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2016 STATUS REPORT ON MAJOR EQUIPMENT PROCUREMENT

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SUMMARY

The Department of National Defence made some progress in procurement in 2016 despite obstacles that included a continued drop in spending, the advent of a new federal Liberal government and uncertainty over the outcome of the Defence Policy Review.

Four trends affected defence acquisitions in 2016. These include an ongoing slippage in recapitalizing the Canadian Armed Forces, some encouraging moves made on the shipbuilding and fighter jet files, mixed progress on implementing the 2014 Defence Procurement Strategy, and uncertainty over the Defence Policy Review.

It is also too early to tell how the Trudeau government's Policy on Results, known as the "deliverology" approach, will play out for defence procurement. However, Budget 2016's major focus was not on defence, and it shifted some funding for capital equipment to a new endpoint of 2045. This suggests that delay in the overall defence procurement program continues.

While the Liberals kept their pledge to make investment in the Royal Canadian Navy a priority, they also made good last year on a negative promise – not to purchase the F-35 stealth fighter bomber. However, further slowing things is the Liberals' refusal to launch a competition to replace it until the Defence Policy Review is published. The government has made this situation more fraught with its intention to buy 18 Boeing Super Hornet fighter jets as interim aircraft, since Liberal policy requires the Royal Canadian Air Force to be capable of meeting both NORAD's and NATO's operational needs simultaneously.

Prior to the release of the new defence policy, both the interim and permanent fighter aircraft projects lacked adequate funding. They were among several large projects that have been approved, but have not yet moved to the contract stage, and whose budgets were inadequate to move forward. Adding to this mix is the fact that a government-wide effort initiated in 2014 to streamline the defence procurement process made no progress in 2016, and a significant number of other prospective projects were not included in the DND investment plan. The subsequent Defence Policy Review has addressed the funding issues, but they were problematic throughout 2016.

Not all is gloom and doom, however. A contract for 16 fixed-wing search and rescue aircraft was awarded, modernization of all of the Halifax-class frigates was completed last year, the number of light armoured vehicles deployed in the field rose from 64 to 262, 10 maritime helicopters were added to the fleet in December, and the new medium-to-heavy lift helicopters carried out their first mission by responding to the Fort McMurray wildfires.

INTRODUCTION

This is the fourth edition of the annual status report on selected major defence acquisitions. It retains the focus and structure of the 2015 edition with the intent of providing an informative and comprehensive document that can assist anyone who is interested in tracking progress on military acquisitions.[1]

The two groups of projects chosen for this edition are the same ones selected for the 2015 edition. Those examined in detail in section 2 (and listed in Annex 1) are taken from the list of projects included in the Department of National Defence (DND)'s *Departmental Performance Report 2015/2016*, Status Report on Major Crown Projects.[2] This is a list of projects that the DND and the Canadian Armed Forces (CAF) identify as the most important projects over the $100 million major Crown project threshold. The inclusion of this list in its entirety removes the element of subjectivity from the author of this report in determining which projects to include. This list focuses exclusively on projects for defence equipment acquisitions, excluding infrastructure, information management, and information technology and service projects.

The projects analyzed in section 3 are those active projects that appear in both the 2015 and 2016 editions of the Defence Acquisition Guide.[3] As many of the projects have not yet received formal approvals, the focus was placed on those projects that the capability sponsors within DND were actively working on in calendar year 2016. These two lists are largely complementary as each annex focuses on projects at different stages in the procurement process. The five stages of the procurement process are: Stage 1 – identification; Stage 2 – options analysis; Stage 3 – definition; Stage 4 – implementation; and Stage 5 – close-out.

The projects in section 2 are mostly in either definition or implementation, whereas the projects in section 3 are largely in identification or options analysis.[4]

SECTION 1

Defence Procurement Update

Previous editions of this report have attempted to identify specific sources of delay affecting defence procurement. Over the course of 2016, however, little changed with Canadian defence procurement. One notable difference from the year prior was that the senior ranks of the procurement workforce enjoyed a much higher level of stability in 2016 than 2015. Other initiatives with procurement implications were started in 2016, but were not fully deployed. The Privy Council Office worked with federal departments to adopt a policy on results which took effect

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1 The first report in this series was by David Bercuson, Aaron Plamondon and Ray Szeto, *An Opaque Window.* (Calgary: Canadian Defence & Foreign Affairs Institute, 2006). See also Elinor Sloan, *Something Has to Give* (Calgary: The Canadian Defence & Foreign Affairs Institute, The School of Public Policy, University of Calgary, and the Centre for Military and Strategic Studies, University of Calgary, 2014) and David Perry, *2015 Status Report on Major Defence Equipment Procurements* (Calgary: Canadian Global Affairs Institute, The School of Public Policy, University of Calgary, and the Centre for Military and Strategic Studies, University of Calgary, 2015).

2 National Defence and the Canadian Armed Forces, 2015-16 Departmental Performance Report (Ottawa: Her Majesty the Queen in Right of Canada, 2016). The timing of this 2016 report made this document the most up-to-date description of Canadian defence procurement projects available to the author.

3 National Defence and the Canadian Armed Forces, Defence Acquisition Guide 2016, May 26, 2016 http://www.forces.gc.ca/en/business-defence-acquisition-guide-2016/index.page National Defence and the Canadian Armed Forces, Defence Acquisition Guide 2015, June 25, 2014 http://www.forces.gc.ca/en/business-defence-acquisition-guide-2015/naval-systems.page

4 For a description of the procurement process, see http://www.cgai.ca/2015_status_report_on_major_defence_equipment_procurements#ExplanationofVariance

July 1, as the Trudeau government introduced a "deliverology" approach to governing.[5] Similarly, a wider effort to modernize the broader suite of Treasury Board policies was launched in 2016.[6] Both of these policy changes have the potential to affect defence procurement significantly, but neither is mature enough to provide any assessment of their impact.

With little new to say about the causes of delay, this year's report will therefore focus on four broad trends that affected defence procurement in 2016: continuing slippage in the overall recapitalization of the Canadian Armed Forces; notable advancement of the government's priority shipbuilding and fighter jet files; mixed progress on the implementation of the 2014 Defence Procurement Strategy (DPS); and huge uncertainty about the medium- and long-term future of defence procurement pending the outcome of the Defence Policy Review.

Continued Recapitalization Slippage

As the 2015 status report suggested, one metric for assessing the rate of success in the defence procurement system is DND's ability to secure project approval at the definition or implementation stages of a project's life from the Minister of National Defence or the Treasury Board. These are the approvals required for a project to enter into the definition or implementation stages of procurement and access Vote 5 project funding.[7] Over the last decade, the number of approvals received by DND annually has fallen dramatically. Relative to 2009/2010, DND secured only half as many combined approvals in 2014/2015. In 2015/2016 the number of approvals that DND secured declined further still, dropping to roughly 40 per cent of the number obtained in 2009/2010.

This significant change in the number of secured approvals correlates closely with a significant change in DND's spending on Vote 5 capital projects. From 2005/2006 to 2010/2011, annual spending on capital increased dramatically in real terms (see Figure 1). This was the result of a significant infusion of capital funding provided through the federal budgets in 2005, 2006 and then locked in place with the 2008 budget and the *Canada First Defence Strategy*. These cumulative changes provided DND with the funding to engage in a major recapitalization. The general trend of increased spending on capital stopped in 2010/2011, however. Subsequently, capital spending has declined, dropping by more than $1 billion annually, in real terms.

This general significant decline in capital spending since 2010/2011 has coincided with DND's inability to make use of the fiscal room set aside for defence. While the 2016 budget did not have a major focus on defence, it followed two previous federal budgets (in 2012 and 2014) in announcing that funds set aside for DND to purchase capital equipment would be shifted into the future. Budget 2016 announced that a total of $3.7 billion of DND's accrual space that had been set aside in the fiscal framework between 2015/2016 and 2020/2021 was removed from that timeframe and redistributed between 2021/2022 and 2044/2045. The accrual space is the budgeting construct introduced with the 2008 *Canada First Defence Strategy* that sets aside a portion of the federal

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5 http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=31300

6 http://pm.gc.ca/eng/president-treasury-board-canada-mandate-letter

7 Vote 5 capital expenditures encompass: "A capital expenditures vote is used when the aggregate of capital expenditures equal or exceed $5 million. Capital expenditures are those made for the acquisition or development of items that are classified as tangible capital assets as defined by Government accounting policies. For example, the acquisition of real property, infrastructure, machinery or equipment, or for purposes of constructing or developing assets, where an organization expects to draw upon its own labour and materials, or employs professional services or other services or goods. Expenditure items in a Capital Expenditures Vote are for items that generally exceed $10,000; although an organization may select a reduced threshold to be applied to different capital classes." http://www.tbs-sct.gc.ca/hgw-cgf/finances/pgs-pdg/gepme-pdgbpd/20162017/me-bpd01-eng.asp#toc1

fiscal framework to account for the annual depreciation expenses associated with the purchases of major defence equipment.[8]

The accounting for individual projects in the accrual space is somewhat comparable to the way a home mortgage works. For most people, the full purchase cost of a new home does not count against their monthly budget, but rather only their mortgage payments do, which spreads the total cost of the home over several years. To relate this back to the capital equipment project, while the bank (in this case the Canadian government) has to make the funds available to pay the seller in full for the cost of a house (in the equipment case a ship, vehicle or aircraft), a homeowner only pays the bank their monthly mortgage payment (for DND, an annual depreciation charge for its ships, vehicles or aircraft). While a potential homeowner might have the money set aside in their bank account to make monthly mortgage payments (again, DND in this instance), if a real estate agent can't actually close a deal for a house (or Canada's defence procurement system cannot actually buy a ship, vehicle or aircraft on schedule), the homeowner does not need to make a mortgage payment (again, in DND's case, it does not need to account for depreciation expenses in the accrual space).

The accrual space is managed like a portfolio of mortgages, within an overall budgetary limit. As of Budget 2016, DND's total accrual space for capital was around $700 million, and projected to reach $3 billion by about 2021/2022.[9] Within this accrual envelope, DND manages a number of projects, but must ensure that their cumulative depreciation charges do not exceed the funding available.

The 2016 budget provided significant clarity about this issue by publishing, for the first time, a table depicting both the previous and revised profile of DND's accrual space. It shows that DND's current annual amortization charges are roughly $2 billion annually lower than the accrual space set aside by the Department of Finance. The *Canada First Defence Strategy* created the accrual space construct for DND in 2008 on the premise that DND could quickly recapitalize all of its combat fleets. Making full use of the accrual space available for this recapitalization would have then, and still does today, required several tens of billions worth of capital equipment purchases and the Canadian Armed Forces taking delivery of that equipment, in just a few years. While DND has made progress on this recapitalization (as detailed below), the full scope of planned reinvestment simply has not happened on the schedule to which the accrual space was originally aligned.

Progress on Priorities

In its 2015 campaign platform, the Liberal Party of Canada made three specific pledges with respect to defence procurement: "We will not buy the F-35 stealth fighter-bomber"; "We will immediately launch an open and transparent competition to replace the CF-18 fighter aircraft"; and "We will make investing in the Royal Canadian Navy [RCN] a top priority."[10] The latter two promises were included directly in the mandate letter that directed Defence Minister Harjit Sajjan to "launch an open and transparent competition to replace the CF-18 fighter aircraft, focusing on options that match Canada's defence needs" and "invest in strengthening the Navy, while meeting the commitments that were made as part of the National Shipbuilding Procurement Strategy."[11] In its first full year in office, the Trudeau government delivered on the first and third of these priorities, and committed to launch a competition sometime between the publication of the Defence Policy Review, and the end of the government's first mandate.

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8 The accrual space also set aside funding for the expansion of the military, provided funding for readiness and operations and support.

