ships), without additional funding in a proposed project Phase 5.

Contract Management

The prime contract was developed using the Benefits Driven Procurement (BDP) methodology. This is a cooperative partnering arrangement whereby, together, the vendor and users organize resources in an Integrated Project Team (IPT), intended to share work, risks and rewards. However, contrary to BDP theory, contract payments have not been linked to the delivery of benefits. The prime contractor is paid

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..... The CRS estimate of profit to date is ... percent (i.e., prime contractor services (total value of services excluding Goods and Services Tax (GST) and profits)). It would be difficult, if not quite unrealistic, to link benefits, which are only known 3–6 years after implementation, to contract performance. It is unlikely such a BDP approach is practical in the implementation of a complex information system like MASIS.

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Note: Subsequent to our audit de-briefing, the MASIS Project Office renegotiated a with the prime contractor and a with the prime licensing vendor.

Governance & Constraints

Several constraints hampered the ability of the MASIS Project Office to fully deliver within the original project budget. Many of these are normal project management challenges; others are relatively unique to MASIS, or to implementing a large Enterprise Management System:

- Four departmental ERP systems, with interdependent data requirements, effectively limiting MASIS functionality in certain supply areas;
- Up to three years of delays imposed upon the Project;
- Competing DND/CF funding priorities;



- Uneven support and commitment from Level 1s;
- Operational tempo within the user community; and
- Latitude/authority to plan, schedule and implement MASIS across DND organizations.

There are limitations on the capacity of the Project Office to drive the Project across the DND/CF and to ensure that benefits are realized. These include:

- Planning and scheduling Level 1 user implementations;
- Acquiring user subject-matter expertise in project analysis, design, testing and information interfaces (e.g., Canadian Forces Supply System—CFSS);
- Resolving funding issues affecting the user communities;
- Ensuring plans for phasing out legacy systems are followed;
- Ensuring resource savings are used to offset the corporate costs of MASIS;
- Ensuring mandatory use of MASIS; and
- Ensuring benefits realization strategy is effectively implemented.

Alignment of authority and accountability is an area of risk for any major cross-functional Information Management (IM) project. This will start with clarity in the definition and communication of scope and requirements. It falls to the Project Director to actively seek to resolve funding and user-acceptance issues.

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Risk Management

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The MASIS Project Office has processes in place to identify risks,
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Testing. CRS contracted with the consulting firm of Deloitte & Touche to provide an assessment of the validity and completeness of the MASIS testing strategy and processes. A separate draft MASIS testing report was distributed in November 2004. It should be noted that MASIS has a very respectable average availability rate of 99.3 percent.

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The MASIS Business Case, which estimated has been changed. The commitment to annual savings has also been replaced by un-quantified efficiencies. The methodology used to identify original savings and stretch targets could not be substantiated by the Project Office.
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Project reporting has tended to emphasize accomplishments against each phase/gate, rather than giving an assessment against overall project cost, schedule and performance objectives.

The MASIS gated/phased approach, while considered to be a prudent approach to reduce risk, has not been followed. There has been no formal evaluation of benefits gained after each phase/gate. It is questionable whether an adequate assessment can be done after each phase, because of the length of time to achieve benefits and because the necessity for all parts of the system to effectively work together to achieve full benefits. For instance, while CC has been considered a phase, it cannot be effectively assessed in isolation from implementation of MASIS at the user units.



MANAGEMENT ACTION PLAN

| Serial | CRS Main Recommendations | OPI | Management Response/Action |
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| 1. | <p>Independent Study:</p> <p>It is recommended that an independent study be conducted to assist PMB in making decisions respecting future MASIS funding and implementation. A VCDS-led study should be conducted immediately to determine whether cost-effective alternatives to MASIS exist, taking into consideration both resources expended and achievements to date.</p> <p>CRS encourages completion of a study by early fall 2005, to re-affirm the MASIS solution as well as senior client commitment to the investment.</p> | VCDS/DGSP, ADM(IM) | <p>Decisions were taken in late 2004 to confirm that MASIS would form the basis of current and future corporate material decision support systems within DND.</p> <p>While ECS support has been secured, security will be a priority and legacy systems replaced by MASIS are to shut down following MASIS roll-out.</p> <p>Notwithstanding, the above, the objectives of the study recommended by CRS will essentially be addressed by a Single Enterprise Resource Planning Feasibility Study now being conducted by DGSP and ADM(IM) staff for completion by end October 2005. MASIS will be a key target of this study.</p> |
| 2. | <p>Governance: It is recommended that the governance structure for MASIS be revised to ensure:</p> <p>a. an appropriate body/position is designated/affirmed with authority to plan, schedule and implement the approved project scope;</p> <p>b. measures are in place to ensure cross-functional risk mitigation strategies; and</p> | VCDS/DGSP ADM(IM) | <p>The MASIS project governance challenges are acknowledged. A new departmental governance structure and consolidated program-delivery approach are developing, which will correct the finding that the Project Manager and Project Leader have limited authority to fully execute MASIS implementation. The planning and preparation for these changes will proceed over the next 10–12 months and should align with the start of the next phase of MASIS development.</p> <p>The Project Delivery Methodology in use within the IM Group provides for structured interdependency management, including monthly reviews/reporting and inclusion as part of the ADM(IM) dashboard.</p> |
| | <p>c. internal project staff has the capacity to provide core business planning and management (e.g., assignment of contract tasking and assessment, progress reporting etc.) in place of consultants.</p> | PL/PM MASIS | <p>Concur. Although a large number of consultants will remain a reality, the Project Management Office (PMO) is actively hiring public servants to replace contractors, focused in areas where such action is warranted.</p> |



