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Evaluation of the Munitions Supply Program (MSP)

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Canada

CAVEAT

This evaluation is not intended to assess the performance of contractors; rather, it is an internal review of processes and practices within the DND/CF.

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LIST OF ACRONYMS

CAL	Canadian Arsenals Limited
COS ADM(Mat)	Chief of Staff Assistant Deputy Minister (Materiel)
COTS	Commercial off-the-shelf
D COS ADM(Mat)	Deputy Chief of Staff Assistant Deputy Minister (Materiel)
DFAIT	Department of Foreign Affairs and International Trade
DGIIP	Director General International and Industry Programs
DGLEPM	Director General Land Equipment Program Management
DGMSSC	Director General Materiel Systems and Supply Chain
DIPP	Defence Industries Productivity Program
DMC	Defence Management Committee
DMGPI	Director Materiel Group Program Integrity
DND/CF	Department of National Defence/Canadian Forces
FMS	Foreign Military Sales
GoC	Government of Canada
GOCO	Government owned, contractor operated
GOGO	Government owned, government operated
IC	Industry Canada
LAP	Load-assemble-pack
METC	Munitions Experimental Test Centre
MOTS	Military off-the-shelf
MOU	Memorandum of Understanding
MSP	Munitions Supply Program
OCS	Out-of-court settlement
PMF	Performance Measurement Framework
PWGSC	Public Works and Government Services Canada
VCDS	Vice Chief of the Defence Staff

RESULTS IN BRIEF

Introduction

This report presents the results of an evaluation of the Munitions Supply Program (MSP). The MSP was evaluated as part of a broader examination of ammunition planning and acquisition in the Department of National Defence/Canadian Forces (DND/CF). The MSP was established in 1978 to foster the development of a domestic industry for conventional ammunition in order to address, what was considered at the time, a national security requirement for increased self-sufficiency in the supply of critical high-volume usage ammunition to the DND/CF.

This evaluation addresses DND/CF senior leadership questions regarding the program's continued relevance, performance, alternatives and opportunities for improvement. ….
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……..
……..[1]

The evaluation is based primarily on observations up to late 2005.

Overall Assessment

- There is insufficient information on which to make a fact-based decision on the future of the MSP.
- While there continue to be risks that could motivate governments to maintain indigenous industrial capability, on balance, the MSP is more compatible with conditions of the 1970s and 80s than the current environment.
- While progress has been made to strengthen the domestic ammunition industry, after almost 30 years of various forms of government support, it is not apparent that strategic objectives have been achieved.
- ……
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- Program design and delivery is not adequate to ensure achievement of objectives and cost effectiveness.
- The mere existence of the MSP, in the absence of adequate management controls, may be creating a false sense of security as to the state of ammunition readiness.

Key Observations and Findings

Program Relevance. The absence of direction in the areas of defence industrial policy, defence capability plans, and strategic ammunition requirements are barriers to assessing the continuing need for an indigenous industrial capability for conventional ammunition. This aside, risks, which in the past have motivated governments to maintain an indigenous ammunition industrial capability, continue to exist today (e.g., volatility in global ammunition markets; nations blocking ammunition exports to meet their own needs or for foreign policy reasons). On the other hand, changes in the external environment make it more difficult to justify the MSP on grounds of relevance.

[1] ……

- Defence planning is no longer centred on a Cold War strategy that calls for the build-up of mass quantities of conventional ammunition and the demonstration of industrial capability to sustain ammunition supply in a war against the Warsaw Pact.
- Elements of the MSP are contrary to the principles of modern procurement policy, which advocates competition and commercial/military off-the-shelf procurement.
- An "assured source of supply" no longer necessarily means a domestic source of supply since the DND/CF is dependent in whole or in part on offshore sources for all critical defence technologies, including virtually all sea and air ammunition.
- Current defence priorities place increased emphasis on reduced cycle time, best product, least cost, and interoperability rather than self-sufficiency.
- Globalization of industry supply chains and significant increases in the cost and complexity of defence technology development make it increasingly difficult to achieve self-sufficiency.
- Perhaps most telling in terms of the reduced strategic importance of the MSP is that the Crown has not pursued discussion with industry on matters of ammunition self-sufficiency and industrial readiness since the late 1980s.

Achievement of Results. Progress has been made toward intermediate program objectives aimed at strengthening the domestic ammunition industry (e.g., infrastructure modernization; development of export markets; technology development). Less clear is the extent to which progress on these fronts has translated into achievement of strategic objectives of increased self-sufficiency, assured supply, and industrial viability and competitiveness. The mere existence of domestic industrial infrastructure and government funding of this capability is not sufficient to ensure that strategic objectives of self-sufficiency and assured supply are being met.

- MSP suppliers' dependency on offshore sources for critical ammunition technology and components continues to go unchecked, leaving the DND/CF open to similar risks as if it were dependent on offshore sources for ammunition.
- MSP supplier ability to meet DND/CF requirements under potential contingency scenarios has not been explored and thus is unknown.
- The DND/CF continues to bear the full cost of maintaining a domestic ammunition capability as though it was the sole customer and development of export markets has not provided the DND/CF with the cost-savings benefits anticipated at the time of MSP introduction.
- ……
  …….

Value for Money. Deficiencies in MSP contract vehicles and a lack of competitive information prevent proper assessment of the reasonableness of MSP costs, though indirect indicators suggest that prices are too high. If further investigation determines that MSP costs are higher than competitive alternatives while not providing a material advantage in terms of security of supply, then the MSP provides questionable value for money (at least under the current program

construct). In addition, the current high fixed overhead cost of maintaining a domestic ammunition capability relative to current levels of DND/CF ammunition demand has likely reduced MSP cost effectiveness relative to alternative supply options.

Alternatives. Historically, Canada and its allies have maintained some degree of domestic production capability for conventional ammunition since this was assumed to provide the greatest security of supply. Over the past decade, allies have to varying degrees looked to competition to improve value for money. Allies vary in terms of the nature and extent of defence goods and services perceived to require an indigenous industrial capability—as would be expected in view of differences in allied geopolitical positions, economies, and defence policies. …… …… ……. Alternatives for Canada include the status quo monopoly supply arrangement, a combination of competitive and preferred sourcing, and migration to full and open competition.

Program Design and Delivery. The MSP management framework is not adequate to ensure achievement of program objectives. Management controls are insufficient in view of the Crown's vested interests in the domestic ammunition industry and the absence of purchasing controls achieved through open competition. Program management is characterized by informality (e.g., key decisions between the Crown and MSP suppliers are not always documented and justified; performance expectations for industrial readiness are not defined). Requirements have not been developed to justify the type and amount of industrial capacity and services supported by the DND/CF. If the MSP is to continue in any form, improvements are required to all elements of the MSP management framework, including policy, strategic direction, contract vehicles, performance monitoring and reporting, and management of strategic supplier relationships.

While Public Works and Government Services Canada (PWGSC) has administrative authority for the MSP, the DND/CF pays for the program and is dependent on MSP suppliers for critical defence goods and services. The DND/CF needs to be proactive in ensuring that program issues are addressed since defence resources and outcomes are at risk.

Recommendations

…… …… there is a need to get back to basics and develop the information needed to support a fact-based decision on the future of the MSP. This would include determination of the DND/CF strategic requirements for conventional ammunition and investigation of the options available to best serve this need. Such an assessment should address the strategic significance of maintaining a domestic industrial base for conventional ammunition. In addition, there is a need to assess whether industry has reached a level of maturity whereby Crown interests can be met through conventional procurement practices and business arrangements.

If it is determined that a policy that calls for increased sovereignty in the supply of critical ammunition to the DND/CF remains relevant and that the maintenance of a domestic industry remains the preferred option for satisfying any part of this requirement, then improvements are required to all facets of MSP design and delivery.

Note: For a more detailed list of CRS recommendations and management responses please refer to Annex A—Management Action Plan.

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INTRODUCTION

Background

- This report presents the results of an evaluation of the MSP.
- The MSP was evaluated as part of a broader examination of ammunition procurement.[2]
- The MSP was introduced in 1978 to strengthen the domestic ammunition industry in order to increase self-sufficiency in the supply of critical, high-volume-usage ammunition to the DND/CF.
- ……..

Study Purpose and Scope

- This evaluation addresses questions raised by DND/CF senior leadership regarding the design and implementation of the MSP and whether program results have been achieved.
  - Is the MSP relevant in the current environment?
  - Is the MSP meeting its strategic objectives?
  - Does the MSP provide value for money?
  - What are the alternatives to the MSP?
  - Are there opportunities for program improvement?
  - Should the MSP continue in the future?
- A detailed assessment of contracting and financial management practices, including compliance with the *Financial Administration Act* (as would be performed with an audit), has not been undertaken as part of this evaluation.
- The acquisition of small arms under the MSP was not evaluated as part of this study.