9 Budget 2017 made further, very significant changes to the accrual space as well.

10 Liberal Party of Canada, *A New Plan for a Strong Middle Class* (Ottawa: 2015), 70.

11 http://pm.gc.ca/eng/minister-national-defence-mandate-letter

Shipbuilding

One of the government's first actions on a defence issue in 2016 was the February announcement of a proposed change to the procurement strategy for the Canadian surface combatant (CSC). Originally, the project was slated to hold two competitions: one to select a warship designer and a second to source a combat systems integrator. This process was oriented around the need to produce a purpose-built warship for the RCN, because its requirements could not have been met by any existing designs. Over the course of the requirements review and reconciliation process for CSC that occurred during 2015, the requirements underwent significant evolution, which opened the possibility of holding a competition for an existing design that with some changes could meet Canada's needs. At the same time, it became apparent that the plan to design a bespoke warship would create a nearly two-year delay between the completion of the last Arctic and offshore patrol ship (AOPS) and the construction of the first CSC. In addition to delaying the introduction of the new capability, this would be problematic for achieving the intent of the National Shipbuilding Procurement Strategy (NSPS) that the shipyards maintain a stable workforce while executing their program of work.

To address these issues, in February 2016 the government announced a proposed change to the procurement strategy to select an existing military off-the-shelf design that would then undergo some customization to adapt it to meet Canadian needs. According to an official announcement of the change, the Crown expects that construction on the CSC could start "up to two years sooner than originally planned,"[12] while also reducing technical and financial risk associated with the project.

The extent to which this can be achieved remains to be seen. In testimony to Parliament, executives from Irving Shipbuilding, the project's prime contractor, stated that as of February 2017, under a best case scenario, the gap between when production on the AOPS ends and CSC starts was 18 months. They went on to express concern that the gap would lengthen without improvements in government decision-making. Further, they also indicated that the lower risk associated with the new procurement strategy would be imperilled if the proposed designs were changed significantly. Changing between 10 and 15 per cent of the ship was identified as the range at which the project would switch from modifying an existing design to effectively creating a new one, with the increased risks associated with doing so.[13]

Subsequently, the government also announced steps to improve its handling of the shipbuilding file. At the CANSEC defence tradeshow in May 2016, Minister of Public Services and Procurement Canada (PSPC) Judy Foote announced, without saying so directly, a rebranding of the NSPS as the National Shipbuilding Strategy (NSS). In so doing, Foote also recognized a number of challenges related to the file and announced a number of changes to its management. First, she recognized the need for greater expertise and stronger oversight, including securing the advice of a shipbuilding expert, a retired British admiral. In addition to an unspecified clarification of departmental roles and responsibilities and mention of regular meetings with the shipyards, Foote also mentioned the establishment of the *ad hoc* cabinet committee on defence procurement (the committee was subsequently established on a permanent basis in August). Second, the announcement stated the government's shipbuilding workforce would be increased, and subsequent public statements indicate that this will see a "doubling and probably tripling"[14] of the marine procurement workforce at PSPC. Third, Foote announced that the government would improve its process for budgeting, recognizing past deficiencies in that area. A key aspect of that improvement is that a

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[12] Evidence, House of Commons Standing Committee on National Defence. 42nd Parliament, 1st Session, No. 35. Feb. 2, 2017.

[13] Evidence, House of Commons Standing Committee on National Defence. 42nd Parliament, 1st Session, No. 28. Nov. 17, 2016. http://www.parl.gc.ca/HousePublications/Publication.aspx?Language=e&Mode=1&Parl=42&Ses=1&DocId=8730424

[14] Evidence, House of Commons Standing Committee on National Defence. 42nd Parliament, 1st Session, No. 28. Nov. 17, 2016.

new cost estimate for CSC will not be released until a build contract is signed.[15] The fourth aspect announced related to better performance monitoring of the shipyards' improvements. The fifth component promised better communications of the shipbuilding file. To that end, a status report on NSS through December 2015 was released.[16]

Finally, on Oct. 27, following a summer of extensive industry engagements, the request for proposals (RFP) for CSC was released to the 12 firms qualified as potential bidders. Bids were originally due April 27, 2017 a deadline subsequenty extended.[17] A definition contract was originally anticipated by mid-2018.[18] The release of the RFP is a critical move forward for the file.

Fighters

Starting at the same CANSEC trade show, Sajjan began laying out the government's proposed way forward with fighter aircraft as well. He referred to what he described as an emerging operational capability gap with respect to fighter aircraft that he inherited from the Harper government. This situation had left him uncomfortable "risk-managing a gap between our NORAD and NATO commitments and the number of fighters available for operations"[19] which he found to be unacceptable. Shortly thereafter, several media reports emerged suggesting that the Trudeau government would make a sole-source purchase of Boeing Super Hornets.[20] When asked about the subject during Question Period, the prime minister replied that "the Conservatives threw their lot in with a plane that does not work and is a long way from ever working,"[21] referring apparently to the F-35.

In July 2016, the Trudeau government announced that it would engage in consultations with potential fighter aircraft manufacturers over the summer. A detailed questionnaire was sent to manufacturers July 7, with response due by July 29. Engagements with allied governments were conducted as part of this effort during July and August.[22]

On Nov. 22, the government announced a twofold approach to acquiring fighters. First, it stated that it would launch, within its first mandate, an open and transparent competition to replace the CF-18 fleet. As well, it will "explore the acquisition of 18 new Super Hornet aircraft to supplement the CF-18s until the permanent replacement arrives."[23] To the latter end, it will engage in talks with Boeing to determine if the 18 proposed aircraft can be acquired at "a cost, time, level of capability, and economic value that are acceptable to Canada."[24]

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15 A new estimate was provided when the Liberal's new defence policy *Strong Secure Engaged* was released.

16 http://news.gc.ca/web/article-en.do?nid=1073779

17 As of Aug 13, 2017 when this paper was finalized, a bid submission deadline had not been established.

18 http://www.tpsgc-pwgsc.gc.ca/app-acq/amd-dp/mer-sea/sncn-nss/nouvelles-news/2016-10-27-eng.html

19 http://www.theglobeandmail.com/news/politics/canada-needs-new-fighter-jets-now-defence-minister-says/article30172969/

20 http://news.nationalpost.com/news/canada/canadian-politics/trudeau-says-f-35s-are-far-from-working-as-liberals-tories-spar-over-fighter-jet-strategies

21 http://www.parl.gc.ca/HousePublications/Publication.aspx?Language=E&Mode=1&Parl=42&Ses=1&DocId=8338219

22 http://www.forces.gc.ca/en/business-equipment/cf-18-replacement.page

23 http://news.gc.ca/web/article-en.do?crtr.sj1D=&crtr.mnthndVl=11&mthd=advSrch&crtr.dpt1D=6670&nid=1158669&crtr.lc1D=&crtr.tp1D=&crtr.yrStrtVl=2016&crtr.kw=&crtr.dyStrtVl=24&crtr.aud1D=&crtr.mnthStrtVl=8&crtr.page=1&crtr.yrndVl=2016&crtr.dyndVl=22

24 http://news.gc.ca/web/article-en.do?mthd=tp&crtr.page=1&nid=1158689&crtr.tp1D=930 Boeing's launch of a complaint to the US commerce department subsequently disrupted these efforts. At CANSEC 2017, Sajjan exorciated Boeing in his keynote speech, describing their actions as not those of a trusted defence partner. Since, the Trudeau government has stated that they will not officially speak with the company.

The move to acquire an interim fighter fleet will employ an exemption to the Canadian government contracts regulations that the Harper government created in 2015. The exception 3(1)(g), is specifically for "a contract whose purpose is, for operational reasons, to fulfil an interim requirement for defence supplies or services or to ensure defence logistical capabilities on an interim basis, and any related contract."[25] This amendment exempts contracts that fall within those parameters from the regulations, which among other things, define narrowly the conditions under which a procurement can proceed without soliciting bids. Without using this exception to the contracting regulations, the government must solicit bids unless one of the following criteria apply: i) the need is one of pressing emergency; ii) the contract is low value ($25,000 unless very specific conditions apply); iii) it is not in the public interest to solicit bids; or iv) only one entity is capable of performing the contract. By invoking the exemption to the contracting regulations, the government is not required to solicit bids, or even to justify why it is not.

According to RCAF commander Lt.-Gen. Mike Hood, the fighter capability gap which has necessitated the interim capability is the result of a Trudeau government policy change requiring the RCAF to be able to meet both NORAD and NATO operational requirements simultaneously.[26] Previously, governments of the day had made commitments to both NORAD and NATO that would require more aircraft than are actually available for use if both were called upon simultaneously. Past governments had risk-managed this issue, by accepting that Canada would simply not be able to deliver upon both commitments to their fullest extents concurrently.

While the government's moves on CSC have been largely praised, several aspects of the fighter decision have been criticized. Key among these criticisms is the assertion by several critics that the capability gap upon which the interim purchase is premised does not in fact exist. Hood provided some clarification around this issue in testimony to Parliament when he stated that the gap is the result of a Liberal government policy change to mandate that the NORAD and NATO commitments be met concurrently.

Additional concerns have been raised about the budgetary and personnel implications of acquiring an interim fighter fleet. Defence officials have subsequently indicated that the funding set aside in the fiscal framework for the permanent replacement of the CF-18 will be used to cover the costs of the interim fighter project,[27] but this leaves open the question of where funding for the full time CF-18 will come from.[28] This also raises the issue of whether the costs, which are unknown, but which leaked information indicates could range between $5 billion to $7 billion, are worth the return on investment.[29] Further, the difficulty of creating two separate fleets presents a number of problems for the RCAF which already has difficulty maintaining sufficient numbers of pilots and skilled maintainers for its single existing fighter fleet.[30]

Another significant point of criticism is the announced timeframe for the competition to permanently replace Canada's CF-18s, as public statements indicate that this could take as long as five years to complete.[31] That it could take an additional five years to competitively procure new fighter aircraft after a year of review by the Trudeau government, following multiple years of study by an independent secretariat under the Harper government's seven-point plan, following its 2010 decision to purchase the F-35 (which came after years of examination and participation in the

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25 http://laws-lois.justice.gc.ca/eng/regulations/SOR-87-402/page-1.html#h-3

26 Evidence, The Standing Senate Committee on National Security and Defence, Nov. 28, 2016.

27 http://www.parl.gc.ca/content/sen/committee/421/NFFN/52946-E.HTM

28 Strong Secure Engaged did not clarify this matter, as no budget for interim fighters was identified, but defence did benefit in the new policy from a long term budget increase, which presumably accommodates that purchase.

29 http://www.cbc.ca/news/politics/fighter-jet-purchase-super-hornets-1.3956306

30 https://warontherocks.com/2017/02/super-hornets-eh-canadian-airpower-falls-short-on-north-american-defense/

31 http://www.cbc.ca/news/politics/fighter-jet-purchase-announcement-1.3862210

Joint Strike Fighter project), is simply difficult to understand. This is likely the clearest evidence yet of diverging expectations regarding defence procurement between government officials and outside observers. While an additional five years of work may simply be how long government officials believe it will take to move the project forward successfully, it is difficult to view this as a reasonable timeframe given all the previous years of work on the file. Notwithstanding the criticism on this file, the Trudeau government has at least decided on a way forward on a file that has been in limbo since 2012. In doing so, however, it has clearly broken its campaign commitment to "immediately launch" a competitive process.

Mixed Progress on the Defence Procurement Strategy

While the government's two priority projects consumed much of the procurement system's time and attention in 2016, throughout the year work to implement the defence procurement strategy, launched in February 2014, continued with mixed success. The most significant factor in this regard is that the Trudeau government appears to have embraced the strategy in practice and execution, even if it does not mention it by name.[32] Public statements by Foote and the parliamentary secretaries for both DND and PSPSC have endorsed the threefold focus on economic leveraging, delivering the right equipment to the armed forces, and doing so in a timely manner.[33]

On April 1, DND's increased delegated authority, one of the key tenets of the Defence Procurement Strategy, finally took effect, with DND's delegation increasing to $400,000. As well, during the year, work to advance the strategy's economic leveraging pillar advanced notably. Innovation, Science and Economic Development's (ISED) Canadian industry study contracted to Avascent progressed, with its report examining key industrial capabilities submitted to government in March 2017. Similarly, DND's Supplementary Estimates B for 2016-2017 contained a $3 million transfer from DND to ISED to establish "an office to study defence analytics and for value-added propositions related to defence procurement."[34] It is unclear where exactly the wider effort to better understand the defence industry is leading, but public comments indicate that the focus of the industrial and technological benefits (ITB) policy will be on supporting existing segments of the defence industrial base.[35]

The other aspect of the Defence Procurement Strategy that is fully implemented is the independent review panel for defence acquisitions. In its first annual report, the panel noted that between June 2015 and 2016 it met 14 times and reviewed 17 projects, providing advice to the minister on four of them.[36] Those projects reviewed include: the Canadian surface combatant, the logistic vehicle modernization, common heavy equipment replacement, joint unmanned surveillance and targeting system, naval large tug, future fighter capability, Halifax heating plant, RCN intelligence, surveillance, target acquisition and reconnaissance unmanned aircraft system, the CF-18 life extension, enhanced recovery capability, land vehicles crew training system, Griffon limited life extension and future aircrew training. Anecdotal comments from some working in the procurement system at DND indicate that the panel is having a positive impact by bolstering the department's credibility with other government departments. The panel's first report indicates that it will measure its performance on the appropriateness of requirements it validates, the usefulness of its advice and how well it enhances confidence with decision-makers and improves credibility with

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[32] Further endorsement came in Strong Secure Engaged which restated many of the original DPS initiatives under the new policy's procurement session.