| Serial | CRS Main Recommendations | OPI | Management Response/Action |
|--------|--|--|--|
| 3. | <p>Cost Management:</p> <p>a. Project Scope and Cost. Develop a view of total capital and PO&M costs, based on the full scope of the MASIS Project and confirm sources of funding.</p> <p>b. Downstream Costs. Ensure that project PO&M estimates are scheduled into future years' Business Planning reference levels at the time of project EPA. Departmental project approval should not proceed until PO&M estimates are made and validated with budget holders.</p> | <p>ADM(IM), PL/PS MASIS</p> <p>VCDS/DGSP</p> | <p>Through the approval cycle for MASIS Phase 5, the PMO will present all predictable costs, including: the capital investment to conclude the phase; the HR demand on the user communities; the estimated O&M costs (including incremental increases as more users and functionality come on line); and the ancillary non-project costs, including any hardware improvements. User participation in development and delivery has been agreed with the three users (Army/Navy/Air Force). The cost of the full scope of the project at end-state will include the cost of previous phases.</p> <p>Note: At the 17 August 2005 meeting of the Program Management Board, MASIS Phase 5 was endorsed at a departmental cost of (\$BY) under a revised milestone.</p> <p>It is the responsibility of each Level 1 to ensure the requisite support costs are included in the Business Plan forecast. The Program Management Board (PMB) has the responsibility to ensure that estimates are both acknowledged by the budget holder and adequately resourced. PMB has recognized this shortfall and given specific direction that all projects will comply. The National Procurement Oversight Committee is engaged in developing a better process to manage PO&M costs over the life of a project.</p> |

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| Serial | CRS Main Recommendations | OPI | Management Response/Action |
|--------|--|--|---|
| 4. | <p>Project Controls and Risk Management:</p> <p>a. Business Case. Revise the MASIS Business Case to include full costs for MASIS implementation, and revised quantified benefits.</p> <p>b. Contracting. Upon renewal of the contract with the prime vendor,</p> <p>c. Risk Management. Update the Project Profile and Risk Assessment (PPRA), and revise the current mitigating strategies.</p> <p>d. Requirements Definition. Update the SOR, to be used as project scope guidance and baseline for progress reporting, and develop project acceptance criteria for deliverables.</p> | <p>PD MASIS</p> <p>ADM(IM) & ADM(Mat)</p> <p>PL/PM MASIS</p> <p>PD MASIS</p> | <p>A full Cost/Benefit Analysis will be included in MASIS Phase 5 documentation.</p> <p>..... Benefits, however, result from the users' application of the System and therefore do not appear for some years after rollout.</p> <p>CRS Note: Benefits must be re-defined in order to provide a mechanism to evaluate results prior to full system rollout in 2011.</p> <p>As an integral part of Phase 5 approval, the PPRA will be updated to reflect current risks and mitigation strategies.</p> <p>The new SOR update will be delivered with Phase 5 Effective Project Approval but is not expected to change project scope guidance. Each individual requirement will still need to be planned and scoped and then designed such that it is tied and integrated into the full solution. Acceptance criteria will be developed with the individual requirements.</p> |
| | <p>e. Project Guidance. Revise the Project Approval Guide (PAG) to ensure that potential savings are identified against specific budget holders/clients and that accountability measures are identified when projects are presented for approval.</p> | VCDS/DGSP | <p>Accountability measures to identify and track savings are currently not in place. The benefits of such measures have been recognized and development is currently being pursued within DGSP.</p> |

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ANNEX A—AUDIT ASSESSMENT

The following is the audit assessment against the following areas:

- Performance against stated audit criteria based upon the adequacy of management controls, the appropriateness of risk management systems, and the adequacy of information for decision-making;
- Progress to date against project time and cost objectives; and
- Progress to date against project performance objectives.

Performance Against Stated Audit Criteria

The following table represents the audit assessment of the MASIS project against 33 specific audit criteria. Each criterion has been rated using the color scheme presented in the rating legend shown on the right. A brief justification for each rating has been provided and specific observations and findings have been referenced for further substantiation.

| | |
|--|--------------------------------|
| | Satisfactory |
| | Minor improvement needed |
| | Moderate Improvement needed |
| | Significant Improvement needed |
| | Unsatisfactory |

| Rating | Audit Criteria ⁸ | Justification | Detailed Staff Report Page Reference |
|----------------------------|--|---------------|--------------------------------------|
| Management Controls | | | |
| | - Adequate project plans. | ..... | 1, 7 |
| | - Minimum acceptable requirements defined. | ..... | 1, 11 |
| | - Benefits and costs understood and quantified. | ..... | 1, 18-23 |
| | - Proposed solutions/options fully described with cost-benefit analysis. | ..... | 1, 21-23 |
| | - The accepted solution meets the minimum requirements. | ..... | Annex A-6/6 |
| | - The scope of the project is well defined and costed. | ..... | 1, 18 |
| | - Roles and responsibilities of all organizations are well understood. | | 1, 9-11 |

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⁸ Refer to Annexes B and C for Background, Audit Objectives and Criteria.