Methodology and Limitations

- Quantitative and qualitative information was obtained from a number of sources:
  - Directed interviews (DND/CF, other government departments, industry, allies);
  - Documents and records;
  - Internal and external publications; and
  - DND/CF corporate accounting and financial systems.
- Deficiencies in program information limited the conduct of the evaluation, and thus less reliable information sources (e.g., anecdotal perspectives of interviewees, reports and presentations prepared by non-independent sources) were used.
- The evaluation is based on observations up to 2005.

[2] See CRS report, *Evaluation of the DND/CF Ammunition Acquisition Program*, 2007.

PROGRAM PROFILE

Background

- Prior to the late 1970s, the Crown was pursuing a policy to procure conventional ammunition at the lowest cost.
- A considerable portion of conventional ammunition was procured offshore.
- Requirements and funding fluctuated from year to year.
- The Canadian ammunition industry, which at the time comprised both publicly and privately owned facilities, was in a poor state.
  - Facilities were of World War II vintage and had deteriorated to the point where major rebuilds were necessary due to a lack of investment and upgrading.
  - Offshore sales and product development were lacking.
  - There was a shortage of trained production workers.
- The composition of MSP suppliers has changed over the years with industry restructuring. (Annex B provides an overview of current MSP suppliers and Annex C provides a chronology of key MSP events.)
- MSP sales have averaged approximately 75 percent of the DND/CF's recurring ammunition expenditures over the five-year period 2000 to 2005,[3] with almost all expenditures going to the primary MSP manufacturer and its subsidiary explosives and propellants producer.[4]
- The MSP primarily supports CF land and common user ammunition requirements.

Program Rationale and Expected Results

- In 1978, Cabinet approved the establishment of the MSP to address, what was considered at the time, a national security requirement for increased domestic self-sufficiency in the supply of critical high-volume-usage ammunition to the DND/CF.
- The Crown determined that a viable domestic ammunition industry was the best means to ensure an uninterrupted supply to the DND/CF in times of peace and war.
- At the same time, the government was not prepared to approve the MSP at any cost—there was an expectation of cost effectiveness whereby the MSP would provide an acceptable balance between the higher cost of procurement in Canada and the benefits received from increased security of supply and industrial development.
- There was also the expectation of the eventuality of a viable and competitive industry that would provide long-term benefits to government in the form of competitive prices and industrial development.

[3] Non-recurring procurement (e.g., capital and opstock acquisitions) are also directed to MSP suppliers.
[4] Subsequent to the completion of this evaluation the primary MSP supplier and its subsidiary were sold to the General Dynamics Corporation.

Program Logic and Activities

- Program logic was based on an economic development model whereby with support from government in the initial stages of the program, the Canadian ammunition industry would become viable and provide long-term benefits to government (a program logic model is provided in Annex D).
- A number of Crown interventions were proposed to strengthen the domestic ammunition industry.
  - **Privatization.** Crown-owned ammunition production operations would be sold to privately held companies.
  - **Preferred Supplier Status.** Specific Canadian suppliers would be designated as "preferred sources" for specific products and for specific periods of time.[5]
  - **Stabilize Production.** To assist industry in stabilizing production, the DND/CF would provide industry with a rolling five-year procurement plan with the first two years firm and the remaining three years for planning purposes.
  - **Plant Modernization.** Loans would be provided to assist in plant upgrading and modernization.
  - **Technology Transfer.** Crown technology and R&D activities would be transferred to industry.
  - **Export Development.** Support would be provided to assist industry in expanding product lines and export markets.
- It was assumed that the DND/CF could not afford to carry the full cost of a domestic industry and that development of export markets was needed to improve economies of scale and to allow other customers to bear a share of industry overhead costs.

Program Organization and Governance

- PWGSC has administrative authority for the MSP under the *Defence Production Act*, in addition to serving in its traditional role as the Crown's contracting authority for the acquisition of goods and services.
- The DND/CF is responsible for funding the MSP, defining requirements, and serving as technical authority for the program.
- Industry Canada (IC) and the Department of Foreign Affairs and International Trade (DFAIT) have roles in the areas of trade and export development.
- Within the DND/CF, MSP responsibilities reside primarily in the Materiel Group.

[5] Production guarantees to MSP suppliers were not identified as an element of the MSP. Also the Crown maintained the option to compete ammunition contracts if MSP contractors were not competitive with offshore sources. ……

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DETAILED FINDINGS & CONCLUSIONS

A. PROGRAM RELEVANCE

Conclusion. *While there continue to be risks that could motivate governments to maintain indigenous industrial capability, on balance, the MSP is more compatible with the policies and conditions of the 1970s and 80s than the current environment. Changes in the operating environment since the MSP was introduced also raise questions as to whether some program objectives continue to be desirable or achievable.*

Indicators of Program Relevance

Relevance addresses whether a program continues to make sense in its current environment.

- Does the program continue to address an actual need or problem?
- Is the program consistent with government policies, priorities, and roles?
- Have changes in the operating environment impacted the program's ability to meet its objectives?
- Is the source of program authority adequate to justify the program's existence?

Needs Assessment

The absence of a Canadian defence industrial policy and a strategic defence capability plan are limitations in assessing the continued relevance of a government policy intended to increase sovereignty and self-sufficiency in the supply of conventional ammunition to the DND/CF.

- Ideally an assessment of MSP relevance would start with an understanding of the DND/CF's future capability and equipment requirements and, as an extension of this, its longer-term ammunition requirements.
- A strategic defence capability plan identifying the DND/CF's longer-term technology platform requirements and direction was not available at the time of study conduct.
- Nor has Canada developed a defence industrial policy to guide decisions on the role of industry in meeting defence capability requirements or which capabilities, if any, should be maintained domestically to protect national interests.
- In addition to the absence of broader policy direction, requirements for industrial capacity have not been addressed as part of the ammunition planning and acquisition process.

Notwithstanding the absence of a defence capability plan and a defence industrial policy, risk factors, which in the past have motivated governments to maintain indigenous ammunition industrial capability, continue to exist today.

- While ammunition may be readily available at reasonable prices on global markets during times of relative global stability, there is a risk that ammunition may become unaffordable or unavailable in the event of crisis.
- There are instances where nations have blocked the export of ammunition in order to satisfy their own needs or for foreign policy reasons, e.g.,
  - Belgium blocked the export of ammunition to the UK in opposition to UK involvement in the Gulf War.
  - Switzerland blocked the export of grenade launcher ammunition to the UK for foreign policy reasons.

Interruption in the supply of goods across national borders is a risk to be managed by defence organizations.

- Global ammunition market conditions can be volatile, e.g.,
  - From the late 1980s until recent years, global markets for conventional ammunition were characterized by multiple suppliers, over-capacity, and low prices until US demand for conventional ammunition resulting from a protracted ground war in Iraq tightened global supply for some ammunition types.
  - Industry rationalization and consolidation will likely continue to impact global capacity and competitiveness (e.g., General Dynamics purchase of SNC Technology).
- Compared to other defence consumables, ammunition may be more vulnerable to interruptions in global supply due to the sheer volume and frequency of procurement and due to the political sensitivity of the commodity.
- Indigenous industrial capability may provide nations with greater control and influence over ammunition design and development (e.g., to meet domestic standards for safety, suitability, and environmental impacts).

Consistency with Government Policy and the Current Environment

There is little foundation for the MSP in current government policy.

- The maintenance of domestic industrial capability has no foundation in post-Cold War defence policy and strategy (e.g., 1994 Defence Policy White Paper, Defence Strategy 20/20, and 2005 Defence Policy Statement are silent on the role of industry in the achievement of defence outcomes).
- Conventional ammunition and small arms, which are the focus of the MSP, are the only items amongst all other defence goods and services where policy calls for the maintenance of a domestic industrial capability for reasons of national security.[6]
- The MSP is contrary to the major thrusts of Government of Canada (GoC) procurement policy (see Table 1).

[6] Ship maintenance is also an exception but is provided special treatment on grounds of industrial regional benefits.

Table 1. Comparison of GoC Procurement Policy and MSP Practices	
Current Procurement Policy	**MSP**
• Full, open, and transparent competition is the best means to assure best price and best product.	• The MSP has been administered in a manner that has created sole-source supply arrangements and a virtual monopoly for the Canadian ammunition industry.
• Commercial/military off-the-shelf (COTS/MOTS) reduces costs, risks, and cycle time, and facilitates interoperability with allies.	• Additional development time and cost is incurred to "Canadianize" ammunition technology owned by offshore contractors and to develop unique Canadian ammunition technology.
• Government should get out of the subsidy business.	• …… …… ……

The MSP is more compatible with the operating environment of the 1970s and 80s than the current environment.

- Changes in the global security environment and defence industry structure, combined with significant reductions in DND/CF demand for ammunition since the end of the Cold War, are amongst factors that make it more difficult to justify the MSP (see Table 2).