[33] The Honourable Judy Foote, Speech to CANSEC; John McKay and Leona Alleslev, "Remarks to Deliverology of Defence Procurement."

[34] Evidence, Standing Committee on National Defence. 42nd Parliament, 1st Session, No. 32. Dec. 1, 2016.

[35] Evidence, House of Commons Standing Committee on National Defence. 42nd Parliament, 1st Session, No. 28. Nov. 17, 2016.

[36] http://www.forces.gc.ca/assets/FORCES_Internet/docs/en/business-how-to-do/irpda-2015-2016-annual-report-.pdf

industry. It is unclear if this assessment will include any quantitative metrics for evaluating whether the introduction of the IRPDA has improved the rate at which projects reviewed by the panel pass through the wider procurement system.

Other key aspects of the Defence Procurement Strategy and associated efforts made little or no progress during 2016. Although DND continued its effort to hire additional procurement staff in the materiel group, and remains in the process of hiring more at the time of writing, through 2016 DND had not successfully expanded its ranks by a couple hundred net positions.[37] In contrast to the mixed success on that front, there was no publicly evident progress on either effort to streamline the defence procurement process in 2016. The project approval process review at National Defence, launched in 2012, remained unsigned throughout 2016.[38] Similarly, the government-wide effort to streamline defence procurement initiated as part of the Defence Procurement Strategy in 2014, made no publicly detectable progress in 2016. To be clear, this is not to say that some procurements did not move forward in 2016, but simply that the efforts to streamline the procurement process did not make any progress that was publicly visible.

While not strictly part of the Defence Procurement Strategy, PSPSC has been moving forward with other aspects of procurement modernization and improvement, following Foote's mandate letter direction to "Modernize procurement practices so that they are simpler, less administratively burdensome, deploy modern comptrollership, and include practices that support our economic policy goals, including green and social procurement."[39] The department issued an RFP in April for an electronic procurement solution designed to "modernize public procurement practices so that they are simpler, less administratively burdensome and deploy modern comptrollership."[40] The department is also examining its contracting terms and conditions to see if they can be simplified. As well, it is adopting flexible bid evaluation, allowing suppliers the opportunity to receive an initial assessment on a bid with the intent of preventing bids from being rejected due to minor reasons.[41]

Uncertainty Over the Defence Policy Review

Finally, throughout 2016 significant effort was directed towards renewing Canadian defence policy. In its 2015 federal election platform, the Liberal Party of Canada acknowledged that the *Canada First Defence Strategy* was "underfunded and out of date"[42] and pledged to draft a new defence policy. The commitment was subsequently incorporated into Sajjan's mandate letter that directed him to "Conduct an open and transparent review process to create a new defence strategy for Canada."[43]

With respect to defence procurement, the key issue that had to be addressed during the Defence Policy Review was rationalizing DND's intended procurements with the capital funding available to implement them. Heading into the review, the problem was twofold. First, the budgets for several major projects that have been approved and included in DND's investment plan (the long-term planning document required by the Treasury Board secretariat),[44] but which were not yet into

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37 At the time of writing, this appears to have been achieved, and the new defence policy mandates DND to add "more than 60" additional positions.

38 It did receive approval in early 2017, however.

39 http://pm.gc.ca/eng/minister-public-services-and-procurement-mandate-letter

40 https://buyandsell.gc.ca/procurement-data/tender-notice/PW-XN-111-30112

41 Evidence, House of Commons Standing Committee on National Defence. 42nd Parliament, 1st Session, No. 28. Nov. 17, 2016.

42 Liberal Party of Canada, *A New Plan for a Strong Middle Class* (Ottawa: 2015).

43 Mandate letter.

44 Canada. Treasury Board of Canada Secretariat. "Policy on Investment Planning - Assets and Acquired Services," accessed July 30, 2014, http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=18225&section=text.

contract, were inadequate. This had been acknowledged explicitly for CSC.[45] The same situation also applied to multiple other projects that had their budgets established almost a decade ago, prior to, or with, the publication of the *Canada First Defence Strategy,* such as the joint unmanned surveillance and target acquisition system. One of DND's key activities for the Defence Policy Review was a re-costing of all of its projects, resulted in a number of budgets being seriously revised.

The second funding problem was that a large number of prospective projects were not funded in the investment plan at all. This was primarily a problem for large projects that would be funded from the accrual envelope over the medium and long term. As outlined above, in the short term, problems with the procurement system are limiting DND's ability to make use of the funds it has. Beyond this time horizon, however, funding limitations have precluded many of DND's planned recapitalizations from happening.

The funding shortfall was acute prior to the release of the new defence policy. Figure 2 frames the magnitude of the problem as it then existed. It also provides estimates for both the low and high ranges of total capital expenditures outlined in the total potential equipment acquisitions in the Defence Acquisition Guide (DAG). These estimates were calculated by taking the total data presented in the DAG, including known project budgets, and removing those projects known to be funded.[46] The remaining list of projects represents potential acquisitions for which funding in the investment plan was likely not assured prior to the release of Strong Secure Engaged, ranging from a low estimate of roughly $40 billion to a high estimate of almost $70 billion.

These columns indicating potential demand are set against the likely room available in DND's investment plan as of spring 2016. At that time, less than $20 billion in available investment plan room was available for capital acquisitions, as well as any needed funding for operating and sustainment costs, and room for possible cost escalation due to inflation, exchange rate fluctuations and other contingencies. Altogether, this suggests that there was two to three times more demand for capital funding than available room in DND's investment plan.[47]

A critical aspect of the Defence Policy Review was thus to bring DND's list of potential projects and the supply of available funding into closer alignment, either by providing policy direction that reduced the number of projects proposed by DND or providing it with additional funding by increasing the capital funding available to the department. Thankfully, the new policy seems to have done both, by increasing the supply of funding and itemizing which projects are included as part of the new policy, and which are not.

SECTION 2: PROJECT STATUS REPORT PART 1

The projects in Annex 1 are those listed in DND's status reports on major Crown projects. The first page for each project itemizes the estimated project costs for the acquisition component of the procurement where this information was obtainable.[48] It also includes a project description and explanation of variance, which describe the project and articulate why deviations from the original schedule have occurred. The second page records the project's progress according to the

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[45] Canada. Office of the Parliamentary Budget Officer, *Feasibility of Budget for Acquisition of Two Joint Support Ships* (Ottawa: 2013); James Cudmore. "Warship Cost could Rise to $30B, Vice-Admiral Mark Norman Confirms," last modified Dec. 2, 2015, accessed Dec. 2, 2015, http://www.cbc.ca/news/politics/warships-30-billion-navy-mark-norman-1.3347145.

[46] This removed the following projects from the total: the Arctic and Offshore Patrol Ship; Canadian Surface Combatant; Fixed-Wing Search and Rescue Aircraft; Future Fighter Capability; Joint Support Ship; Joint Unmanned Surveillance and Target Acquisition System; Point Defence Missile System Upgrade; Underwater Warfare Suite Upgrade.

[47] Confidential interviews

[48] This entry has been revised to provide the revised estimated total cost for the project reported in the 2015-2016 departmental performance report, unless otherwise indicated. This provides a more consistent basis for reporting project costs than the project budget category previously employed.

major procurement milestones published in the document. In the "Initial" column, the first publicly available data on the project are included.[49] The "2014," "2015," and "2016" columns provide data from the departmental performance reports from 2013/2014, 2014/2015 and 2015/2016 respectively. These four columns in combination are intended to demonstrate progress since the project was initially included for publication, and then specifically progress over the last two years. Dates highlighted in green indicate that a project is proceeding faster than indicated the year prior, those highlighted in red indicate the project is moving slower, and those not highlighted indicate the project is on schedule. A dotted line through the middle of this page indicates that the program was significantly changed after its initial inclusion, either through cancellation or a project reset and thus the data below the line are applicable to the revised project schedule only. Where a checkmark symbol (✓) is entered, this indicates that the milestone was achieved on the schedule previously indicated. Finally, this section concludes with a part specifically indicating progress in 2016.[50]

Of the 25 projects listed in Annex 1, two had no data entered in 2016 – the Future Fighter Capability and Joint Unmanned Surveillance and Target Acquisition System projects. Of the remaining 23, a comparison of their project milestones showed that in 2016, one was early compared to the previous year's schedule indicated, 10 were proceeding on schedule and 12 projects were late relative to what the previous year's schedule indicated. A full listing is presented in Table 1.

These individual project descriptions reveal that every one of the projects examined has experienced a delay in achieving at least one published milestone, with the exception of the Maritime Helicopter Project (a project which has experienced multiple major contract amendments causing delays) and the CP-140 Aurora Incremental Modernization/Structural Life Extension Project on which there are only two years of data. None of the projects that had a single Full Operational Capability date achieved that milestone on schedule, although the Halifax-Class Modernization/Frigate Life Extension and Underwater Warfare Suite Upgrade projects remain on track to do so.

Only the acquisition of the fifth C-17 as part of the Airlift Capability Project – Strategic, Halifax-Class Modernization/Frigate Life Extension, Mercury Global and Submarine Capability Life Extension projects achieved IOC on schedule and the latter's schedule was set nine years after the vessels were acquired.

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[49] Of note, due to the age of some projects there were data problems obtaining consistent records for the older projects in this Annex. Only the status reports on major Crown projects published since 2006/2007 are available on the DND website. The author used any data provided in DND's Report on Plans and Priorities from previous years to supplement this information where possible, but this still presented an inconsistent set of data entries for the "Initial" column for older projects.

[50] The data used in this Annex are drawn from open sources. It should be recognized that there is an information asymmetry between the projects that have deviated the least and the most from their original schedules. Generally, only the most complex projects with the highest level of risk, and thus the ones most likely to be delayed, become the subjects of these audits. There is thus generally more information to explain delay than there is to explain why a project remained on schedule.

Similarly, there was significant variation in terms of which milestones the projects reported, and when they first reported them. As an example, the Arctic Offshore Patrol Ship Project published an initial operating capability (IOC) target the first time the project was mentioned in the status report on major Crown projects. The submarine capability life extension, however, did not publish an IOC date until nine years after the project was first detailed in the Reports on Plans and Priorities in 1999, the same year the contract for the vessels was signed. This type of information disparity therefore precludes systematic comparisons and analysis across these projects.

Further, not all schedule milestones are equally important, with project close-out; for instance, less important than the others. Once a project hits full operational capability (FOC), the most significant work, requiring the most staff effort, has been completed. Often after this stage, the remaining tasks will be transferred over to the equipment program managers in the materiel group. Often, closing out a project can take significant time after FOC is achieved due to the need to receive all invoices, and finalize infrastructure, force generation and supply chain arrangements. The Canadian Search and Rescue Helicopter Project, for instance, reached FOC in 2004, but has not yet been closed out.