ANNEX A

| Rating | Audit Criteria | Justification | Detailed Staff Report Page Reference |
|--|--|----------------|--------------------------------------|
| Management Controls (cont'd) | | | |
| | - Work plans are in place and used to measure progress. | ..... ..... | 3, 20 |
| | - There is a human resources plan in place. | ..... | N/A |
| | - End-users participate in planning and accepting the new system. | ..... | 1, 12 |
| Compliance with Policies and Guidelines | | | |
| | - Necessary approvals obtained. | ..... | 1, 18-23 |
| | - PAG documents. | ..... | 1, 11 |
| | - Financial management standards. | ..... | 5-6 |
| | - Contractual procedures. | ..... | 3-6 |
| Information Management Controls | | | |
| | - Appropriate controls to ensure completeness of testing. | ..... | 13-15 |
| | - Appropriate controls to ensure the validity of production data. | ..... ..... | 13-15 |
| | - Change management system in place. | ..... | 13-15 |
| Safeguarding of Assets | | | |
| | - Assets safeguarded in accordance with inventory policies. | ..... ..... | 16 |
| Project Pays Due Regard to Effectiveness and Efficiency | | | |
| | - Project resources are spent with due consideration to economy. | ..... ..... | 3-9, 13 |
| | - Adequate monitoring of contracts to ensure contract performance. | | 3-6, 12 |
| | - The project office is organized to ensure value for money. | | 8, 12, 13 |

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ANNEX A

| Rating | Audit Criteria | Justification | Detailed Staff Report Page Reference |
|--|--|----------------------------------|--------------------------------------|
| There is Appropriate Project Governance | | | |
| | - Roles and responsibilities of key departmental players are understood. | ..... | 9-12 |
| | - Appropriate project leadership exercised. | ..... | 9-12 |
| | - Appropriate financial and non-financial monitoring systems in place. | ..... ..... | 6-8, 11-12, 18-21 |
| There are Appropriate Risk Management Systems | | | |
| | - Risk arising from business strategies are identified and prioritized. | ..... | 16-17 |
| | - Management has determined the level of acceptable risk. | ..... ..... | 16-17 |
| | - Risk mitigation strategies are designed and implemented. | ..... ..... ..... | 16-17 |
| | - Ongoing monitoring activities are conducted to periodically assess risk. | ..... ..... | 16-17 |
| Adequate Information is Provided to Decision-Makers | | | |
| | - Timely reporting of the project's performance to departmental authorities. | ..... | 18-23 |
| | - Information is accurate. | ..... | 18-23 |
| | - Compares project progress against plans. | ..... | 18-23 |
| | - Provides decision-makers with appropriate context to make decisions. | ..... ..... ..... ..... | 18-23 |
| | - There is accurate Major Capital Projects (MCP) progress reporting to TB. | | 18-23 |

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ANNEX A

Progress to Date Against Project Time and Cost Objectives

MASIS has not met its original cost and schedule objectives. Over time, indicative project cost has increased and project completion has been pushed further into the future. Figure 3 displays the evolution of indicative project cost estimates with corresponding project completion dates, as presented in historical project documentation.

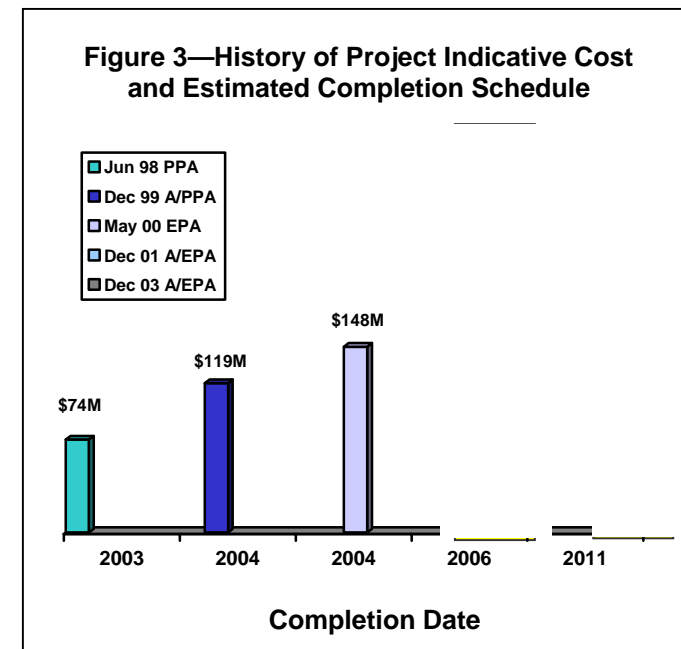
Progress to Date Against Project Performance Objectives

MASIS has not yet met all the project performance objectives. Our assessment of project performance (other than cost and schedule) is based on the following three criteria:

- Attainment against stated MASIS objectives and principles;
- Attainment against stated mandatory requirements/functionality; and
- Attainment of expected MASIS benefits.