Table 2. Comparison of 1970/80s and Current Planning Environments		
	1970/80s	**Current Environment**
Defence Strategy	• Cold War strategy called for the build-up of massive quantities of conventional ammunition, backed by industrial mobilization capability that could sustain allied forces against the Warsaw Pact. • Coercive force measured in terms of mass and volume of firepower and the industrial capacity to sustain firepower.	• Defence strategy geared to asymmetric threats. • Desire for increased precision in weapons.
Demand for Ammunition	• Significant DND/CF demand for conventional ammunition (over BY[7] $300M in mid-1980s), particularly for large calibre tank and artillery ammunition, provided conditions more conducive to supporting a domestic industrial base.	• Recurring DND/CF ammunition demand is a fraction of Cold War levels (BY$185M in 2005), in turn, impacting the economics of maintaining a domestic industrial base.

[7] Costs in budget year dollars (BY$) reflect the purchasing power of the dollar in the year the cost is incurred.

Table 2. Comparison of 1970/80s and Current Planning Environments (cont'd)		
	1970/80s	**Current Environment**
Planning Environment	• Cold War conditions provided the stable and predicable planning environment required by Canadian ammunition suppliers to manage their production lines under the MSP business model. • Defence planning scenarios assumed a long strategic warning period that would provide time to ramp-up defence industrial production capacity.	• An unpredictable security environment and CF engagement in combat roles increases uncertainty and volatility in ammunition demand. • Defence planning scenarios assume a reduced warning period, providing less time to ramp up defence industrial production capacity.
Defence & Other National Priorities	• Nationalism and protectionism characteristic of Canadian economic and industrial policies (e.g., trade, foreign ownership). • Socio-economic concerns of high unemployment and regional disparities were priorities to be addressed in government programming.	• Open trade and globalization of commerce characterize economic policy. • Pre-eminence of operational requirements (rather than socio-economic matters) in procurement policy.
Canadian Defence Industry	• Some degree of domestic self-sufficiency in defence technologies. • Public and private Canadian ownership of defence contractors as well as offshore sourcing. • Programs to support Canadian defence industrial base (e.g., Defence Industries Productivity Program (DIPP)).	• The DND/CF is dependent in whole or in part on offshore sources for all major defence technologies, including virtually all air and sea ammunition. • Privatization of government-owned defence industries. • Changes in global defence markets and industry structure (e.g., industry consolidation, multinational ownership, and globalization of contractor supply chains) reduce the degree of self-sufficiency that a relatively small defence market such as Canada can practicably achieve.
Product Development	• MSP vision included development of unique Canadian ammunition technology that could be exported globally and contribute to the financial viability of the domestic ammunition industry.	• The spiralling cost of defence technology development is becoming prohibitive even for nations with significantly larger defence budgets and industries than Canada. • DND/CF is buying off-the-shelf weapons systems from offshore suppliers that come with proven ammunition technology that is an extension of these systems. • Interoperability with allies is a corporate priority for the DND/CF.

Canada's relatively small defence procurement requirements do not afford it the option to maintain a high level of self-sufficiency in its defence industrial base.

- The DND/CF, as a relatively small player with limited purchasing power, looks to offshore markets to achieve economies of scale in defence procurement.

- Even MSP producers of conventional ammunition are highly dependent on offshore technology and components.[8]
- The spiralling cost of defence technology development also raises questions as to the cost effectiveness of public funding to support development of unique Canadian ammunition technology.
- Similarly, in an environment where the DND/CF is buying off-the-shelf weapons systems from offshore suppliers that come with proven ammunition technology, there is a need to reassess the practice of the Crown incurring additional resources, risks, and cycle time to facilitate production of that ammunition in Canada by MSP suppliers.

Perhaps most telling in terms of reduced strategic relevance of the MSP has been the Crown's inattention to matters of security of supply and industrial readiness over the past two decades.

- Not since the Cold War has the GoC examined its defence industrial capability requirements for conventional ammunition.
- Program and industry staffs indicated that matters of security of supply and industrial preparedness have not been a topic of discussion between MSP suppliers and the GoC since the 1980s.
- Consistent with this finding, mechanisms are not in place to facilitate the management of industrial readiness and security of supply considerations (e.g., performance objectives, oversight mechanisms, contract provisions, contingency plans, risk management).

Source of Program Authority

A 1978 Cabinet decision ……

- The MSP for ammunition was approved with a 1978 Cabinet decision.
- ……[9]

[8] The Crown is not currently monitoring the extent to which this is occurring.

[9] ……

B. PROGRAM PERFORMANCE (ACHIEVEMENT OF RESULTS)

Conclusion. *Progress has been made toward intermediate objectives set out at the time of MSP introduction (e.g., industry infrastructure modernization, development of export markets, technology development). However, after almost 30 years of various forms of government support, it is not apparent that strategic objectives have been achieved in terms of increased self-sufficiency, assured supply, and industry viability and competitiveness.*

Barriers to Assessing MSP Performance

Deficiencies in program information presented barriers in assessing MSP performance.

- Guidance documentation has not been developed to amplify or update the MSP, causing lack of clarity and consensus among stakeholders as to program purpose, objectives, and assumptions.
- Clear measures and indicators of program performance have not been developed to serve as a basis for evaluation or for ongoing performance monitoring.
- Management information needed to assess program performance is not being maintained (e.g., historic baseline supplier cost information, competition price benchmarking data).
- ……
- Broad objectives implicit in original program documents were used as a basis for assessing program performance in the absence of more current and detailed program information.

Program Performance to Date

Progress has been made toward intermediate outcomes aimed to strengthen the domestic ammunition industry.

- Efforts have been made to expand MSP industry export sales, modernize infrastructure, and streamline operations (see Table 3).

Table 3. MSP Intermediate Outcomes and Performance	
Program Objective	**Performance**
Increase exports/ reduce costs to DND/CF	• Program logic assumed that DND/CF demand alone was insufficient to support a domestic ammunition industry and that export markets were needed to make the program affordable (i.e., economies of scale, non-DND/CF customers share the burden of industry overhead costs). • …… • Program information is insufficient to determine whether expanded exported sales have had the intended result of reducing the cost burden to the DND/CF of maintaining a domestic ammunition industry (e.g., historical baseline cost data has not been maintained to compare industry costs with and without export markets). • …… • …… • Primary supplier officials also indicated that there was a shortfall between the cost to support an export market and the price that export markets would bear.
Develop new ammunition products and technology	• Industry has developed intellectual property for select products and production process (e.g., CRV-7, Simunition™). • Industry is reinvesting in product development and attracting development funding from non-DND/CF sources. • The primary ammunition producer remains primarily a load-assemble-pack (LAP) operation dependent on technology and components of offshore contractors, and producing ammunition under licence by offshore contractors.
Modernize selected facilities of domestic ammunition industry	• Degradation of infrastructure was amongst major obstacles faced by the financially troubled Canadian ammunition industry in the 1970s. • Assembly operations for the primary ammunition supplier were upgraded and rationalized both before and after being privatized in the mid-1980s. • …… • …… • The federal explosives regulator is satisfied that progress is being made to address health and safety concerns.
Improve productivity/ reduce costs	• Production operations for the primary supplier were streamlined in early 1990s (e.g., reduced plants from three to two). • Flexible manufacturing processes were developed to allow industry to change lines and be efficient for smaller production runs. • Procurement contracts were consolidated to improve economies in supplier acquisition of raw materials. • Program staffs were unable to produce documentation to demonstrate whether supplier productivity improvements have translated into cost savings to the Crown.

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Less apparent is the extent to which MSP strategic outcomes have been achieved.

- In terms of objectives of increased self-sufficiency and assured supply, MSP supplier dependency on offshore sources for critical technology and components is going unchecked, leaving the DND/CF open to similar risks as though it were dependent on offshore sources for the completed ammunition.
- Nor are measures in place to assess other dimensions of industrial readiness, including the ability of industry to respond to DND/CF needs under various contingency scenarios.
- Implicit in the MSP policy decision was the expectation that the domestic ammunition industry would reach a level of maturity where it was financially viable and competitive.
- ……
  ……
- MSP strategic objectives and observed performance are provided in Table 4.

Table 4. MSP Strategic Outcomes and Performance

Program Objective	Performance
Increase domestic self-sufficiency and assured supply	• Since the inception of the program, the DND/CF has looked to MSP contractors to meet its requirements for conventional ammunition. • For the most part, MSP performance has been observed over an extended period of relative peace and stability and without CF engagement in combat roles. • There have been instances where the DND/CF's ability to acquire necessary ammunition has been put at risk; however, this has been attributable to deficiencies in program delivery rather than risks in the security environment …… …… ……[10] • The key test of MSP performance, however, is its ability to respond to DND/CF ammunition requirements in the event of crisis. [11] • The primary MSP supplier is essentially a LAP operation dependent on offshore technology (intellectual property), components, and raw materials. • Dependency on offshore technology and components carries similar risks as offshore dependency on finished ammunition products (e.g., materials may not be available in the event of heightened global demand, production licences could be revoked or components withheld for foreign policy reasons). • Observations made by program staff indicate that history has shown that even limited regional crises (e.g., Falkland Islands, Gulf War I) have caused difficulties for suppliers in obtaining necessary ammunition raw materials from offshore. • Concerns with regard to MSP offshore dependencies have been a recurring theme in previous internal and external program reviews (e.g., 1988 OAG report).