For 2016 specifically, the following progress was noted:

- In March 2016 the first keel unit for the AOPS, the HMCS Harry DeWolf, was moved into place. The second keel unit followed in May. In July the second of four main propulsion diesel engines and generators was installed.
- In February a proposed change to the procurement strategy for the Canadian surface combatant was announced, which was confirmed in June.
- On Oct. 27, the request for proposal for the Canadian surface combatant was released.
- A contract for 16 fixed-wing search and rescue aircraft was awarded to Airbus Defence and Space on Dec. 1, 2016.
- In November 2016, the government announced that it would enter into negotiations with Boeing to purchase an interim fleet of 18 Super Hornet aircraft and that an open competition for a permanent fleet would be launched during the current mandate.
- The last frigate to go through the Halifax-class modernization/frigate life extension, HMCS Toronto, completed its upgrade on schedule in November 2016.
- In August 2016 the government announced that it would be purchasing a small unmanned aerial vehicle from the United States Navy through a foreign military sale.
- In March 2016 a $35.4 million contract was announced for long lead items for the joint support ship.
- In January 2016 a request for information for the joint unmanned surveillance and target acquisition system projects was released and responses were provided to the government April 15.
- In 2016, the number of vehicles for the Light Armoured Vehicle III Upgrade Project inducted into production rose from 185 to 420, the number produced increased from 143 to 332 and the number fielded to operational units has risen from 64 to 262.
- As of December 2016, Canada had accepted 10 maritime helicopters. Initial cadre training started in May 2016. The contract was amended Jan. 28, 2016 and again Aug. 23, 2016. Testing for ship's helicopter and operating limits was conducted in the first four months of 2016 on HMCS Halifax. Block 2 critical design review was successfully completed in April 2016.
- In November 2016 the government received final delivery of the last kitted shelters for the Medium Support Vehicle System Project on time and on budget.
- The first medium-to-heavy lift helicopter pilot, flight engineer and load master graduated from the Garrison Petawawa Operational Training Centre Feb. 12, 2016. The aircraft deployed on their first domestic humanitarian deployment on Operation LENTUS in response to the massive Fort McMurray wildfires.
- In July 2016, a request for information was released for the strategic deployable terminals component of Mercury Global, followed by a notice of proposed procurement in October.
- A second round of reliability testing for the tactical armoured patrol vehicle was completed in April 2016. Vehicle deliveries began Aug. 12, 2016.

SECTION 3: PROJECT STATUS REPORT PART 2

In addition to the detailed project descriptions published in the status reports on major Crown projects, DND also annually publishes procurement data in its DAG. This section analyzes this information.

The 2016 edition of the DAG comprised six categories: land systems, naval systems, aerospace systems, joint and other systems, services, and Canadian Special Operations Forces Command services. The analysis here concentrates only on the first three categories, denoted as army, navy and RCAF in the tables below. Because the guide's intent is to provide information about future equipment needs for the military, most of the initiatives listed have not yet received government approval and have therefore been subject to change or removal. Recognizing this, only those projects that each of the services judged to be active were examined.

Of note, the AOPS, CSC, FWSAR, future fighter capability, JSS, JUSTAS and UWSU projects were listed in the 2015 and 2016 DAGs; in addition to the projects included in Annex 1, they are therefore not discussed in detail below.

Table 2 compiled data on the 2015 and 2016 entries for the army, navy and RCAF. 2016 entries that were new, had been archived, or had changed to absorb another project previously listed elsewhere in the 2015 DAG were excluded from this analysis as they did not allow a comparison from 2015 to 2016. It should be noted that some of these entries had been archived because the projects had advanced. For the remaining entries, the project milestones in the 2016 DAG were compared with those in the 2015 DAG. As with the projects listed above, they were categorized as either early, on schedule or late.

A comparison of the 2015 and 2016 DAG entries shows that in the time between the documents' publication, the RCN's Maritime Satellite Communications Upgrade and Naval Remote Weapon Station projects were awarded contracts, the Point Defence Missile System Upgrade and the Underwater Warfare Suite Upgrades received definition approval and the Multi-Role Boat Project entered into options analysis. An advanced contract award notice was issued for the RCAF's SONOBUOYs AN/SSQ 62E DICASS contract, the CC-138 Twin Otter life extension and the search and rescue mission management system replacements received definition approval, and the CF-188 life extension 2025 entered into options analysis. The Canadian Army's Ranger Rifle Project entered into contract, and the army received definition approval for the airspace co-ordination centre modernization, high risk search capability and LAV operational requirements integration task mobility upgrades, with the latter having also entered options analysis between the two reports.

The analysis, presented in Table 2, shows that 24 per cent of the projects analyzed are early, 28 per cent are on schedule, and 49 per cent are late. Table 3 lists the data presented on the same set of potential procurements in the 2015 edition of this report. A comparison of Table 2 and Table 3 shows a better rate of progress on projects (denoted by them being either early or on schedule) between 2015 and 2016 than was the case between 2014 and 2015. The list of projects included in this section is provided in Table 4.

TABLE 1 PROJECTS LISTED IN BOTH THE 2015/2016 AND 2014/2015 DEPARTMENTAL PERFORMANCE REPORTS

Project	Year-to-Year Status
1. Airlift Capability Project – Strategic	**Late**
2. Airlift Capability Project – Tactical	On Schedule
3. Arctic and Offshore Patrol Ship	**Late**
4. Canadian Cryptographic Modernization Program	**Late**
5. Canadian Search and Rescue Helicopter Project	**Late**
6. Canadian Surface Combatant Project	**Early**
7. CP-140 Aurora Incremental Modernization / Structural Life Extension Projects (New)	On Schedule
8. Fixed-Wing Search and Rescue Aircraft Replacement Project	On Schedule
9. Force Mobility Enhancement Project	**Late**
10. Future Fighter Capability	No Data
11. Halifax-Class Modernization/Frigate Life Extension	On Schedule
12. Land Forces Intelligence, Surveillance, Target Acquisition and Reconnaissance System	**Late**
13. Joint Support Ship	**Late**
14. Joint Unmanned Surveillance and Target Acquisition System	No Data
15. Light Armoured Vehicle III Upgrade Project	On Schedule
16. Lightweight Towed Howitzer	On Schedule
17. Maritime Helicopter Project	On Schedule
18. Medium Support Vehicle System Project	**Late**
19. Medium-to-Heavy Lift Helicopter	On Schedule
20. Mercury Global	**Late**
21. Protected Military Satellite Communications	On Schedule
22. Submarine Capability Life Extension	On Schedule
23. Tactical Armoured Patrol Vehicle	Late
24. Tank Replacement Project	Late
25. Underwater Warfare Suite Upgrade	Late

TABLE 2 ACTIVE PROJECT SCHEDULE CHANGE FROM DAG 2015 TO DAG 2016

Service	Total	Early	On Schedule	Late
Army	29	9	4	16
Navy	10	3	3	4
RCAF	33	5	13	15
Total	**72**	**17**	**20**	**35**
Project Schedule Change from DAG 2015 to DAG 2016 (%)				
Service	**Total**	**Early**	**On Schedule**	**Late**
Army	29	31%	14%	55%
Navy	10	30%	30%	40%
RCAF	33	15%	39%	45%
Total	**72**	**24%**	**28%**	**49%**

TABLE 3 ACTIVE PROJECT SCHEDULE CHANGE FROM DAG 2014 - DAG 2015

Service	Total	Early	On Schedule	Late
Army	20	0	8	12
Navy	14	2	6	6
RCAF	16	1	5	10
Total	**50**	**3**	**19**	**28**
Active Project Schedule Change from DAG 2014 to DAG 2015 (%)				
Service	**Total**	**Early**	**On Schedule**	**Late**
Army	20	0%	40%	60%
Navy	14	14%	43%	43%
RCAF	16	6%	31%	63%
Total	**50**	**6%**	**38%**	**56%**

TABLE 4 ACTIVE 2016 DAG PROJECTS

Project	Options Analysis	Definition Approval	Request for Proposals	Implementation Approval	Contract	Delivery
Army						
84mm Carl Gustaf Upgrade	2019	2023	2024	2025	2025	2026-2036
Advanced IED Detection and Defeat	2019	2020	2023	2023	2024	2026-2036
Advanced Sub-Unit Water Purification System		2016	2019	2018	2019	2022
Airspace Co-ordination Center Modernization		**X**	**2017**	**2017**	**2018**	**2021**
Anti-Tank Guided Missile Replacement	2026-2036	2026-2036	2026-2036	2026-2036	2026-2036	2026-2036
Armoured Combat Support Vehicle	2018	2020	2021	2022	2023	2026-2036
Body Armour Modernization	2018	2020	2022	2022	2023	2026-2036
Bridge and Gap Crossing Modernization	2018	2020	2023	2022	2023	2026-2036
C16 Digital Compass Upgrade	2017	2020	2023	2022	2023	2025
C6 GPMG Modernization			2017	2016	2017	2022
Camp Sustain	2018	2020	2021	2021	2022	2025
CF Land Electronic Warfare Modernization		2019	2021	2021	2022	2026-2036
Close Combat Modular Fighting Rig	2017	2019	2022	2022	2023	2026-2036
Combined/Joint Intelligence Modernization		2018	2021	2020	2021	2024
Common Heavy Equipment Replacement		2017	2019	2019	2019	2023
Domestic and Arctic Mobility Enhancement	2020	2022	2023	2024	2025	2026-2036
Enhanced Recovery Capability		2018	2020	2020	2020	2025
FOO/FAC Modernization	2018	2020	2023	2022	2024	2026-2036
Ground-Based Air and Munitions Defence	2018	2020	2022	2022	2023	2026-2036
High Risk Search Capability		**X**	**2017**	**2016**	**2017**	**2020**
Indirect Fire Modernization	2018	2020	2022	2022	2023	2025
Joint Deployable HQ and Signal Regiment Modernization	2017	2019	2021	2021	2022	2025
Land Command Support System Intelligence Surveillance Reconnaisance Modernization	2018	2020	2022	2022	2023	2026-2036

Project	Options Analysis	Definition Approval	Request for Proposals	Implementation Approval	Contract	Delivery
Land Command Support System Tactical Command and Control Information System Modernization	2017	2019	2022	2022	2023	2026-2036
Land Command Support System Tactical Communications Modernization	2017	2019	2020	2021	2022	2026-2036
Land Vehicles Crew Training System		2016	2017	2019	2019	2024
LAV Operational Requirements Integration Task Mobility Upgrade	**X**	**X**	**2016**	**2016**	**2017**	**2021**
LAV III UP part 2	2016	2017	2018	2019	2019	2022
Light Force Enhancement	2018	2020	2022	2022	2023	2026-2036
Light Utility Vehicle Wheeled Recapitalization	2018	2020	2023	2023	2024	2026-2036
Logistics Vehicle Modernization		2017	2019	2020	2020	2025
New Canadian Ranger Rifle *ARCHIVED*						
Night Vision System Modernization	2018	2020	2022	2022	2023	2025
Pistol Replacement	2017	2020	2022	2022	2023	2026-2036
Tactical Power System *NEW*	2018	2020	2022	2022	2023	2025
Unit Weapons Training System	2019	2021	2022	2023	2023	2026-2036
Weapon Effects Simulation Mid-Life Upgrade	2016	2018	2019	2020	2020	2024
Air Force						
Advanced Short Range Missile	2018	2019	2021	2022	2022	2026-2036
Aircrew Chemical Biological Radiological Nuclear Ensemble	2019	2021	2023	2024	2024	2026-2036
Armament Loader Modernization		2016	2017	2016	2017	2019
Canadian Multi-Mission Aircraft	2022	2024	2024	2025	2025	2026-2036
CC-130J Block 8 Upgrade	2018-2020	2019	2021	2021	2022	
CC-138 Twin Otter Life Extension Project			**2016**	**2016**	**2016**	**2020**
CC144 Consolidation Project	2016	2018	2020	2020	2020	2022
CC-144/150 Missile Warning and Infrared Countermeasures Project	2017	2019	2020	2021	2021	2025
CC-150 Life Extension	2017	2018	2019	2019	2020	2024
CF-188 Life Extension 2025		**2016**	**2017**	**2018**	**2018**	
CF-188 Training Enhancements	2019	2022	2023	2024	2024	2026-2036
CH-149 Cormorant Mid-Life Upgrade	2016	2017	2018	2018	2019	
Complex Weapon	2017	2019	2019	2020	2020	2025
CT-114 Life Extension Beyond 2020	2016	2017	2018	2019	2019	2023
Fighter Lead in Training	2017	2020	2019	2019	2019	2026-2036
Fighter Training Enhancements	2019	2022	2023	2024	2024	2026-2036
Fixed-Wing Search and Rescue *ARCHIVED*	RFP Closed					
Future Aircrew Training		2017	2019-2020	2021	2021	2026-2036
Future Fighter Capability		2017	2017-2019	2018-2020	2018-2020	2026-2036
Griffon Limited Life Extension		2017	2019	2019	2019	
ILS Replcement - assume precision landing replace	2019-2020	2021	2025	2022-2024	2025	2026-2036
Joint Unmanned Surveillance and Target Acquisition System		2018-2020	2019-2021	2022-2024	2022-2024	2026-2036
Long Range Air-to-Air Missile	2026-2036	2026-2036	2026-2036	2026-2036	2026-2036	2026-2036
Low Collateral Damage Weapon	2017	2018	2018	2019	2019	2021
Medium-Range Air-to-Air Missile Sustainment	2017	2018-2020	2019-2020	2019-2020	2020-2026	2026-2036