Attainment Against Stated MASIS Objectives and Principles

The main objective of MASIS is to support CF operational activities by optimizing equipment availability and the associated support costs throughout the equipment life cycle. Although important strides are being made to reach this objective, it is too early in the MASIS implementation to fully assess.



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ANNEX A

The audit assessment against the Basic Principles⁹ for MASIS is portrayed in the table below:

| Basic MASIS Principle | Audit Assessment |
|--|--|
| Operationally Focused. | Not yet achieved. Deployable component not available at this time. Additional hardware and software required for Army and Air Force to satisfy deployed unit capability. |
| End-To-End System, e.g., Front-Line to PWGSC to Industry. | Not yet achieved. Project Office needs to define what end-to-end means. Front-line/deployable system not yet available. No direct interface with PWGSC or industry. Army/Navy workshop to management capability in place, although not yet fully used. |
| Integration/Interface. Allow for information exchange with other corporate systems and industry, and provide users with ready and seamless access to data. | Partially achieved. Limited interface with Canadian Forces Supply System Upgrade (CFSSU). Requires duplicate input since the Departmental Integrated Human Resource System (DIHRS) is system of record. No interface with Capability Initiative Database (CID). |
| Exploit Information Technology Infrastructure. | Partially achieved. Automated Data Capture (ADC) should be more fully exploited. |
| Commercial Off-the-Shelf (COTS) Software. | Achieved. |
| Benefits Realization (BR) Approach. Utilize a business-oriented framework that enables DND to select and manage implementations such that their benefits are clearly defined, optimized and harvested. | Partially achieved. Process in use. Considerable effort has gone into defining benefits, but benefits not yet harvested/quantified. BDP philosophy not fully implemented—no re-investment of savings taking place and lacking performance baselines to compare benefits. |

⁹ MASIS Project Charter 10 April 2000.

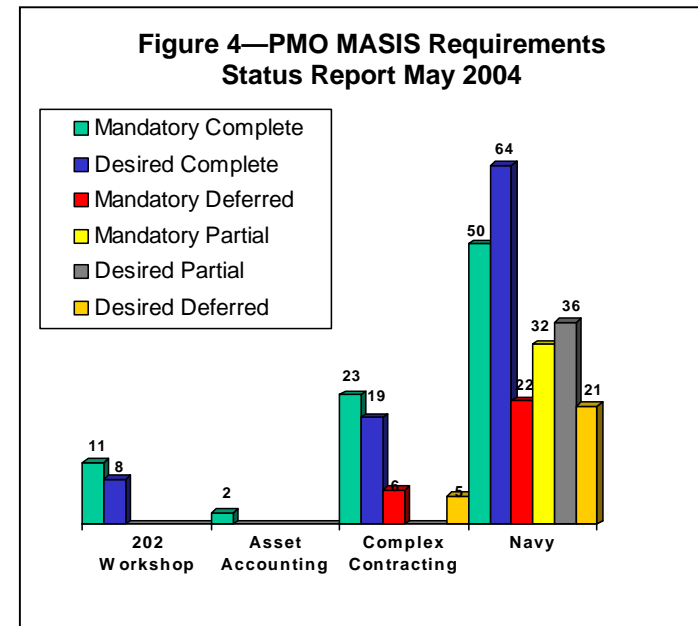


ANNEX A

Attainment Against Stated Requirements

Figure 4 depicts the status of the requirements for each of the MASIS initiatives reported by the project office. The audit found that 30 percent of the Navy requirements are only partially completed (32 mandatory, 36 desirable) and 19 percent of the requirements (22 mandatory, 21 desirable) have been deferred to Phase 5 of the project. The accuracy of the requirement tracking system is of concern due to 13 missing Navy requirements that are not included in the deferred items. At least 20 percent of the CC requirements have not been met to date, although previously reported as complete. The requirements tracking system is being amended accordingly. Up to one third of NDHQ procurement staff is not using the CC MASIS tool, due to deficiencies. At the time of audit the project office estimated would be required to address the deficiencies in the CC and AA initiatives.

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ANNEX A

Attainment of Expected MASIS Benefits

The expected benefits of MASIS and our assessment of their progress to date, are shown in the following table:

| MASIS Expected Benefits (long-term) | CRS Assessment to 30 Jun 2004 (based on user input) |
|---|--|
| Increased operational availability. | Possible, but not yet proven. |
| Increased ability to plan for operational missions. | Likely, not yet fully integrated at formation level. |
| Improved satisfaction of materiel customers. | Too early to assess although currently experiencing interface issues. |
| Improved asset visibility. | Yes, but not to fullest extent (lack of visibility into CFSS). |
| Improved productivity. | Indications are that productivity improvements will occur e.g., FMF Cape Scott and 202Workshop. |
| Seamless and timely access to material information. | Expected to improve once data has been converted. |
| Increased performance measurement, decision-making and analysis. | Performance measurement implementation delayed. Decision-making and analysis should improve with time. |
| Increased delegation of responsibility and decision-making authority created. | Cannot assess at this time. |
| Increased cost visibility. | Yes. |
| Significant cost avoidance and increased cost efficiencies to DND. | Yes, based on 202Workshop. |
| Increased support to business planning. | Yes, further capabilities once Business Warehouse (BW) enhanced. |
| Enabled tailored system support. | No linkage to industry. |
| Remediation of non-compliant Year 2000 affected systems. | Yes. |

Quantification of benefits, originally intended to be a cornerstone in the Business and Benefits cases, and in helping make the investment decision, will not likely be attainable for many years.