[10] MSP contractor performance in meeting delivery date commitments or quality assurance standards was not assessed as part of this study.

[11] Crown support of the domestic ammunition industry under the MSP for the past 30 years can be likened to the maintenance of an insurance policy to protect DND/CF ammunition interests in the event of crisis. The program assumes that if industrial capability is not in place during peacetime, it cannot be ramped up just for wartime.

Table 4. MSP Strategic Outcomes and Performance (cont'd)	
Program Objective	**Performance**
Increase domestic self-sufficiency and assured supply (cont'd)	• Action has yet to be taken to provide necessary assurances that the MSP can deliver required ammunition in times of need, e.g., - Requirements, performance expectations, and contingency scenarios have not been defined; - Oversight mechanisms have not been developed and implemented; and - Defence risks are not being identified and addressed in contractor supply chains. • Program staffs did not know the current level of MSP supplier offshore dependencies, though some were of the opinion that such dependencies have likely increased due to supplier efforts to contain costs. • MSP supplier ability to respond to DND/CF needs beyond the components and raw materials on hand for the upcoming production year is unknown. • Program staff and industry representatives stated that matters of industrial readiness had not been a topic of discussion since the mid-1980s. • Years of safety, environmental, and financial concerns for the MSP ammunition propellant supplier represent other risks not proactively addressed by the Crown. • Conversely, the long-term relationship with MSP suppliers has, on occasion, compensated for deficiencies in DND/CF ammunition planning and acquisition processes (e.g., for the 2002 production year, the DND/CF did not develop requirements and procurement plans, leaving the primary ammunition supplier to anticipate DND/CF requirements).
Provide competitive prices to government	• There is a lack of objective program information on which to base an assessment of MSP price performance. • …….. (see CRS *Evaluation of the DND/CF Ammunition Acquisition Program, 2007*).
Develop an economically viable industry	• …… - …… - …… - …… - …… - …… - …… - ……
Other Outcomes	**Performance**
Reduce cycle time	• In theory, a domestic source of ammunition supply would provide reduced cycle times to respond to the needs of the home nation. • Program staffs were of the opinion that efforts to "Canadianize" offshore ammunition technologies to facilitate production in Canada added considerably to acquisition cycle time and cost (e.g., 25mm, extended range ammunition). • The cycle time to procure in-service conventional ammunition on a recurring basis from offshore suppliers is unknown and thus it is not known if the MSP provides an advantage for existing ammunition technology. • It was the opinion of procurement staff that US sources have gone to great lengths to assist the GoC obtain items required on an urgent basis for coalition operations.

Table 4. MSP Strategic Outcomes and Performance (cont'd)	
Program Objective	**Performance**
Generate socio-economic benefits	• The domestic ammunition industry has produced exports and created jobs, largely in the province of Quebec. • There are significant environmental cost liabilities associated with the domestic ammunition industry.

Prospects for Future Performance

It is unlikely that program performance will improve if the MSP continues on its current path.

- ……
- DND/CF continues to bear much of the business risk of sustaining a domestic ammunition industry, ……
- A history of financial bailouts combined with what appears to be an ongoing level of government support, raises question as to the achievability of a viable domestic ammunition industrial base.
- The Crown has not taken action to ensure that this pattern will not continue in the future so that ammunition budgets will remain within some acceptable budgetary capacity.
- Crown actions suggest that it is willing to assume unlimited financial risk for the preservation of the domestic ammunition industry and it is doing this with limited means for monitoring and influencing behaviour and outcomes.

C. VALUE FOR MONEY

Conclusion. *Program information is insufficient to demonstrate MSP value for money.*

Value for Money Defined

Value for money implies both relevance and achievement of results at a reasonable cost.

- An assessment of value for money requires a clear sense of what is expected from a program (program rationale) and its costs and benefits, whereas there are information gaps in these areas for the MSP.
- If it is determined that the MSP is at a price premium relative to other supply alternatives, while not providing a strategic advantage in terms of improved security of supply, then the program provides questionable value for money.
- Reductions in DND/CF ammunition demand since the Cold War may have reduced the cost effectiveness of the MSP relative to other alternatives due to the high fixed cost of sustaining a domestic industry.

Value Perception

The perceived value of program outcomes, or willingness to pay, will vary from individual to individual, organization to organization, or nation to nation, depending on needs, priorities, and circumstances.

- Value for money is a function of the perceived benefits of a program or activity as compared to the costs incurred to achieve those benefits.
- Relating the concept of value perception to ammunition supply, how much a nation is prepared to pay to avoid the risk of interruption in supply would be influenced by factors such as the nation's defence policy, geopolitical position, and economy.
- For example, the US, as the dominant player in the global security environment, is willing and able to spend more than smaller nations to secure the supply of critical defence goods and services.
- The UK and Australia provide examples of contrasting perceptions as to the value of maintaining a domestic ammunition propellant industrial.
- The UK did not consider the bailout of their ammunition propellant industry to be good value for money in view of a defence policy that calls for maximizing value for dollar.
- In contrast, Australia spent significant amounts to support their domestic ammunition propellant industry, consistent with their defence policy of self-reliance.

D. ALTERNATIVES (PROGRAM COST EFFECTIVENESS)

Conclusion. *…… provides an opportunity to explore alternative supply arrangements for conventional ammunition that may provide a better balance between costs and risks.*

Security of Supply vs. Cost

Alternative ammunition acquisition strategies can be differentiated by a trade-off between cost and security of supply.

- It is incumbent upon a defence organization to develop an ammunition acquisition strategy that fulfils the ammunition requirements of its forces in times of peace and war.
- Security of supply is a key consideration in the development of acquisition strategies for critical defence goods and services such as ammunition.
- Like other procurement attributes, security of supply is a trade-off between cost and quantity—generally, the higher the security of supply, the higher the cost (see Figure 1).
- Degrees of security of supply roughly correspond to degrees of government control or intervention (e.g., full and open competition involves minimum government intervention).

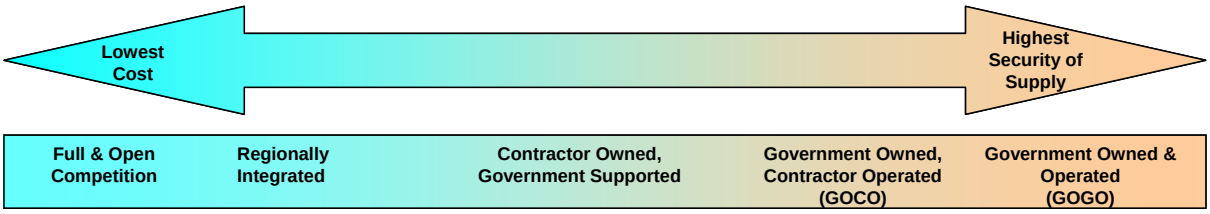


Figure 1. Alternative Ammunition Acquisition Strategies. *An acquisition strategy positioned at the left end of the spectrum would be prepared to accept more risk in terms of security of supply in order to realize cost savings and maximize the use of defence dollars. A strategy at the right end of the spectrum calls for the highest degree of confidence in terms of security of supply and comes at the greatest cost.*

Alternative Sources of Supply & Risk Management Tactics

Various combinations of supply sources and risk mitigation tactics can be employed to realize the desired balance between cost and security of supply.

- Examples of sources of supply and risk management tactics are provided in Table 5.

Table 5. Examples of Supply Alternatives & Risk Mitigation Approaches	
Supply Sources	**Strategies & Tactics**
Procurement	• Where sourced (e.g., domestic vs. offshore suppliers). • How sourced (e.g., competition vs. sole-sourced, direct commercial buys vs. Foreign Military Sales (FMS)). • Government influence over suppliers (e.g., ownership, subsidies, contracts, legislation, regulation). • Relationship with exporting nations (e.g., informal, Memoranda of Understanding (MOU), treaties, mutual dependency/cooperative arrangements).
Stockpiling	• Level of holdings (e.g., opstocks, safety stocks for training).
Maintenance of domestic industrial capability	• Amount and type of capacity maintained (e.g., capacity to meet peacetime requirements, standby/surge capacity to meet unforeseen mobilization requirements).

Observations from Allied Nations

Each nation's unique circumstances will determine where it chooses to fall on the security of supply spectrum and the tactics it employs to balance costs and risks.