Project	Options Analysis	Definition Approval	Request for Proposals	Implementation Approval	Contract	Delivery
Multi-Band Radio Crypto Modernization *NEW*	2018	2019	2020	2021	2022	2024
Multi-Fleet Air Traffic Management Avionics	2018	2019-2021	2023	2023	2024	2026-2036
North Warning System Replacement	2020	2021	2023	2024	2024	2026-2036
Omnibus Aviation Life Support Equipment Modernization		2019	2021	2021	2022	2024
Omnibus Support Vehicle Replacement 2	2022	2023	2024	2023	2024	2026-2036
RCAF Footwear Project	2018	2020	2021	2023	2023	2025
Search and Rescue Mission Management System Replacement			**2017**	**2017**	**2017**	**2020**
Snow and Ice Control Capability Recapitalization Project	2016	2017	2019	2019	2019	2022
Snowbird Aircraft Replacement Project	2019-2020	2022	2025	2020-2026	2026-2036	2026-2036
Strategic Tanker Transport Capability - assume multi-role tanker	2018	2020	2021	2022	2022	2026-2036
Tactical Integrated Command, Control and Communications Air		2016	2019	2019	2020	2024
Tactical Reconnaissance Utility Helicopter	2021	2024	2026-2036	2026-2036	2026-2036	2026-2036
Utility Transport Aircraft	2018	2020	2021	2021	2022	2026-2036
Voice Switch for Air Traffic Control (ATC) Units	2017	2018	2019	2019	2019	2021
Weapon System Trainers		2016	2017	2018	2018	2022
Navy						
Arctic/Offshore Patrol Ship	contract awarded					
Canadian Surface Combatant			2016	2021	2021	2036+
Joint Support Ship			2017	2017	2017	2021
Lightweight Torpedo Upgrade			2020	2020	2020	2022-2024
Maritime Satellite Communications Upgrade	**contract awarded**					
Multi-Role Boat	**X**	**2016**	**2016**	**2017**	**2017**	**2020**
Naval Electronic Warfare System Sub Surface	2017	2020	2022	2022	2023	2025
Naval Large Tug		2017	2020	2020	2020	2023
Naval Remote Weapon Station	**contract awarded**					
Point Defence Missile System Upgrade *ARCHIVED*						
RCN Intelligence Surveillance Tracking Acquisition and Reconnaissance Programme	2016	2018	2019	2020	2021	2021-2025
StrongBow		2016	2020	2020	2021	2026-2036
Submarine Equipment Life Extension	2016	2019	2020-2026	2020-2026	2020-2026	2026-2036
Underwater Warfare Suite Upgrade		**X**	**2016**	**2017**	**2017**	**2024**

Legend	
New Project for 2016	
Project Ahead of Last Year's Schedule	
Project on Last Year's Schedule	
Project Behind Last Year's Schedule	
Contract award, RFP, other advance	
Milestone Advanced Since 2015	**X**

FIGURE 1

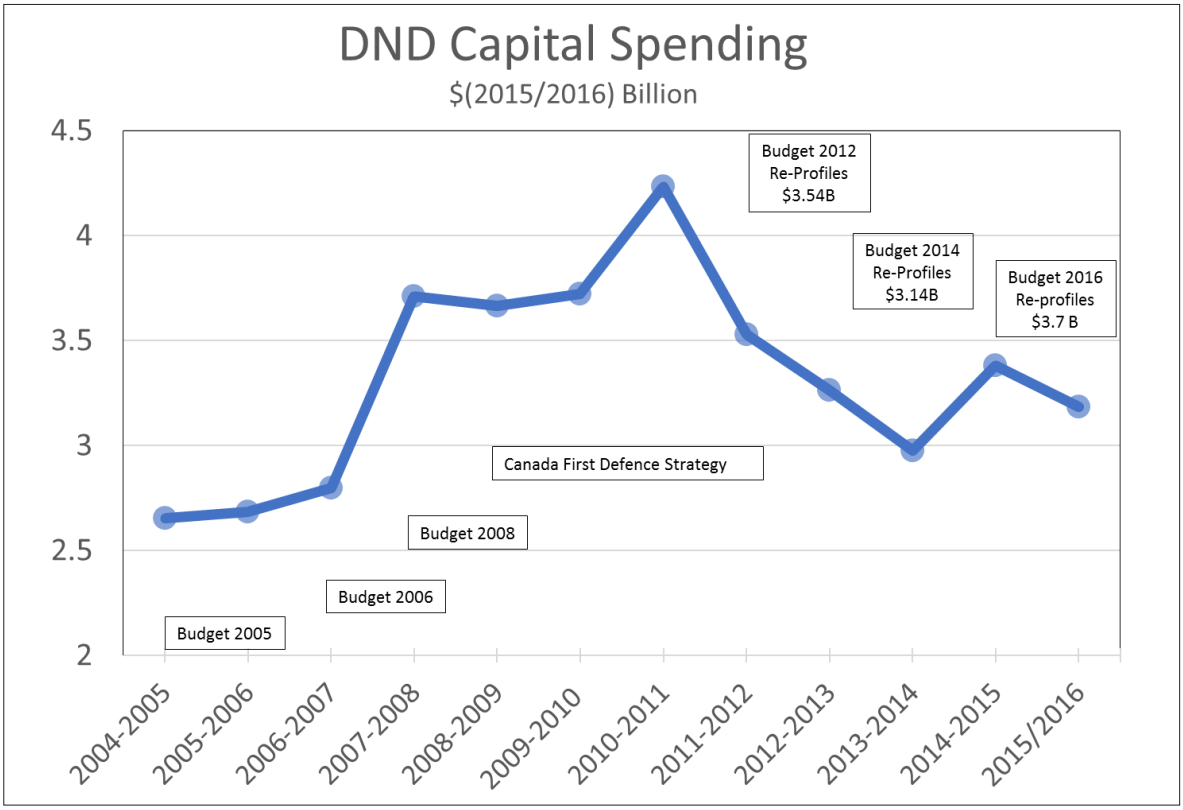

Figure 1: This chart tracks DND spending on Vote 5 capital, adjusted for inflation using the DND economic model. These expenditures are made on a modified cash basis. The captioned activities noted on the graph all created changes to the DND budget on an accrual basis. As the section earlier notes, however, the two sets of financial information are interlinked. The budgets identified below the spending line provided DND with the fiscal base (in accrual terms) that gave individual projects a funding source. This allowed projects to move forward and spend money on a cash basis, which is depited in the graph. After 2010/2011, the real rate of spending on Vote 5 capital has declined. The reduced rate of spending has subsequently delayed the schedule upon which DND must depreciate those assets in its accrual space. The reduced rate of spending on a cash basis has therefore contributed to DND re-profiling its accrual space into future years.

FIGURE 2 DND'S ESTIMATED CAPITAL SHORTFALL AS OF 2016 ($B)

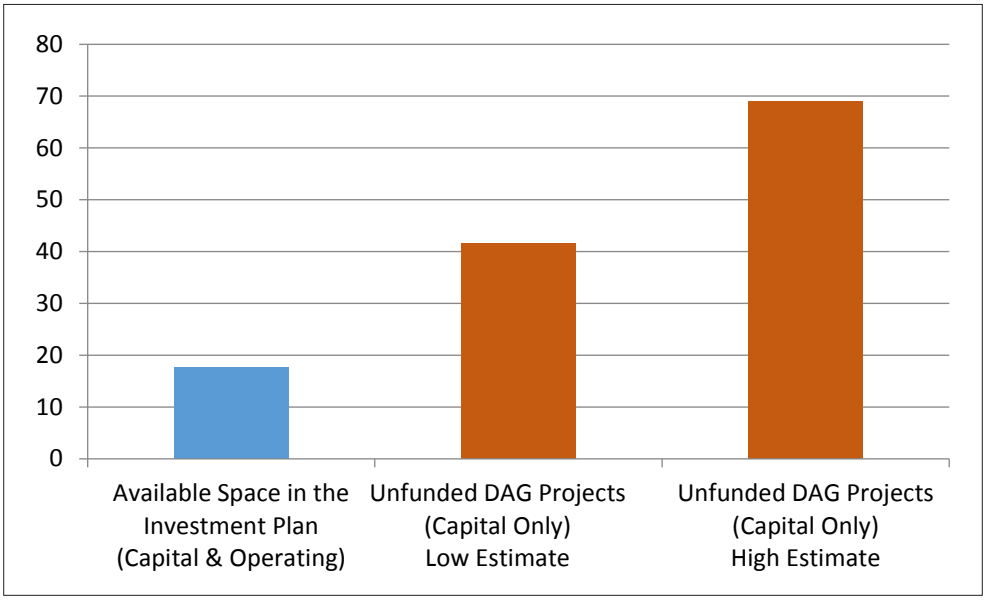

Figure 2: This graphic presents an estimate of the available space in DND's investment plan as of spring 2016, and a high and low estimate for how much demand there was on that available space.

ANNEX 1: PROJECTS LISTED IN "STATUS REPORT ON TRANSFORMATIONAL AND MAJOR CROWN PROJECTS" OF DEPARTMENTAL PERFORMANCE REPORT 2015/2016 THAT APPEARED IN A PREVIOUS "STATUS REPORT ON TRANSFORMATIONAL AND MAJOR CROWN PROJECTS".

1. Airlift Capability Project – Strategic
2. Airlift Capability Project – Tactical
3. Arctic and Offshore Patrol Ship
4. Canadian Cryptographic Modernization Program
5. Canadian Search and Rescue Helicopter Project
6. Canadian Surface Combatant Project
7. CP-140 Aurora Incremental Modernization / Structural Life Extension Projects (New)
8. Fixed-Wing Search and Rescue Aircraft Replacement Project
9. Force Mobility Enhancement Project
10. Future Fighter Capability
11. Halifax-Class Modernization/Frigate Life Extension
12. Land Forces Intelligence, Surveillance, Target Acquisition and Reconnaissance System
13. Joint Support Ship
14. Joint Unmanned Surveillance and Target Acquisition System
15. Light Armoured Vehicle III Upgrade Project
16. Lightweight Towed Howitzer
17. Maritime Helicopter Project
18. Medium Support Vehicle System Project
19. Medium-to-Heavy Lift Helicopter
20. Mercury Global
21. Protected Military Satellite Communications
22. Submarine Capability Life Extension
23. Tactical Armoured Patrol Vehicle
24. Tank Replacement Project
25. Underwater Warfare Suite Upgrade (New)

Airlift Capability Project – Strategic

Estimated Total Cost:[51] $1.807 billion

Project Description:

This project originated as a Conservative Party of Canada campaign promise in the 2006 election to acquire "a fleet of at least three strategic lift aircraft."[52] That scope was subsequently expanded to acquiring four aircraft. All aircraft were delivered by 2008 and this initial project was closed out after it hit FOC in 2012. The government announced it would acquire a fifth C-17 on Dec. 19, 2014 using the remaining funding from the acquisition budget of the original aircraft purchase which was completed roughly $415 million under budget.[53]

Explanation of Variance:

Delivery of the first four aircraft occurred very quickly, as Canada used the advance contract award notice (ACAN) process, a procedure used to advertise an intent to sole-source a purchase, to procure the C-17 specifically. Canada also bought a virtually unmodified aircraft off an existing American production line, with the U.S. government's concurrence, at a time when Canada needed airlift because of operations in Afghanistan. The project was also a personal priority of then-minister of National Defence Gordon O'Connor, and benefited from the strong working relationship between former chief of defence staff Gen. Rick Hillier and then-deputy minister Ward Elcock.[54] The in-service support (the activities required to sustain the operation of a military fleet over its lifetime) arrangements secured for the fleet tapped into the existing worldwide arrangements established for the American C-17 fleet, facilitating a rapid acquisition.