ANNEX B—MASIS BACKGROUND AND AUDIT OBJECTIVES

MASIS PROJECT BACKGROUND

The stated objectives of the MASIS project are to provide DND with an integrated materiel acquisition and support information system, for the cost-effective optimization of weapon/equipment system availability throughout the materiel life cycle. The project is to deliver a suite of integrated applications that will provide timely and accurate information to enable end-to-end activities of personnel providing materiel support to operations. MASIS will support engineering and maintenance functionality that includes acquisition, support, and disposal of Materiel, and MA&S Business Management. As a single integrated system, MASIS is to link MA&S information from the front line to individual units, headquarters, other corporate systems, other government departments, and industry. MASIS is to be based on SAP R/3 software, supplemented by other COTS and should have the necessary interfaces to allow for exchange of information between other DND corporate information systems as well as industry and to provide seamless access to data in a usable format. MASIS will have approximately 19,000 users once fully implemented (procurement, repair, engineering, supply staffs), and be used by senior managers and operators to determine equipment availability status.

MASIS TB Project Approvals History to Date and Related Funding (Dept Funding \$BY, Net of GST¹⁰)

| Date | Authority | Abbreviated Description | Approval \$BY | Stated Total Project Cost (DND Funding) |
|---------------|------------------------|---|-------------------------------------|--|
| June 1998 | (SS)PPA | Expenditure Authority (EA) to define Phase 1. | \$7,135,000 | \$73,635,000 (indicative) |
| March 1999 | A/PPA | EA to procure hardware and software—SAP licences. | \$11,400,000 Maximum | Not Stated |
| December 1999 | A/PPA | EA to implement project consolidation plan. | \$3,415,000 | \$119,320,000 (indicative) |
| May 2000 | EPA | Release Phase 2 funding: CC, AA, IEI (Information Exchange Interface), BW, Navy Planning and Scoping Studies (P&S). | \$63,737,000 | \$147,895,000 (indicative) |
| December 2001 | A/EPA and TB Letter | Release Phase 3 funding: Deliver Navy, Army P&S. | \$62,208,000 (TBS approval only) | \$147,895,000 (indicative) ¹¹ |
| December 2003 | A/EPA | Release Phase 4 funding, Strategic pause, complete subsequent phases. | \$34,413,000 | <u>\$182,308,000 (substantive)</u> ¹² |

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¹⁰ All funding references in this report will be made in Dept \$BY dollars, net of GST, unless otherwise noted.

¹¹ While the December 2001 document listed the Total Project Cost at \$147.895M, supporting documentation notes that total project cost is estimated at

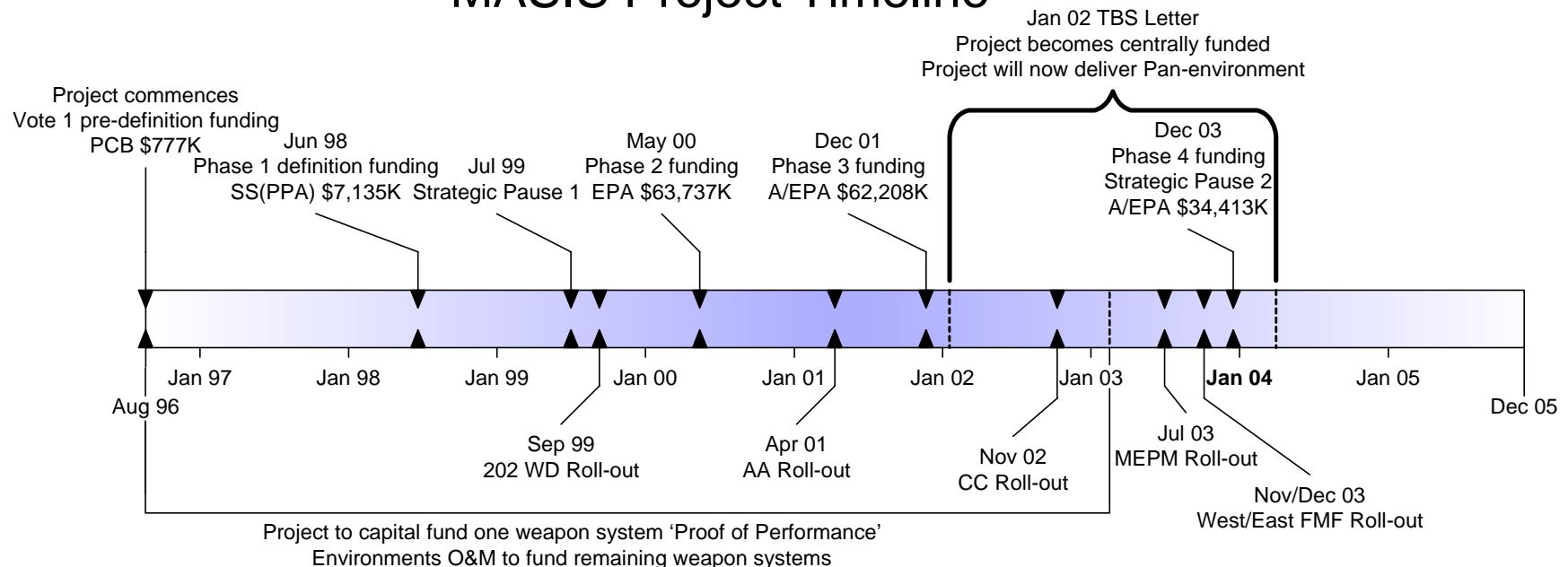
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¹² While the December 2003 approval listed the total project cost at \$182.308M, the supporting documentation noted that MASIS would likely cost
Also, the December 2003 Total Project cost (e.g., \$182.308M) represents the total approved expenditure authority to date, rather than Total Project Cost. This is not consistent with normal reporting.