- A nation's defence policy, geopolitical position, economy, and priorities are amongst factors that will impact its ammunition supply strategy and choice of risk management tactics.

While nations have historically looked to domestic sources of supply as a means to protect sovereignty interests in the supply of critical defence goods and services such as ammunition, the desire for improved cost effectiveness has led most nations to increase competition.

- At the peak of the Cold War, major allies were pursuing a policy of high security of supply for conventional ammunition and seeking varying degrees of self-sufficiency, with public ownership of ammunition production operations the norm.
- Global developments in the 1980s and 1990s (e.g., easing of global tension, declining defence budgets, increased cost and complexity of technology, industry rationalization) created pressure to seek more cost-effective ammunition acquisition strategies.
- Consistent with modern procurement reform, most allies privatized their state-owned ammunition operations and to varying degrees have taken steps to increase competition.
- While there is an absence of independent empirical research to support observations, procurement and industry staffs were of the opinion that while nations have taken steps to increase competition, most nations continue to support indigenous producers of conventional ammunition in one form or another.
- Insofar as "smart" ammunition is concerned, there is likely only room amongst allied nations for very few suppliers—thus the maintenance of a domestic industry for smart ammunition is an option for few nations.

The US stands alone amongst allied nations in terms of the range of defence industrial capabilities that it can sustain domestically.

- Its geopolitical position, national wealth, and huge share of world demand for defence goods and services call for the highest levels of self-sufficiency and security of supply.
- The US relies on a range of supply alternatives for conventional ammunition, i.e.,
  - Numerous domestic private contractors;
  - Government owned, government operated (GOGO) installations;
  - Government owned, contractor operated (GOCO) installations; and
  - Offshore sourcing.
- Numerous US-based ammunition suppliers allows the US to realize the combined benefits of competition and domestic sourcing—whereas other nations may be able to support no more than one supplier of conventional ammunition.
- In recent years the US Army has commissioned studies to examine the cost effectiveness of continued government ownership of conventional ammunition production operations.

Other nations need to be more selective, finding the balance between domestic and offshore sources that allows them to minimize risks for their most vital defence capabilities while maximizing the use of their defence dollars.

- UK defence industrial policy emphasises fair and open global competition not only to maximize value for money but also to encourage open global markets that allow UK defence industries to compete abroad.
- The UK 2005 Defence Industrial Strategy White Paper identifies a limited number of strategic capabilities for which a domestic capability is needed—which includes select capabilities in the areas of general ammunition design and production, but not bulk explosives (i.e., UK is willing to accept the risk of acquiring propellant offshore rather than subsidize their domestic industry). [12]
- Consistent with its defence policy of self-reliance, Australia has an explicit policy to strengthen and maintain a defence industrial base, including an industrial capability for the production of conventional ammunition and propellant.
- The Australian government has invested significant amounts in its defence industrial base, including support for its domestic ammunition propellant manufacturer.

[12] For example, the UK has not identified a requirement to maintain domestic capability for general explosives (e.g., propellants) and possibly small arms ammunition. After considering competitive alternatives, the UK considers that increased risk arising from offshore dependencies can be mitigated through increased attention to stockpiles and improved supply chain management. The UK defence industrial policy position for general ammunition is documented at pages 95-99 of its Defence Industrial Strategy, Defence White Paper, December 2005 and other publicly available documents.

- European nations are working collaboratively to explore opportunities to rationalize their defence industrial base in a manner that provides the benefits of indigenous supply while improving economies of scale on a pan-European basis.

Alternatives for Canada

Alternatives to the status quo may provide opportunities for the DND/CF to improve both cost performance and security of supply.

- Table 6 below provides examples of generic alternatives along the cost and security of supply spectrum.

Table 6. Generic Alternatives for Acquiring Conventional Ammunition

Alternative	Description	Comment
Full and open competition (maximize value for money)	• Contracts competed and awarded based on best price/value. • Domestic industry viability left to market forces. • DND/CF security of supply interests protected through conventional contracting arrangement. • Opstock and inventory holdings adjusted to reflect changes in supply risk.	• Potential need for government policy review and approval. • Industry may be sufficiently mature to meet DND/CF needs without special government policy intervention. • Socio-economic impacts and environmental cost liabilities if primary MSP supplier ceases to be a going concern.
Combination of domestic industrial capability and competitive sourcing (improve value for money)	• Sourcing is competed to the extent possible, while maintaining the minimum domestic industrial capacity needed to satisfy critical requirements (to the extent this is cost-effective). • No frills approach. • Focus on critical high-volume ammunition and items where Canadianization is cost-effective. • Any Crown requirement for industrial capacity beyond that needed to support current DND/CF ammunition needs is justified separately.	• Congruent with existing MSP policy. • Even limited competition may create incentive for domestic industry to improve competitiveness. • Opportunity for the Crown to diversify sources of supply and develop relationships with alternative suppliers.
Status quo	• Ammunition is sole-sourced from primary domestic ammunition supplier. • Canada is a closed market for conventional ammunition. • Continued government interventions to support and protect industry.	• ……
Increase government intervention (increase security of supply)	• Increase government control over domestic industry outcomes (e.g., contracts, regulations, ownership).	• Current program management controls are insufficient to protect Crown interests in terms of security of supply.

E. PROGRAM IMPROVEMENT

Conclusion. *The MSP management framework does not provide reasonable assurance that program objectives will be achieved or be achieved cost effectively. The informality of MSP management practices is not commensurate with the considerable risk exposure of the Crown. If the MSP is to continue in any form, improvements are required to all elements of the MSP management framework, including policy, governance, contract vehicles, and performance measurement.*

Management Control Environment

The MSP presents additional risks, as compared to other procurement arrangements, due to the absence of competition and the vested interests of the Crown.

- Sole sourcing by the DND/CF has created a virtual monopoly for MSP suppliers and, as such, ammunition procurement does not benefit from conventional purchasing controls achieved through a competitive bidding process.
- There is a long history of dependency by primary ammunition suppliers on the Crown.
- Legacy environmental issues present significant cost liability risks if the primary MSP ammunition supplier or its subsidiary propellant manufacturer ceases to be a going concern.
- MSP policy identifies conventional ammunition as critical to national security interests.
- Outsourcing of the Munitions Experimental Test Centre (METC) Nicolet has created a GOCO arrangement, placing Crown assets under the control of contractors.

Despite program risks, the MSP management framework is characterized by informality, insufficient checks and balances, and weak accountabilities.

- There is too much dependence on verbal agreements, with insufficient records of business decisions and the underlying rationale.
- Program staff stated that records were incomplete, limiting their ability to understand past agreements with industry.
- The Crown has expended significant resources to preserve a domestic ammunition industry without clearly identifying what it expects from this arrangement.
- The program operates under a presumption that industry can meet DND/CF strategic ammunition requirements (e.g., mobilization and readiness, security of supply, cost performance) even though strategic requirements have not been identified and mechanisms are not in place to assess program performance.
- Risk management has been reactive rather than proactive, and a framework for managing risks is not in place.

Policy and Strategy

The MSP is operating without a clear sense of purpose and direction, which is in turn impairing stakeholder understanding and commitment to the program.

- Past and current program staffs and industry representatives expressed concern that the MSP lacks vision and direction.
  - *"The program is drifting in the absence of strategic vision."*
  - *"The Government is spending significant amounts on industry infrastructure in the absence of understanding and agreement as to the bigger picture."*

Strategy provides the context and direction around which to rally efforts, direct resources, manage expectations, and elicit stakeholder buy-in to keep a program on track.

- Weaknesses in strategic direction have left program stakeholders to develop their own interpretation of where the program is going and how resources should be directed.
- Industry investors have asked where the MSP arrangement is going, since they did not see a viable business proposition going forward.
- Within government, commitment to the MSP is mixed and GoC senior managers continue to question the value and rationale of the program.

MSP policy does not provide an adequate foundation for program decision making.

- MSP policy is relatively broad, and detailed program guidance has not been developed to amplify or update the original policy.
- Examples of areas requiring policy guidance include:
  - Expectations for industry viability and time horizons;
  - The continuing role of government including conditions, if any, under which the Crown is prepared to subsidize industry and the nature of such subsidies;
  - Criteria for determining which ammunition capabilities require a domestic presence;
  - Extent to which the domestic industry will be subject to competition;
  - What constitutes a domestic capability (e.g., ownership; physical location);
  - Whether MSP contractors will be allowed to fail or cease to be a going concern; and
  - Measures to be taken by government to protect its strategic interests.

Policy guides and limits actions and ensures that stakeholders understand the basic principles and assumptions behind government interventions.

Governance and Horizontal Program Delivery

MSP governance has eroded after years of restructuring, staff turnover, and loss of corporate knowledge amongst program delivery partners.