Despite the speed of implementation, FOC of the original four aircraft was delayed due to complexities associated with transitioning to the in-service support arrangements, which required the full availability of infrastructure at Canadian Forces Base Trenton.[55]

The extremely rapid acquisition of the fifth aircraft is attributable to similar dynamics. Boeing had built 10 additional C-17s, "white-tailed"[56] in that they had no identified customer in mind. Canada therefore purchased an existing aircraft, already produced, without any modifications.

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[51] This report cites the "estimated total cost" for projects, rather than published project budgets or contract values to provide a standardized set of costs. The government is otherwise inconsistent in delineating what costs are captured in other news releases or backgrounders. Where available, contract costs are also published. All figures are those published as "revised estimated total cost" in the Status Report on Projects Operating with Specific Treasury Board Approval, for 2015/2016**.** http://www.forces.gc.ca/en/about-reports-pubs-departmental-performance/2016-projects-operating-with-specific-treasury-board-approval.page Accessed Dec. 1, 2016. This captures the four components of Vote 5 funding: Procurement costs of the acquisition (equipment platform/system/fleet and associated infrastructure); integrated logistics support (nominally two-year spares initial provisioning, training development, technical data packages, simulators, etc., – will vary from project to project); Project Management Office costs to include project staff SWE /military pay, travel, training, office space, contracted support, etc.; and GST.

[52] Conservative Party of Canada, "Conservatives Call for Boost to Canadian Forces," Dec. 19, 2005.

[53] Canada, Department of National Defence and the Canadian Armed Forces, "Increased Air Power for the Royal Canadian Air Force - Fifth CC-177 Globemaster to Increase RCAF Airlift Capability," Dec. 19, 2014. http://news.gc.ca/web/article-en.do?nid=916009, DPR 2013/2014

[54] Rick Hillier, *A Soldier First,* (Toronto: Harper Collins, 2008).

[55] RPP 2010-2011

[56] Nigel Pittaway, "Boeing: Five C-17As Still for Sale," *Defence News*, April 23, 2015 http://www.defensenews.com/story/defense/air-space/support/2015/04/23/australia-c17-boeing-air-force-globemaster/26137493/

Major Milestones:	Initial[57]	2014	2015	2016
Memorandum to Cabinet	June 2006	✓		
Effective Project Approval	June 2006	✓		
ACAN Notice July 2006		✓		
Contract Award	Feb. 2007	✓		
First Delivery	Aug. 2007	✓		
IOC	Spring 2008	Oct. 2008	✓	
FOC	Summer 2009	Dec. 2012	✓	
----------The Initial Project Closed After Reaching FOC for the First 4 Aircraft----------				
Amended Project Approval	Dec. 2014[58]	✓		
IOC 5th Aircraft	April 2015[59]	March 2015	✓	
FOC 5th Aircraft	Aug. 2015[60]	Sept. 2015	✓	
Project Close-Out	Dec. 2015[61]	March 2016	2021	

Progress in 2016:

No Information Publicly Available.

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[57] This Annex is compiled primarily using information provided in the "Status Report on Transformational and Major Crown Projects," section of the Department of National Defence Departmental Performance Report (DPR), supplemented with information from the section by the same name in the Department of National Defence Report on Plans and Priorities (RPP). In the interest of brevity, most citations to these two reports employ the abbreviations RPP or DPR, and indicate the relevant fiscal year. Unless specified by additional footnotes, the information in the column "2014" is from the DPR 2013/2014, that from "2015" from DPR 2014/2015 and "2016" from DPR 2015/2016. Information in the "Initial" column is from the footnote next to the word "Initial", unless otherwise specified. For the Airlift Capability Project – Strategic, the information in the "Initial" column is from DPR 2006/2007, unless otherwise indicated.

[58] RPP 2015/2016

[59] RPP 2015/2016

[60] RPP 2015/2016

[61] RPP 2015/2016

Airlift Capability Project – Tactical

Estimated Total Cost: $3.068 billion

Project Description:

This project replaced the oldest members of the RCAF's fleet of C-130 Hercules aircraft. A commitment to do so first appeared in the 2005 budget, and it was reiterated in the 2005 Defence Policy Statement. It was first brought forward for cabinet approval in the fall of 2005 as a sole-source procurement for the C-130J, but this strategy was rejected.[62]

This project was named as part of the Conservative Party of Canada's 2006 election platform, which committed to the "replacement of Canada's tactical airlift fleet of C-130 Hercules aircraft".[63] The project entered the implementation stage with the December 2007 contract award to Lockheed Martin Corporation for 17 C-130J aircraft. Aircraft deliveries began in May 2010 and were completed by May 2012. The contract was subsequently amended in December 2009 to include provisions for in-service support, in February 2010 for maintenance training systems, and in November 2013 for the Block 7.0 avionics modification required to satisfy final project deliverables.[64] The first CC-130J entered the Block 7.0 modification line in January 2015. Fleet embodiment and conversion of the CC-130J training system to the Block 7.0 configuration will progress to completion in the 2016-2017 fiscal year.[65]

Explanation of Variance:

The project was initially delayed due to the transition in government after the 2006 election. Thereafter, it had to be reconciled with the Harper government's priorized acquisition of a strategic airlift aircraft. Once the decision was made to proceed with the purchase, it occurred rapidly, in part because the C-130J was determined to be the only qualified aircraft following the solicitation of interest and qualification, a procedure whereby potential bidders are invited to indicate if they are interested and capable of bidding on a procurement. There was also a clear operational need due to the advanced age of the fleet being replaced, and pressing operational demand due to operations in Afghanistan. [66]

Delays in achieving IOC, FOC and project close-out appear to be due to longer than expected timelines for establishing contracts for in-service support, maintainer training and upgrading infrastructure at CFB Trenton.[67]

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62 Alan Williams, *Reinventing Canadian Defence Procurement*, (Kingston: Breakout Education Network, 2006), 30.

63 Conservative Party of Canada, "Conservatives Call for Boost to Canadian Forces," Dec. 19, 2005.

64 RPP 2015/2016

65 RPP 2016/2017

66 Hillier, *A Soldier First*.

67 DPR 2012/2013

Major Milestones:	Initial[68]	2014	2015	2016
Memorandum to Cabinet	June 2006	✓		
Preliminary Project Approval	June 2006	✓		
Effective Project Approval	Fall 2007	Dec. 2007	✓	
Contract Award	Fall 2007	Dec. 2007	✓	
IOC	Summer 2011	Sept. 2013	✓	
FOC	Summer 2013	Sept. 2016	Dec. 2016	Dec. 2016
Project Close-Out	Winter 2014	Dec. 2014	March 2017	March 2017

Progress in 2016:

No Information Publicly Available.

[68] DPR2006/2007

Arctic and Offshore Patrol Ship

Estimated Total Cost: $3.535 billion

Project Description:

This project evolved from the 2006 Conservative Party of Canada election platform commitment to "station three new armed naval heavy icebreakers in the area of Iqaluit."[69] Over time this requirement was adapted significantly, and now calls for "an ice-capable ship"[70] that will be able to operate year-round in one metre of first-year ice with old ice inclusions, while also being able to operate in the open ocean. The ship will be fitted with a gun system suited for constabulary roles, maintain a speed of 17 knots, operate at a range of 6,800 nautical miles, operate autonomously for up to four months, embark utility helicopters and provide limited support to the CH-148 Cyclone discussed below.

The project originally intended to acquire six to eight vessels, but this changed following a review of the design. The current contract for five to six ships required a project increase of roughly $300 million.

Explanation of Variance:

The Arctic Offshore Patrol Ship Project was delayed by the launch of the National Shipbuilding Procurement Strategy in June 2010. This process required first competitively selecting the winning shipyards that would build the ship (announced Oct. 19, 2011), and then negotiating umbrella agreements with the shipyards that lay out the terms for the overall program (completed in February 2012). Irving Shipyards Inc., awarded the work, subsequently undertook a roughly $300 million shipyard upgrade which saw the construction of an entirely new shipbuilding facility.

The project has subsequently employed a design-then-build approach which has effectively front-loaded a number of activities into a larger than usual definition contract. This effort resulted in a more costly and longer than normal definition stage designed to help gain a better understanding of the ship design prior to beginning construction in the implementation stage, as well as validating the new shipyard equipment and processes. The Arctic Offshore Patrol Ship Project is also being used to validate the systems and processes to be used for the entire combat work package, including the Canadian surface combatant discussed below.[71]

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[69] Conservative Party of Canada, "Defending Sovereignty – Strengthening Canada's Arctic Forces," Dec. 22, 2005.

[70] National Defence and the Canadian Armed Forces, Defence Acquisition Guide 2015, last modified June 25, 2014 http://www.forces.gc.ca/en/business-defence-acquisition-guide-2015/index.page

[71] Public Works and Government Services Canada, "National Shipbuilding Procurement Strategy (NSPS)" last modified July 14, 2015 http://www.tpsgc-pwgsc.gc.ca/app-acq/sam-mps/nouvelles-news-eng.html

Major Milestones:	Initial[72]	2014	2015	2016
Memorandum to Cabinet	Jan. 2008	✓		
Preliminary Project Approval	May 2007	✓		
Revised Project Approval Definition 1		Oct. 2011	✓	
Revised Project Approval Definition 2		Dec. 2012	✓	
Definition Contract		March 2013	✓	
Effective Project Approval	Jan. 2010	Dec. 2014	✓	
Contract Award (Implementation)	Jan. 2010	Jan. 2015	Dec. 2014	Jan. 2015
First Delivery	Aug. 2013	2018	2018	2018
IOC	March 2014	2019	2019	2019
FOC	Summer 2013[73]	2023	2023	2023
Project Close-Out	Winter 2014[74]	2024	2024	2024

Progress in 2016:

In March 2016 the first keel unit for ship 1, the HMCS Harry DeWolf, was moved into place. The second keel unit followed in May. In July the second of four main propulsion diesel engines and generators was installed.[75] In July the request for proposals was released for the AOPS/JSS in-service support contract (AJISS) which will support both vessel fleets.[76] In December 2016, Thales Canada was reportedly told it had won the contract.[77]

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72 DPR 07/08

73 DPR 2006/2007

74 DPR 2006/2007

75 http://shipsforcanada.ca/timeline#timeline

76 http://news.gc.ca/web/article-en.do?nid=1102479

77 http://news.nationalpost.com/news/canada/liberals-select-french-firm-for-5-2-billion-ship-maintenance-project-but-it-could-cost-more-in-long-run

Canadian Cryptographic Modernization Program

Estimated Total Cost: $426 million

Project Description:

The Canadian Cryptographic Modernization Program will modernize the government's cryptographic equipment and infrastructure in order to safeguard classified information and maintain Canada's ability to establish secure communications both nationally and internationally. The CCMP omnibus project includes the following sub-projects:

- Secure Voice / Telephone Re-key Infrastructure
- Secure Voice / Telephone Family
- Classified Security Management Infrastructure
- Combat Identification Family (Identification Friend or Foe (IFF))
- Link Encryption Family
- Network Encryption Family
- Secure Radio Family
- Combat Net Radio Enhancement
- Secure Mobile Environment.