Figure 1—MASIS Phases and Planned Deliverables, as at 1 May 2004

MASIS Project Timeline



Other Related Project Approvals

In addition to the above funding, the following completes the history of MASIS approvals and overall funding levels:

- Synopsis sheet (Identification) SS(ID) 1996 \$59.4M (95/96\$) indicative project cost;
- Program Control Board (PCB) 8/96 approved Preliminary Planning Approval (PPP) Vote 1 pre-definition funding \$777K;
- SRB 26 June 1997 approved Project charter;
- Procurement Review Committee ROD 22 July 1997 noted MASIS project value estimated at \$66.9M;
- IEI Project # 435 approved funding for interfaces December 2001 \$26.3M; and
- Of this amount, approximately was for services provided by the MASIS prime contractor.



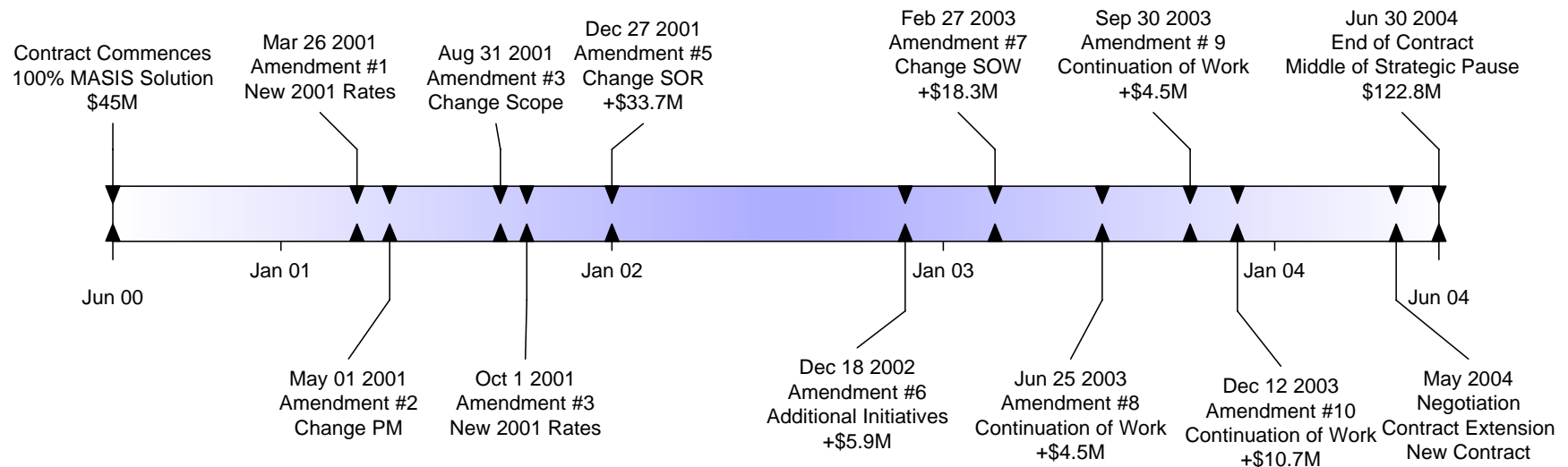
ANNEX B

MASIS Contracts History

The original prime contract for delivery of the MASIS solution was signed in June 2000 for four years at \$45.2M, and has been amended ten times. Of the amendments, six were substantive amendments related to project phasing/gates and corresponding funding. The total value of the prime contract (with amendments) at the time of the audit was \$122.8M. The main licensing vendor contract was signed in March 1999 for five years at \$8.9M and amended to cover for a total value of \$16M. The other licensing vendor contract was signed in March 1999 for six years at \$535K and amended to cover..... for a total value of \$4.2M.

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MASIS Prime Contract Milestones



ANNEX B

MASIS Project Costs

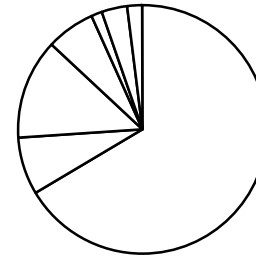
Figure 2 provides the breakdown of the MASIS project expenditures provided by the MASIS Project Management Office. The majority of the \$154.6M costs (74 percent) are attributable to the prime contractor services and hardware purchases.