- Cuts to government programs during the 1990s have left gaps in MSP responsibilities (e.g., technical personnel who resided in PWGSC prior to the end of the Cold War to provide leadership and expertise in areas of defence industrial readiness and policy no longer exist).
- A succession of staff turnovers has left program staff operating without a clear understanding of roles and responsibilities.
- Role definitions are limited to basic procurement functions (i.e., contracting, technical and requisitioning authorities) and do not address other responsibilities that would be expected in the management of a defence industrial program such as the MSP (e.g., strategic and policy direction, program performance and reporting, risk management).
- PWGSC activities for the MSP are today basically limited to contracting and financial audits, even though PWGSC has statutory responsibility for the overall management of the MSP.
- The DND/CF's role in the strategic management of the MSP is not defined or apparent even though it is defence outcomes and funding that are ultimately at risk.
- Compartmentalization of responsibilities across and within government departments prevents the management of the MSP within the context of a broader integrated ammunition supply strategy (e.g., no one with the breadth of expertise and authority to address interdependencies across the ammunition supply chain and ensure an optimal mix of opstocks, safety stocks, and industrial capacity).
- Expansion of the types of services provided by MSP suppliers (e.g., outsourcing of METC, life cycle management services) place additional demands on MSP governance that have not been adequately addressed (e.g., oversight of performance and the safeguarding of Crown assets under industry control).
- Entities that have been established to support MSP governance (e.g., industry-government management committee) were considered by government and industry representatives to be ineffective as a forum for strategic direction and issue resolution (e.g., meetings not occurring at acceptable intervals, lack of follow-through on identified problems, right people not participating, meeting minutes are not being provided as stipulated).

Contract Vehicles

Improvements were made to contracting practices with the primary MSP contractor during the 1980s and 1990s.

- Cost-plus contracts with the primary MSP supplier were replaced with incentives to improve contractor productivity.
- Incentives were introduced to encourage the contractor to develop export markets.

- Contracting processes were streamlined with the introduction of a single global contract that replaced multiple individual procurement contracts.
- Longer-term contracts were introduced as an incentive for contractors to make investments to improve production efficiencies.

Contracts have insufficient detail to understand the nature and extent of supplier deliverables, prices, and performance expectations, reducing their effectiveness in protecting Crown interests.

- The total basket of goods and services to be provided by the primary supplier is unclear, with too much buried in industrial overhead costs.
- There are divergent views among program staff as to the extent of benefits received from the primary supplier and the value.
- Program staffs were of the view that there is too much ambiguity in contracting vehicles and that this contributes to disputes and prolonged contract negotiations.
  - *"Contracts are more grey than black and white, leaving too much open to interpretation and dispute. As a result, every year we get bogged down arguing about the same issues."*

Complexity and distortions in price structures further reduce understanding of amounts paid.

- Ancillary services to be provided by industry are bundled in the cost of ammunition.
- Payments attributable to current ammunition production are not distinguished from industrial capacity the Crown wishes to maintain above current production requirements.
- Pricing practices for allocating fixed and variable costs have changed over the years, causing fluctuations in ammunition unit prices.
- Ammunition prices have been used as a means to compensate industry for reasons other than the receipt of goods and services (e.g., ammunition unit prices held artificially high in order to fund supplier infrastructure improvements).
- Government-industry cost and profit sharing formulas can take multiple years to settle and be reflected in ammunition prices.

Contract and price structures do not provide the DND/CF with the information and flexibility needed to manage ammunition expenditures.

- Bundled prices do not provide a level of detail that facilitates incremental decisions regarding the types and amounts of services and capability the DND/CF wishes to procure.
- Contract vehicles do not provide sufficient understanding of how changes in demand for goods, services, and industrial capacity should impact amounts to be paid by the DND/CF.

MSP contracts do not provide sufficient checks and balances to protect Crown interests in the absence of competition.

- Performance criteria for key performance areas (e.g., security of supply, competitive prices) are not included in contract provisions.
- Contractor incentives that encouraged productivity improvements were removed from contracts in 2003—reducing the likelihood of future benefits to government from industry productivity improvements.
- Contract provisions do not secure a level of transparency that is commensurate with the risks borne by the Crown (e.g., Crown access to supplier records, assets, and information) and there is pressure from suppliers to reduce Crown access to supplier records (e.g., pressure to do away with cost audits).

Performance Monitoring and Reporting

A performance measurement framework is not in place to determine if the program is on track or meeting objectives.

- MSP performance monitoring is limited to quality assurance activities associated with the acceptance of ammunition manufactured by MSP suppliers and to PWGSC cost audits of supplier contracts.
- PWGSC cost audits, while useful in validating contractor cost expenditures (e.g., labour and materials), do not ensure reasonableness of prices or other aspects of program performance.
- Performance objectives, measures, and reporting mechanisms are not in place and therefore there is no basis on which to draw conclusions as to the achievement of strategic objectives.

Other Management Control Issues

Statements of requirements have not been developed to justify the procurement of ammunition services and industrial capacity.

- Procurement contracts should be founded on statements of requirements that are sufficiently clear and detailed to understand the type and amount of goods, services, and capability required.
- DND/CF requirements plans are currently limited to types and quantities of ammunition.
- Statements of requirements have not been developed to support the procurement of ancillary ammunition services from MSP suppliers (e.g., activities formerly performed by the Materiel Group, such as technical support, configuration management, and sourcing, that have migrated to industry over the years).

- Nor have statements of requirements been developed to justify the level of expenditure to procure domestic production capability (e.g., amount and type of industrial capacity that the Crown wishes to maintain beyond current production levels to meet self-sufficiency, surge and readiness objectives).
- There should be visibility to decision-makers if departmental funding intended to procure ammunition is being shifted to material-management functions to be performed by industry.

Expenditures of public funds to assist MSP contractors have not always been supported with appropriate justification and documentation.

- ……
  ……
  …….

A recurring concern identified by DND/CF and PWGSC procurement staff was the potential conflict of interest created by engaging the primary MSP supplier as an ammunition-sourcing agent on behalf of the Crown.

- Over the years the Crown has engaged its primary MSP supplier to act as its sourcing agent to explore sourcing arrangements with global ammunition suppliers on its behalf.
- Procurement staffs have expressed concern as to the potential conflict of interest of expecting the contractor to act in the best interest of the Crown when recommending products, since the contractor is in the business of developing its own products.

Strategic Supplier Relationships

GoC and industry best practices recognize the importance of some of the "softer" elements of procurement management—particularly the quality of relationships with strategic suppliers.

- Quality longer-term supplier relationships are particularly desirable for a critical, expensive, and dangerous good such as ammunition in order to ensure consistency, reliability, cost effectiveness and security of supply.
- Quality supplier relationships are achieved through sustained effort and attention on both sides—they do not just happen.

Quality relationships with strategic suppliers can yield numerous benefits (e.g., cost savings, reduced cycle time through improved processes alignment, innovation through willingness to share ideas, cooperation/reduced disputes). Alternatively, poor relationships with strategic suppliers can jeopardize results and cost effectiveness.

The climate of relationships between the Crown and its primary ammunition supplier and overall commitment to the MSP program appears to have waned over the years.

- On the government side, a range of views towards the MSP was observed (e.g., support, ambivalence, opposition), with some interviewees of the view that the cost of the MSP is too high and that it does not provide value for money.

- On the supplier side, industry perceived that the GoC is not living up to its buyer obligations and that a lack of strategic direction does not create an environment that is conducive to industry success.

Weaknesses in MSP program design and delivery undermine quality relationships with strategic suppliers.

- Responsibility and accountability for the relationships with MSP suppliers is not defined.
- A lack of strategic direction has been a source of discontent for stakeholders both in government and industry.
- Poor communications amongst government program delivery partners causes mixed messages to industry or, alternatively, leaves government open to suppliers using lack of communications to their advantage.
- Weaknesses in contract vehicles leave too much open to interpretation and dispute ……. ……. …….
- Program staffs perceive that GoC senior leadership lacks the will to hold MSP suppliers accountable and that suppliers have been "rewarded" for circumventing established processes and escalating disputes to senior levels of government, thus reducing the incentive for industry to work through established channels and deal with designated subject matter experts.

Best Practices

Practices used by one allied nation to manage the relationship with its domestic ammunition supplier provide opportunities for MSP improvements.

Lessons Learned from the UK

- Supplier performance criteria are built into the contract framework (e.g., requirement that prices be tested on world markets for reasonableness).
- Additional ammunition items are added to long-term supply contracts only if the supplier is successful in securing the initial contract through a competitive bidding process (on a full cost basis).
- A joint industry-government management committee has been established to oversee program performance and to report on progress to higher levels of government.
- Government is not in the business of subsidizing industry.
- Payments to contractors for reasons other than the procurement of goods and services are not the norm (e.g., payments for infrastructure modernization). In the event that such an "investment" is deemed to be in the public interest, a business case is required to justify the use of public funds and monitoring mechanisms are put in place to ensure that identified benefits to the government are in fact realized and reported.
- Risk management has been strengthened through better understanding of the vulnerabilities in contractor supply chains caused by offshore dependencies and the development of strategies to address perceived risks.