Explanations of Variances:

The CCMP is reported to be on budget. Schedule slippage is in part due to its interdependence with the American cryptographic modernization initiative and the key management infrastructure program. Canada's collaboration with the United States allows Canada to leverage American research and development and maintain interoperability with its allies, but as a result the Canadian project's timeliness must align with the American initiative.[78] On March 31, 2016, the end date of the program was extended to March 2021.[79]

[78] RPP 2015/2016

[79] http://www.forces.gc.ca/en/about-reports-pubs-departmental-performance/2016-status-report-on-transformational-and-major-crown-projects.page#canadiancryptographicmodernizationprogram

Major Milestones:	Initial[80]	2014	2015	2016
Preliminary Project Approval (omnibus)	March 2005	✓		
Preliminary Project Approval CSMI	Nov. 2006	✓		
Secure Voice / Telephone Re-key Infrastructure		Sept. 2009	✓	
Secure Voice / Telephone Family		July 2012	✓	
Classified Security Management Infrastructure – Phase 1A		2015	✓	2017
Classified Security Management Infrastructure – Phase 1B		March 2012	✓	
Classified Security Management Infrastructure Phase 2 Def		March 2013	✓	
Link Encryption Family		2020	2020	2020
Secure Mobile Environment (cancelled)		2014	✓	N/A
Classified Security Management Infrastructure – Phase 2A		2017	2017	2018
Classified Security Management Infrastructure – Phase 2B		2019	2020	2021
Combat Net Radio Enhancement		2016	2016	2017
Network Encryption Family		2018	2018	2018
Combat Identification Family (IFF)		2018	2018	2018
Secure Radio Family		2019	2020	2020
Classified Security Management Infrastructure – Phase 3		2020	2020	2021

Progress in 2016:

No Information Publicly Available.

[80] RPP 2007/2008

Canadian Search and Rescue Helicopter Project

Estimated Total Cost: $788 million

Project Description:

This project emerged as one-half of the New Shipborne Aircraft Project that the Chrétien government cancelled in 1993, and subsequently split into two separate projects for search and rescue helicopters and maritime helicopters. It replaced the CH-113 Labradors with a fleet of 15 new CH-149 Cormorant helicopters.[81]

Explanation of Variances:

Initial delay was the result of the Chrétien decision to cancel the original New Shipborne Aircraft Project. Further delay then resulted from an initial, unchallenged assumption that the requirement could be procured off the shelf. In reality, an assessment found that the final aircraft delivered has less than 30 per cent commonality with the actual consistency – off the shelf variant. This delayed the issuance of airworthiness certification, and contributed to an initial under-resourcing of the Project Management Office.[82]

Effective project closure was achieved on Sept. 15, 2004, but work is ongoing to achieve project close-out. A three-year technical publication revision service was required to progress towards FOC, which did not begin until 2007-2008.[83] The work remaining is related to a minor retrofit after delivery, to conform to design specification, which is completed when major maintenance is conducted on the fleet and documentation in support of aircrew training is provided.

Major Milestones:	**Initial**[84]	**2014**	**2015**	**2016**
Preliminary Project Approval	Nov. 1995			
Request for Proposal	Nov. 1996			
Effective Project Approval	April 1998	✓		
Contract Award	April 1998	✓		
First Delivery	June 2000	Sept. 2001	✓	
Final Delivery	July 2002[85]	July 2003	✓	
Project Completion (effective)	July 2004[86]	Sept. 2004	✓	
Project Close-Out	Winter 2014[87]	2015	2016	Fall 2017

Progress in 2016:

Five additional milestones were completed in FY 2015-2016 (but it is unclear which occurred during calendar year 2016).

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81 Aaron Plamondon, *The Politics of Procurement*, (Vancouver: UBC Press, 2010).

82 Chief Review Services, *Review of the Canadian Search and Rescue Helicopter Acquisition (Cormorant)* (Ottawa: Department of National Defence, 2007).

83 DPR 2006/2007

84 RPP 1998/1999, 88-89.

85 RPP 1999/2000, 33.

86 RPP 1998/1999, 89.

87 DPR 2006/2007

Canadian Surface Combatant Project

Estimated Total Cost: Originally $26.2 billion.[88]

Project Description:

The Canadian surface combatant project originally intended to recapitalize Canada's naval fleet through two variants: An area air defence and task group command and control variant and a general purpose variant. This was first discussed in the 2005 *Defence Policy Statement* which pledged to "Begin to define the requirements for a new class of surface ship to replace the current destroyers and frigates."[89] The project formed part of the 2006 Conservative Party's election platform, which committed to "initiating a longer-term frigate/destroyer replacement program,"[90] and was included in the 2008 *Canada First Defence Strategy.* Whether the project will produce two variants or one, has not been discussed publicly. The project was originally set to acquire 15 vessels, but this was later revised to "up to 15"[91] vessels.[92] The government is examining a batching strategy that could see the procurement broken into contracts for fewer than 15 ships at a time.[93]

Explanation of Variance:

The project is part of the National Shipbuilding Procurement Strategy, and progress on the Canadian surface combatant has been dependent upon progress on the other aspects of that wider strategy, detailed above. The project experienced significant delay in selecting the final procurement strategy, which was originally supposed to occur in the summer of 2013. The use of 15 industry engagement sessions since 2012 is reflective of a commitment to engaging with industry, but at the same time contributed to a delay in announcing a "most competitive procurement strategy" in May 2015. As a result, a gap of almost two years between the completion of the ASOP project and the start of CSC project construction had emerged. The revised procurement strategy that would see a military off-the-shelf design procured is intended to reduce this gap as much as possible.

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88 Strong Secure Engaged pegged the new project cost for the acquisition of these ships at $56-60B.

89 Department of National Defence, *Defence Policy Statement*. (Ottawa: 2005), 14. All subsequent references to the *Defence Policy Statement* refer to this document.

90 Conservative Party of Canada, "Conservatives will Boost Defence on West Coast to Protect Canadian Sovereignty," Dec. 27, 2015.

91 Public Works and Government Services Canada, "National Shipbuilding Procurement Secretariat," July 14, 2015 http://www.tpsgc-pwgsc.gc.ca/app-acq/sam-mps/snacn-nsps-eng.html

92 Strong Secure Engaged put the future fleet number at 15.

93 Evidence, House of Commons Standing Committee on National Defence. 42nd Parliament, 1st Session, No. 28. Nov. 17, 2016.

Major Milestones:	Initial[94]	2014	2015	2016
Identification Phase Approval	July 2007[95]			
Preliminary Project Approval	2011			
Definition Phase 1		June 2012	✓	
Definition Phase 2		Oct. 2014	2017	2017
Definition Contract		2016	2017	2017
Effective Project Approval		2019	Early 2020s	Early 2020s
Implementation Contract Award	2015	2019	Early 2020s	Early 2020s
First Delivery		2025	Late 2020s	Late 2020s
IOC	2021	2026	Late 2020s	Late 2020s
FOC	2036	2042	Mid-2040s	Early 2040s
Project Close-Out	2037[96]	2043	Late 2040s	Early 2040s

Progress in 2016:

In February a proposed change in the procurement strategy was announced to selecting an existing warship design. This decision was confirmed in June. The shift followed a requirements reconciliation process the RCN undertook in the summer of 2015, which resulted in a modified set of requirements that can be met by adapted existing ship designs.[97] Over the summer of 2016, Canadian industry and the pre-qualified short-listed respondents were also engaged on the draft request for proposals. On Oct. 27, the request for proposals was released to pre-qualified companies.[98]

94 RPP 2011/2012

95 DPR 2010/2011

96 RPP 13/14

97 http://news.gc.ca/web/article-en.do?nid=1083659

98 http://news.gc.ca/web/article-en.do?nid=1143299

CP-140 Aurora Incremental Modernization / Structural Life Extension Projects (New)

Estimated Total Cost: $1,566 million (AIMP) + $421 million (ASLEP)

Project Description:

To deliver 14 modernized and life-extended CP-140 Aurora aircraft to the RCAF through four aircraft installation blocks.

Explanation of Variance:

To date, the Aurora Incremental Modernization Project has delivered a modernized navigation and communication capability to the RCAF and has updated the mission computer and sensors on nine of 14 aircraft, of which six have also had a structural life extension. The modernized Aurora aircraft have restored Canada's airborne maritime surveillance capabilities while providing significant enhancements to its overland surveillance ability with its world-class integrated mission systems capabilities as demonstrated during domestic and international surveillance missions. The next block of the modernization was contracted with General Dynamics Mission Systems-Canada in October 2015 to further enhance the Aurora's capabilities and to maintain its operational relevance to its eventual retirement in the 2030 timeframe. By the end of 2016, 11 of 14 aircraft were to have been modernized; of which 10 will have also had a structural life extension.

Major Milestones:	**Initial[99]/2015**	**2016**
Block 4 Definition Approved	Oct. 2013	✓
Block 4 Implementation Approved	June 2015	✓
Contract Award	Oct. 2015	✓
Initial Operational Capability	Dec. 2018	Dec. 2018
14th Modified Aircraft Delivered	June 2020	June 2020
Contract Close-Out	Dec. 2020	Dec. 2020

[99] DPR 2014/2015

Fixed-Wing Search and Rescue Aircraft Replacement Project

Estimated Total Cost:

Previously $1.45 billion. A contract was announced in December 2016 valued at up to $4.7 billion, including option years for maintenance and support through 2043.[100]

Project Description:

This project will replace the fixed-wing component of the RCAF's search and rescue fleet. In 2004, the Martin government provided money in its budget to accelerate the replacement of search and rescue airplanes; it was mentioned specifically in the 2005 *Defence Policy Statement*, and was first brought forward for cabinet approval in the fall of 2005, but not approved.[101] The project also appeared in the 2006 Conservative Party campaign platform, and was specifically mentioned in the 2008 *Canada First Defence Strategy.*

Explanation of Variance:

An internal DND audit of the project noted initial delay following the 2004 budget related to a lack of external endorsement of the project's procurement strategy, problems with the project's life cycle costing, as well as an issue with its proposal for in-service support.[102] Alan Williams described the former problem as related to the RCAF's statement of operational requirement, which he contends the RCAF wrote to favour the Alenia C27J.[103]

The issue lingered for several years, until Public Works and Government Services Canada (PWGSC) asked the National Research Council to review the project's requirements in 2009. It reported in March 2010 that "The [statement of operational requirement] as written is over-constrained."[104] A revised document was finalized in December 2010, and a PWGSC-led secretariat was established to provide project governance in February 2012. Changes to the final request for proposals were also created by introducing a requirement for a Canadian in-service support integrator to maximize the industrial benefits accruing to Canadian industry from the project's in-service support arrangements.[105]

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[100] http://www.tpsgc-pwgsc.gc.ca/app-acq/amd-dp/air/arsvf-fwsar/index-eng.html

[101] Williams, *Reinventing Defence Procurement.*

[102] Chief Review Services, "Audit of the Fixed Wing Search and Rescue Project (FWSAR),"(Ottawa: Department of National Defence, May 2009).

[103] Williams, 40.

[104] National Defence and the Canadian Armed Forces, "Review of the Statement of Operational Requirement for the Fixed Wing Search and Rescue Aircraft," March 12, 2010 http://www.forces.gc.ca/en/about-reports-pubs/fixed-wing-search-rescue-aircraft-2010.page

[105] Public Works and Government Services Canada, "Fixed-Wing Search and Rescue Aircraft Replacement (FWSAR) Project: FWSAR Project - Independent Review of Evaluation Plans, Methods and Tools" April 2, 2015, Accessed Oct. 17, 2015. http://www.tpsgc-pwgsc.gc.ca/app-acq/stamgp-lamsmp/svtvnpro-rscfwpro-eng.html

Major Milestones:	Initial	2014	2015	2016
DND Identification Approval	Nov. 2002			
Preliminary Project Approval	Spring/Summer 2009[106]			
Expenditure Authority – Def	March 2012[107]	March 2012	✓	
Project Approval – Def	2014[108]	2014	March 2015	✓
Effective Project Approval	Spring 2010[109]	2015	2016	✓
Contract Award	Spring/Summer 2010[110]	2015	2016	✓
First Delivery	March-Sept. 2005[111]	2018	2019	2019
IOC	2018[112]	2019	2020	2020
FOC	2019[113]	2021	2022	2022
Project Close-Out	Spring/Summer 2017[114]	2022	2023	2023

Progress in 2016:

The government awarded a contract to Airbus Defence and Space on Dec. 1, 2016.

This contract includes delivery of 16 C295W aircraft; infrastructure and set-up activities, such as training and engineering services; construction of a new simulator-equipped training centre in Comox, B.C.; and maintenance and support services.