Audit Objectives

The audit objectives are to:

- Assess progress to date against project cost, time and requirements objectives;
- Assess the adequacy of management controls in place to ensure project activities can be accomplished according to defined objectives;
- Assess the appropriateness of risk management systems in place to identify, assess and mitigate risks; and
- Assess the adequacy of information provided to decision-makers.

**Figure 2 – MASIS Project Expenditure
(as at 31 March 2004)
\$154.6M (not including costs to other organizations)**



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ANNEX C—AUDIT ASSESSMENT CRITERIA

Audit criteria have been derived from three sources:

- a. Control Objectives for Information and Related Technology (COBIT¹³);
- b. Project Management Book of Knowledge (PMBOK); and
- c. DND Project Approval Guide.

Management Controls

Management controls are all methods that an organization uses to govern its activities in order to accomplish its defined objective. For the purposes of the MASIS audit, the following sub-criteria were used:

- Adequate project plans are in place to guide project implementation;
- Minimum acceptable requirements to be achieved are defined and validated;
- Benefits and costs are understood and are quantified;
- Proposed solutions/options are fully described with a cost-benefit analysis;
- The accepted solution meets the minimum requirements, and exceptions noted;
- The scope of the project is understood, and all related work elements defined/budgeted as part of the project;
- Roles and responsibilities of all organizations are understood, including definition of work and funding;
- Work plans that integrates schedule, budget and work-in-progress information are in place and used to measure progress;
- There is a human resources plan that defines the impact on personnel, user organizational resources required, and plans for staff training; and
- End-users participate in planning for and acceptance of the new information system.

¹³ TM COBIT 3rd Edition Management Guidelines, July 2000. Released by COBIT Steering Committee and IT Governance Institute.



ANNEX C

Compliance with Policies and Guidelines

- Central Agency approvals;
- DND Project Approval Guide (PAG) documents;
- Financial Management System (FMS) requirements; and
- Contractual procedures.

Information Management Controls

- There are appropriate controls to ensure the validity and completeness of the testing strategy and processes; and
- There are appropriate controls to ensure the integrity of production data.

Safeguarding of Assets

- Assets are safeguarded from loss and treated in accordance with inventory policies.

Project Pays Due Regard to Effectiveness and Efficiency

- Project resources are spent with due consideration to economy;
- Quality assurance systems are in place to ensure ruggedness/robustness/accuracy of the MASIS information system;
- There is adequate monitoring of contracts to ensure contract performance in accordance with the agreed terms, schedule, cost and deliverables; and
- The project office is organized to ensure value for money.

Appropriate Project Governance

- Roles, responsibilities and accountabilities of key departmental players are understood;
- Appropriate project leadership exercised; and
- Appropriate financial and non-financial monitoring systems are in place.



ANNEX C**Appropriate Risk Management Systems**

- Risk arising from business strategies are identified and prioritized. Ongoing risk assessments are expected in the following areas:
 - Risk to project time/schedule objectives,
 - Risks to project cost (i.e., total program costs; individual to-date costs),
 - Technical risks, and
 - Human resource risks;
- Management has determined the level of acceptable risk;
- Risk mitigation strategies are designed and implemented to reduce, or otherwise manage, risk at levels that were determined to be acceptable; and
- Ongoing monitoring activities are conducted to periodically assess risk and the effectiveness of controls to manage risk.

Adequate Information Provided to Decision-Makers

- Timely reporting of the project's performance to departmental authorities;
- Accurate information;
- Compares project progress against plans, and recommends appropriate adjustments in order to meet the objectives;
- Provides decision-makers with appropriate context in order to make decisions; and
- Accurate Major Capital Projects (MCP) progress reporting to Treasury Board (TB).



ANNEX D—AUDIT METHODOLOGY USED

Interviews and Site Visits as follows:

| Senior Management | Management/Users/Site Visits | PMO/PM/PD | Other Interdependent Groups |
|-------------------|------------------------------|------------------------|-----------------------------|
| PL & PS | Esquimalt site visit | PM | FMAS Interface |
| DGMEPM & DGMPR | Halifax site visit | PD | CFSSU Interface |
| DGAEPM | 202 Workshop site visit | IBM PM & DPM | DIHRS Interface |
| CLS/DGLEPM | DFPPC | PWGSC contract manager | DMASP (complex contracting) |
| C Fin O | MEPM | DCPS Fin staff | ADM(IE) ERP group |
| COS ADM(Mat) | DSFC, DB | MMAP PM & A/PM | DGEAS |
| | | MAFT A/PM | TBS Analysts |
| | | MAPS PM | DMGIM, DNIS (HW/SW assets) |
| | | | CAC |