F. FUTURE OF THE PROGRAM

There is a lack of complete and objective information on which to make a fact-based decision on the future of the MSP. Despite information gaps, study findings raise concerns regarding the performance and continued relevance of the MSP. At the same time, an absence of direction in the areas of defence industrial policy, defence capability plans, and strategic ammunition requirements is an obstacle to exploring options for change.

…… there is a need to get back to basics and develop the information needed to support a fact-based decision on the future of the program. This would include determination of DND/CF strategic ammunition requirements and investigation of the options available to serve these needs. Such an assessment should provide understanding of what will happen if the government does not intervene. For example, industry may have reached a level of maturity whereby Crown interests can be met through conventional procurement practices and business arrangements. If it is perceived that some form of government intervention continues to be required, the strategic significance of such intervention should be clear and the advantages, as compared to not intervening, should be understood.

If it is determined that a policy that calls for increased domestic self-sufficiency and sovereignty in the supply of critical conventional ammunition to the DND/CF remains desirable, and that the maintenance of a domestic industrial base is the most cost-effective means to satisfy all or part of this requirement, then improvements are required to all facets of program design and delivery.

RECOMMENDATIONS

Collaborative Approach

Any effort to transform the MSP will require collaboration amongst government and industry program delivery partners.

- While PWGSC has administrative responsibility for the MSP, the DND/CF needs to be proactive in ensuring that program issues are addressed since defence resources and outcomes are at risk.
- Other Crown departments with vested interests include IC and DFAIT.
- The Government of Quebec has assumed an increased stakeholder interest as a result of its participation in the …….[13]

Needs Assessment

A decision on the future direction of MSP must start with a clear understanding of the DND/CF's strategic ammunition requirements.

Recommendation. Determine the DND/CF's strategic requirements for ammunition, related services, and industrial capacity, including which specific capabilities, if any, must be provided domestically.

Option Analysis

Understanding of available options for satisfying DND/CF ammunition requirements is required to assess cost effectiveness and to support a business decision on the future course of the DND/CF's ammunition acquisition strategy.

- Requirements determination and option analysis should consider the need for improved speed and agility to respond to DND/CF ammunition requirements in an unpredictable security environment.

Recommendation. Investigate the feasibility, cost, and risk of alternatives for satisfying identified ammunition requirements.

Program Decision

Recommendation. Based on an assessment of requirements and options, develop and implement an ammunition acquisition strategy appropriate to current needs and conditions.

[13] ……
……
……..

Program Improvement

Should it be determined that an indigenous ammunition industrial capability is needed to satisfy any part of DND/CF conventional ammunition requirements and that Crown intervention is required to ensure continuation of such capability, improvements are required to all aspects of MSP design and delivery.

Recommendations

Policy. Develop a policy framework that clearly identifies MSP objectives, principles and assumptions (e.g., criteria for determining what capabilities must be maintained domestically; extent that industry will be subject to competition; circumstances, if any, under which government will subsidize industry and the form and extent of subsidies).

Governance. Clarify and formalize through memorandum of understanding the responsibilities, authorities, and accountabilities for the MSP across program delivery partners and within the DND/CF. This includes clear accountability for strategic direction and program performance. The current distribution of departmental risks and competencies should be considered in the determination of responsibilities, authorities, and accountabilities.

Procurement Approach. To the extent possible, apply GoC procurement policy principles and practices, including competitive sourcing, in order to ensure value for money in the acquisition of conventional ammunition.

Right-size the MSP. Align the amount and type of domestic ammunition industrial capability to be procured with DND/CF requirements, so as to ensure that the DND/CF is not procuring industrial capability beyond its requirements. As an extension of this, if the Crown wishes to maintain domestic industrial ammunition capacity beyond that needed to support current critical requirements (e.g., surge capacity), the amount of capacity to be procured should be justified by statements of requirements and be identified separately in the procurement of ammunition goods and services.

Performance Monitoring and Reporting. Establish measures of program success and mechanisms for reporting on program performance to senior management. Performance oversight should include mechanisms to safeguard Crown assets under the control of industry (e.g., METC).

Contract Vehicles. Establish contract vehicles that provide the transparency needed to understand the full nature and extent of goods and services procured and the related costs. Create contract incentives to drive continuous improvement and contractor efficiencies. Include provisions that secure Crown access to contractor records and facilities commensurate with the Crown's interests.

ANNEX A—MANAGEMENT ACTION PLAN

Ser	CRS Recommendation	OPI	Management Action	Target Completion Date
1.	**Needs Assessment.** Determine the DND/CF's strategic ammunition requirements for ammunition, related services, and industrial capacity, including which specific capabilities, if any, must be provided domestically.	ADM(Mat)/ COS ADM(Mat)	COS ADM(Mat), in his capacity of Co-Chair of the Ammunition Board will oversee a departmental MSP needs assessment study. The study will be undertaken by an MSP Working Group involving relevant L1 organizations. DGIIP has agreed to organize an initial meeting of the Working Group in January 2008 to facilitate a discussion of study metrics and core team membership for this effort. The Working Group will be guided and supervised by the Ammunition Board, which also has key L1 membership. The needs assessment and accompanying recommendations will be reviewed with the VCDS and will likely need to go to DMC for decisions.	Target for taking the needs assessment and recommendations to the VCDS is November 2008. An interim outline of major issues and draft recommendations will be produced by June 2008 in anticipation of a need to open legal discussions with at least one MSP supplier.
2.	**Option Analysis.** Investigate the feasibility, cost, and risk of alternatives for satisfying identified ammunition requirements.	ADM(Mat)/ COS ADM(Mat)	Depending on the results of the needs assessment, and resulting departmental decisions, an options analysis will be undertaken by the MSP Working Group under the supervision of the Ammunition Board.	Completion date depends on the decisions coming out of the needs assessment.
3.	**Program Decision.** Based on an assessment of requirements and options, develop and implement an ammunition acquisition strategy appropriate to current needs and conditions.	ADM(Mat)/ DGLEPM, DGIIP	Depending on the results of the options analysis, and resulting departmental decisions, ADM(Mat) will direct DGLEPM to develop required internal revisions to the Ammunition Program. DGIIP will be directed to initiate appropriate discussions with external stakeholders, the content of which will be dependent upon the departmental decisions taken further to the Options Analysis. The Ammunition Board will provide advice and support. Note that this effort will require agreement and support from PWGSC and possibly IC.	Completion date depends on the previous stage of work.

ANNEX A

Ser	CRS Recommendation	OPI	Management Action	Target Completion Date
4.	**Policy.** Develop a policy framework that clearly identifies MSP objectives, principles and assumptions (e.g., criteria for determining what capabilities must be maintained domestically; extent that industry will be subject to competition; circumstances, if any, under which government will subsidize industry and the form and extent of subsidies).	ADM(Mat)/ DGLEPM, DGIIP	As part of program development, DGLEPM will lead the development of the required departmental policy underpinnings, supported by DGIIP, DGMSSC and the Ammunition Board. DGIIP will lead policy discussions with external stakeholders to implement decisions taken by the Department as a result of the Options Analysis. Note that this effort will require agreement and support from PWGSC and possibly IC. Specific activities will be determined by the decisions taken at Recommendation #3.	Completion date depends on the previous stage of work.
5.	**Governance.** Clarify and formalize through memorandum of understanding the responsibilities, authorities, and accountabilities for the MSP across program delivery partners and within the DND/CF. This includes clear accountability for strategic direction and program performance. The current distribution of departmental risks and competencies should be considered in the determination of responsibilities, authorities, and accountabilities.	ADM(Mat)/ COS ADM(Mat)	COS ADM(Mat), in his capacity of Co-Chair of the Ammunition Board will oversee the establishment of an appropriate departmental governance framework. The MSP Working Group will undertake the necessary consultations and analysis. Note that this effort will require agreement and support from PWGSC and possibly IC. Specific activities will be determined by the decisions taken at Recommendation #3.	Completion date depends on previous stages of work.
6.	**Procurement Approach.** To the extent possible, apply GOC procurement policy principles and practices, including competitive sourcing, in order to ensure value for money in the acquisition of conventional ammunition.	ADM(Mat)/ DGLEPM, DGIIP	As part of program development, DGLEPM and DGIIP will work within the MSP Working Group to develop the approved procurement approach, supported, where appropriate, by the Ammunition Board. The MSP Working Group will also provide a forum for any necessary consultations and analysis. Note that this effort will require agreement and support from PWGSC and possibly IC. Specific activities will be determined by the decisions taken at Recommendation #3.	Completion date depends on previous stages of work.
7.	**Right-size the MSP.** Align the	ADM(Mat)/	As part of program development,	Completion date depends