Reports and Research Conducted

- Review of MASIS-CFSSU interface strategy—Gartner, Inc.—March 2001;
- Internal MASIS Review (Mat) November 2001;
- EI/ERP study—Gartner, Inc.—April 2002;
- Independent review of the MASIS project—Interis Consulting – April 2003;
- Project Completion Report—IEI project—May 2003;
- The Hidden Cost of Enterprise Software—CIO—January 1998;
- HRMS Review—CRS/KPMG study—March 2003;
- CFHIS Study—CRS;
- Post Completion Report—FSSU Project;
- MASIS Risk Assessment and full project cost analysis Assistant Deputy Minister (Finance and Corporate Services) (ADM(Fin CS));



ANNEX D

- Reserve Integrated Information Project—CRS 2000;
- Various Gartner, Inc./COMPASS Management Consulting Limited reports;
- Teleconferences with Gartner, Inc.;
- CAC audit plan on prime contractor labour rates;
- Project Approval Documentation and Reports;
- MASIS Project Monthly Progress Reports; and
- Prime Contractor Benchmark on Support Costs (2002).

Audit Methodology

- Documented Interviews;
- Implemented audit plan based on aforementioned audit criteria;
- Visit/Field Trips to DND units that have implemented MASIS—202 Workshop, Navy East and West coasts;
- Sampling of financial, contracting, asset transactions and IM testing information;
- Data Extraction and Analysis;
- Research and Benchmarking; and
- Augmented by specialized IM/IT consultant.



ANNEX E—LIST OF ACRONYMS & ABBREVIATIONS

| | | | |
|--------------|--|--------|---|
| A/PM | Associate/Project Manager | DGAEPM | Director General Aerospace Equipment Program Management |
| AA | Asset Accounting | DGEAS | Director General Enterprise Application Services |
| ADC | Automated Data Capture | DGLEPM | Director General Land Equipment Program Management |
| ADM(Fin CS) | Assistant Deputy Minister (Finance and Corporate Services) | DGMEPM | Director General Maritime Equipment Program Management |
| ADM(IE) | Assistant Deputy Minister (Infrastructure and Environment) | DGMPR | Director General Maritime Personnel and Readiness |
| ADM(IM) | Assistant Deputy Minister (Information Management) | DGSP | Director General Strategic Planning |
| ADM(Mat) | Assistant Deputy Minister (Materiel) | DIHRS | Departmental Integrated Human Resource System |
| BDP | Benefits Driven Procurement | DMASP | Director Material Acquisition and Support Program |
| BR | Benefits Realization | DMGIM | Director Materiel Group Information Management |
| BW | Business Warehouse | DND | Department of National Defence |
| C Fin O | Chief of Finance | DNIS | Director National Information Systems |
| CAC | Consulting and Audit Canada | DPM | Deputy Project Manager |
| CC | Complex Contracting | DRDC | Defence Research Development Canada |
| CF | Canadian Forces | DSFC | Director Strategic Finance and Costing |
| CFSS | Canadian Forces Supply System | EA | Expenditure Authority |
| CFSSU | Canadian Forces Supply System Upgrade | ECS | Environmental Command Staff |
| CID | Capability Initiative Database | EPA | Effective Project Approval |
| CLS | Chief Land Staff | ERP | Enterprise Resource Planning |
| COBIT | Control Objectives for Information and Related Technology | FMAS | Financial Management and Accounting System |
| COS ADM(Mat) | Chief of Staff Assistant Deputy Minister (Materiel) | FMF | Fleet Maintenance Facilities |
| COTS | Commercial Off-the-Shelf | FMS | Financial Management System |
| CRS | Chief Review Services | GST | Goods and Services Tax |
| DB | Director Budget | IEI | Information Exchange Interface |
| DCPS | Director Common Procurement Supply | | |
| DFPPC | Director Force Planning and Program Coordination | | |



ANNEX E

| | | | |
|-------|---|--------|---------------------------------|
| IM | Information Management | SS(ID) | Synopsis Sheet (Identification) |
| IPT | Integrated Project Team | TB | Treasury Board |
| JCRB | Joint Capability Review Board | TBS | Treasury Board Secretariat |
| MA&S | Material Acquisition and Support | VCDS | Vice Chief Defence Staff |
| MAFT | MASIS Air Force Team | | |
| MAPS | MASIS Army Planning Staff | | |
| MASIS | Material Acquisition and Support Information System | | |
| MCP | Major Capital Projects | | |
| MEPM | Maritime Equipment Program Management | | |
| MMAP | MASIS Maritime Acceptance Project | | |
| NDHQ | National Defence Headquarters | | |
| P&S | Planning and Scoping Studies | | |
| PAG | Project Approval Guide | | |
| PCB | Program Control Board | | |
| PD | Project Director | | |
| PL | Project Leader | | |
| PM | Project Manager | | |
| PMB | Program Management Board | | |
| PMBOK | Project Management Book of Knowledge | | |
| PMO | Project Management Office | | |
| PO&M | Personnel, Operating and Maintenance | | |
| PPA | Preliminary Project Approval | | |
| PPP | Preliminary Planning Approval | | |
| PPRA | Project Profile and Risk Assessment | | |
| PS | Project Sponsor | | |
| PWGSC | Public Works and Government Services Canada | | |
| SCD | Statement of Capability Deficiency | | |
| SCIP | Strategic Capability Investment Plan | | |
| SOR | Statement of Requirements | | |
| SRB | Senior Review Board | | |