ANNEX A

Ser	CRS Recommendation	OPI	Management Action	Target Completion Date
	amount and type of domestic ammunition industrial capability to be procured with DND/CF requirements, so as to ensure that the DND/CF is not procuring industrial capability beyond its requirements. As an extension of this, if the Crown wishes to maintain domestic industrial ammunition capacity beyond that needed to support current critical requirements (e.g., surge capacity), the amount of capacity to be procured should be justified by statements of requirements and be identified separately in the procurement of ammunition goods and services.	DGLEPM, DGIIP	DGLEPM and DGIIP will ensure alignment between the size of the MSP and requirements. The MSP Working Group will provide a working-level forum for any necessary consultations and analysis. Note that this effort will require agreement and support from PWGSC and possibly IC. Specific activities will be determined by the decisions taken at Recommendation #3.	on previous stages of work.
8.	**Performance Monitoring and Reporting.** Establish measures of program success and mechanisms for reporting on program performance to senior management. Performance oversight should include mechanisms to safeguard Crown assets under the control of industry (e.g., METC).	ADM(Mat)/ D COS ADM(Mat)	MSP performance monitoring and reporting will be integrated into the Materiel Group PMF. DMGPI, who is responsible for this, will work with DGLEPM to define appropriate measures and ensure regular reporting, both to ADM(Mat) and through COS ADM(Mat) to the Ammunition Board. Specific activities will be determined by the decisions taken at Recommendation #3.	Completion date depends on previous stages of work.
9.	**Contract Vehicles.** Establish contract vehicles that provide the transparency needed to understand the full nature and extent of goods and services procured and the related costs. Create contract incentives to drive continuous improvement and contractor efficiencies. Include provisions that secure Crown access to contractor records and facilities commensurate with the Crown's interests.	ADM(Mat)/ DGLEPM	As part of program execution, DGLEPM will work with PWGSC to ensure that contract vehicles meet Government policy direction. Specific activities will be determined by the decisions taken at Recommendation #3.	Completion date depends on previous stages of work.

ANNEX B—OVERVIEW OF MSP AMMUNITON SUPPLIERS

Company	Overview
SNC Technologies, Inc. (SNC TEC)	• Primary supplier of conventional ammunition to the DND/CF. • Formed from privatization of Canadian Arsenals Ltd. (CAL) and acquisition of smaller private entities (e.g., IVI). • Subsidiary of SNC Lavalin Group Inc. (global provider of engineering and construction services, headquartered in Quebec)[14]. • A load, assemble, and pack producer of small, medium and large calibre ammunition for military and police forces. • Other activities include R&D, provision of auxiliary products and services, and management of the DND/CF's ammunition training and testing facility METC Nicolet (outsourced to SNC TEC in 1998). • Acquired assets of EXPRO TEC Inc in 2001. • …… • …….. …… • …….. ……
SNC EXPRO TEC (Division of SNC TEC)	• Produces explosives and propellants for military, sporting, and automotive sectors (one of 2 such producers in North America). • …….. and wholly owned subsidiary of SNC TEC (SNC TEC acquired EXPRO TEC assets in 2001 following EXPRO TEC bankruptcy). • …… …… ……. • …… …… …… …… • …… …… …… …… …… …….. ……

[14] SNC TEC was acquired by the General Dynamics Corporation subsequent to the completion of the CRS study conduct.

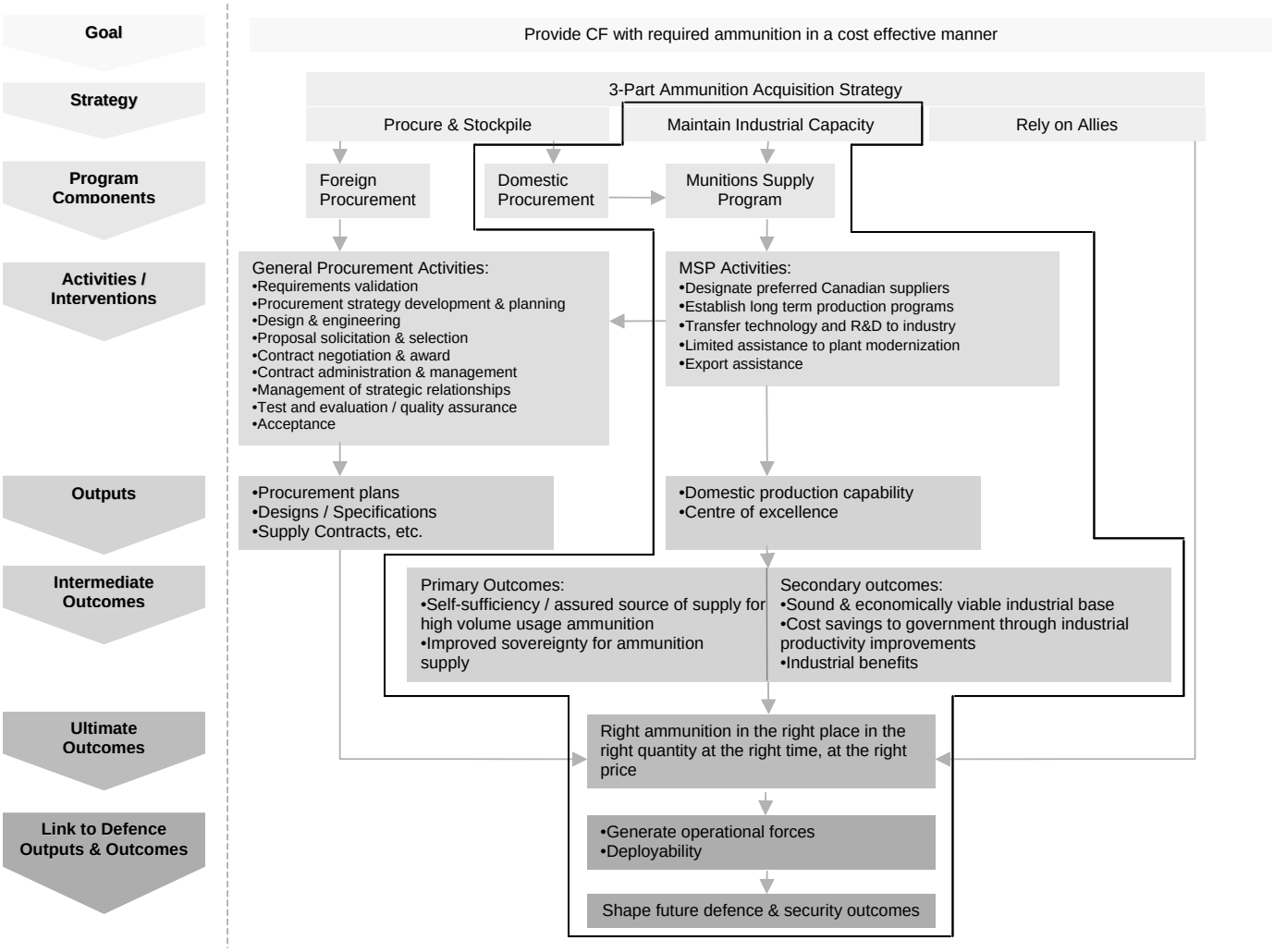
ANNEX B

Company	Overview
IMT Corporation	• Custom forging and machining facility that services defence and commercial markets. • …….. to SNC TEC for metal parts for large calibre projectiles.
Bristol Aerospace Limited (BAL)	• Division of Magellan Aerospace Corporation. • Produces rocket systems. • DND/CF stopped procuring CRV7 in 1992 due to excessive inventory. • Crown has had a continuing relationship with the company stemming from the licensing of Crown CRV-7 technology to BAL. • Company is diversified aerospace company, …… ……

ANNEX C—CHRONOLOGY OF KEY MSP EVENTS

Time Period	Event
Late 1800s to mid-1960s	Government owned and operated ammunition facilities supplemented by privately owned suppliers.
1945	Government owned plants incorporated as crown corporation under Canadian Arsenals Ltd.
Mid-1960s to mid-1980s	Privatization of government owned ammunition facilities.
1978	Cabinet decision to establish MSP for conventional ammunition.
Mid-1980s to present	Streamlining and modernization of MSP production facilities.
Mid-1990s to present	Primary ammunition supplier expands into global markets.
1991	…… …… ……
1993	…… ……...
1993	Adopted a single global arrangement to replace multiple standalone procurement contracts with primary MSP supplier.
1994	…… …… ……
1998	Government outsources management of proofing and testing function to SNC TEC (METC Nicolet test centre).
2000	MSP explosives and propellant producer (EXPRO TEC) goes into receivership.
2001	SNC TEC acquires EXPRO TEC assets.
2001	…… …… ……
May 2005	…… …….

ANNEX D—MUNITIONS SUPPLY PROGRAM LOGIC MODEL



The MSP is illustrated within the context of the DND/CF Ammunition Acquisition Program.