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106 RPP 2009/2010

107 DPR 2014/2015

108 DPR 2014/2015

109 RPP 2009/2010

110 RPP 2009/2010

111 Canada, Department of Finance, *Budget Plan 2004* (Ottawa: 2004), 194.

112 DPR 2011/2012

113 DPR 2011/2012

114 RPP 2009/2010

Force Mobility Enhancement Project

Estimated Total Cost: $356 million

Project Description:

The Force Mobility Enhancement Project is a two-phase project. In Phase 1, the project will replace Canada's aging Leopard 1 armoured engineer vehicle Badger fleet with a heavily protected and mobile platform capable of supporting the newly acquired Leopard 2 main battle tank until 2035. The project will then acquire 13 Leopard 2-based armoured engineer vehicles, with an option of an additional five, including engineering implements for the armoured engineer vehicle. In Phase 2, the project will acquire tactical mobility implements for the in-service Leopard 2 main battle tank. Tactical mobility implements could include, but are not limited to, mine rollers, mine ploughs and dozer blades. The project will also seek to acquire two Leopard 2-based armoured recovery vehicles, with an option of an additional two, as support variants for the armoured engineer vehicle. The armoured recovery vehicles will be acquired by exercising contract options from the tank replacement project.

Explanations of Variances:

On Dec. 10, 2013, the contractor informed DND that IOC would be postponed for seven months from February 2015 to September 2015 due to delays in the design and delivery of the casted chassis modules. On Aug. 26, 2014, DND was notified of a second delay to meeting IOC. This second delay is due to the postponement of ballistic testing by eight months.[115]

Canada has accepted the first three AEVs and all four of the ARVs have been delivered. Ten mine roller systems have been delivered, while dozer blades and mine ploughs are scheduled for delivery in 2016. Modifications to the Leopard 2 MBT fleets are currently underway, with 18 vehicles completed.

The Senior Review Board (SRB) meeting on Feb. 5, 2016 endorsed revisions to the IOC date for Phase I to March 2017 and IOC date for Phase 2 to October 2016. The changes were due to the availability of the Canadian Army to conduct training.[116]

[115] RPP 2015/2016

[116] DPR 2015/2016

Major Milestones:	Initial[117]	2014	2015	2016
Preliminary Project Approval - Def.	June 2009[118]	✓		
RFP Phase 1	Oct. 2010	✓		
RFP Phase 2	June 2011	✓		
Effective Project Approval	April 2014[119]			
Effective Project Approval Phase 1		March 2012	✓	
Effective Project Approval Phase 2	Feb. 2012	Nov. 2013	✓	
Contract Award Phase 1	Nov. 2011	Apr. 2012	✓	
Contract Award Phase 2	March 2012	Nov. 2013	Dec. 2013	✓
IOC Phase 1	April 2014	Dec. 2015	Oct. 2016	March 2017
IOC Phase 2	Dec. 2013	Aug. 2015	Aug. 2015	Oct. 2016
FOC	2015[120]	Dec. 2016	Dec. 2017	Dec. 2017
Project Close-Out	2017[121]	2017	April 2018	March 2018

Progress in 2016:

No Information Publicly Available

[117] DPR 2010/2011

[118] RPP 2010/2011

[119] RPP 2010/2011

[120] RPP 2010/2011

[121] RPP 2010/2011

Future Fighter Capability

Estimated Total Cost:

N/A.[122] The prior Next Generation Fighter Capability Project to acquire the joint strike fighter had its acquisition envelope frozen at $8.990 billion.[123]

Project Description:

The objective of the Future Fighter Capability Project is to replace the CF-18 fleet upon its retirement. Canada initially joined the concept demonstration phase of the joint strike fighter consortium in 1997, and subsequent phases of the project in 2002 and 2006. The 2008 *Canada First Defence Strategy* committed to purchasing "starting in 2017, 65 next-generation fighter aircraft to replace the existing fleet of CF-18s."[124] In June 2010 the government announced that Canada would purchase the joint strike fighter.[125]

The Trudeau government has directed that as a matter of policy, Canada's fighter fleets must be ready to meet Canada's NATO and NORAD commitments simultaneously. The commander, RCAF, has stated that this policy "would mean that 65 aircraft aren't sufficient as the final size of the fleet."[126]

Explanation of Variance:

In March 2011, the Parliamentary Budget Officer released a report indicating that the cost of acquiring the aircraft exceeded those released publicly and in April 2012, a report from the auditor general similarly presented a higher cost estimate and also indicated several problems with the process used to decide to purchase the F-35. On April 3, 2012, the government announced a comprehensive response to the auditor general's report, including a seven-point plan to address the auditor general's recommendation. As a result, the National Fighter Procurement Secretariat was established to provide oversight and co-ordination among the departments involved with the implementation of the seven-point plan, and the procurement was reset. All of the work associated with the seven-point plan was completed in December 2014.

During the 2015 federal election, the Liberal Party stated that "we will not buy the F-35," and instead "immediately launch an open and transparent competition to replace the CF-18 fighter aircraft."[127] Sajjan's mandate letter instructed him to "launch an open and transparent competition to replace the CF-18 fighter aircraft, focusing on options that match Canada's defence need."

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[122] Strong Secure Engaged pegged the project budget for future fighters at $15-18B

[123] http://www.forces.gc.ca/sites/FORCES_Internet/about-reports-pubs/next-gen-fighter-independent-review-2014.page

[124] Department of National Defence. *Canada First Defence Strategy,* 17.

[125] Office of the Auditor General of Canada, *2012 Spring Report of the Auditor General of Canada: Chapter 2—Replacing Canada's Fighter Jets* (Ottawa: Spring 2012).

[126] Evidence, Standing Senate Committee on National Security and Defence Nov. 28, 2016 http://www.parl.gc.ca/Content/SEN/Committee/421/secd/09ev-52940-e.htm

[127] Liberal Party of Canada, *A New Plan for a Strong Middle Class* (Ottawa: 2015), 70.

Major Milestones:	Initial[128]	2014[129]	2015	2016
Identification Phase Approval	Jan. 2010	✓		
First Procurement Request	Jan. 2012			
First Delivery	Dec. 2016			
IOC	May 2020			
FOC	Sept. 2025			
Project Close-Out	Dec. 2027			

In April 2012, a complete review of the project was announced.

On Nov. 22, 2016, a revised approach was announced.

Progress in 2016:

In July, the government of Canada launched a round of industry engagement with interested suppliers of fighter aircraft.[130] On Nov. 22, the government announced a revised approach to acquiring fighter aircraft. It will first discuss with the U.S. government and Boeing a potential procurement of 18 Super Hornet aircraft for use over an interim period to determine if they can be provided "at a cost, time, level of capability, and economic value that are acceptable to Canada."[131]

At the same time, the Liberals also announced that they "will, within the current mandate, launch an open competitive procurement process to permanently replace the CF-18 fighter aircraft."[132] This effort will be informed by the results of the Defence Policy Review, and the government "will develop its purchasing requirements for the aircraft, everything from the number of aircraft needed to defend Canadians and in-service support requirements, to economic benefits to Canada, to the estimated time of delivery."[133]

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[128] DPR 2010/2011

[129] DPR 2013/2014

[130] http://www.forces.gc.ca/en/business-equipment/next-gen-fighter.page

[131] http://news.gc.ca/web/article-en.do?mthd=tp&crtr.page=1&nid=1158689&crtr.tp1D=930

[132] Ibid.

[133] http://news.gc.ca/web/article-en.do?mthd=tp&crtr.page=1&nid=1158689&crtr.tp1D=930

Halifax-Class Modernization/Frigate Life Extension

Estimated Total Cost:

$2.758 billion (Other cost breakdowns cite a total of $4.3 billion[134])

Project Description:

This project is both modernizing and life-extending all 12 Halifax-class frigates, commissioned between 1992 and 1996. It began as a life extension only (FELEX in the proceeding page), but this was combined in 2005 to include a number of capability upgrades (HCM/FELEX). This was pledged in the 2005 *Defence Policy Statement*[135] and mentioned in the 2006 Conservative Party platform.[136] The ships were originally designed for anti-submarine warfare and anti-surface warfare in the open ocean environment, while the fleet's operational activities have shifted increasingly to littoral regions. The project is providing enhancements to both sensors and weapons as well as life-extending critical equipment. This includes a new combat management system; radar suite; interrogator friend or foe mode S/5; internal communications system upgrade; Harpoon missile system upgrade; electronic warfare system upgrade; long-range infrared search and track system; modification to the gun; and replacement of the Shield II missile decoy countermeasures system, integrated machinery control system and navigation radars.[137] A limited capability to embark a task group commander has been added to four of the ships as well.[138]

Explanation of Variance

The project is extremely complex, involving major changes to the ships' systems, with work occurring in two separate shipyards, with a separate contract for the combat systems integration, internal communications system and weapons control system. The project was led by an innovative management arrangement which created a committee of sponsors including the assistant deputy minister materiel, the commander, RCN, the assistant deputy minister acquisitions from Public Works and Government Services Canada, as well as the chief executive officers from each of the principal contractors to establish collaborative working relations from the beginning of the project.[139] This arrangement was crucial to resolving schedule issues and controlling costs, and was facilitated by continuity in key staff positions. [140]

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[134] http://news.gc.ca/web/article-en.do?mthd=index&crtr.page=1&nid=1059339

[135] Department of National Defence, *Defence Policy Statement*, 14.

[136] Conservative Party of Canada, "Conservatives will Boost Defence on West Coast to Protect Canadian Sovereignty," Dec. 27, 2015.

[137] National Defence and the Canadian Armed Forces, "Halifax-Class Modernization (HCM) / Frigate Life Extension (FELEX)," Nov. 24, 2014 http://www.forces.gc.ca/en/news/article.page?doc=halifax-class-modernization-hcm-frigate-life-extension-felex/hkm9beb0

[138] RPP 2015/2016

[139] Chief Review Services. *Audit of the Halifax-Class Modernization / Frigate Life Extension (HCM/FELEX) Project. (*Ottawa: Department of National Defence , 2011).

[140] Doug Dempster, "Navigating Complexity," *Vanguard*, September/October 2015.

Major Milestones:	**Initial**[141]	**2014**	**2015**	**2016**
Preliminary Project Approval (FELEX)	Feb. 2005	✓		
Preliminary Project Approval (HCM)	Feb. 2007	✓		
Effective Project Approval	April 2008	Sept. 2008	✓	
Multi-Ship Contract Awards	Oct. 2007	March 2008	✓	
Combat System Integration Contract	Sept. 2008	Nov. 2008	✓	
Refits Start	April 2010	Oct. 2010	✓	
IOC	Jan. 2015[142]	Jan. 2015	✓	
FOC	Jan. 2018[143]	Jan. 2018	Jan. 2018	Jan. 2018
Project Close-Out	April 2018	Jan. 2019	Jan. 2019	Jan. 2019

Progress in 2016:

The last frigate to go through the process, HMCS Toronto, completed its upgrade on schedule, in November 2016.

[141] DPR 2006/2007

[142] RPP 2014/2015

[143] RPP 2009/2010

Land Forces Intelligence Surveillance, Target Acquisition and Reconnaissance System

Estimated Total Cost: $672 million[144]

Project Description:

This project is providing an integrated, interoperable, intelligence surveillance, target acquisition and reconnaissance capability that will improve commanders' ability to visualize the operational area, manage sensors and information collection resources, and to plan and implement actions to successfully complete operational missions. It will enhance existing capabilities and acquire new ones in the areas of communications, command and control and sensors. The project includes the acquisition of unmanned aerial vehicles (UAV), weapon-locating sensors (WLS) and transformation or enhancement of existing sensor platforms to include electronic warfare (EW). In support of Operation Athena in the 2003/2004 timeframe, the project delivered equipment in the areas of command and control, tactical unmanned aerial vehicles (TUAV), weapons-locating sensors and electronic warfare capabilities as "unforecasted operational requirements." Early deliveries of elements of the unmanned aerial vehicles, electronic warfare and data link communications sub-projects continued during 2006 for Operation Archer. As well, urgently required systems, in particular the acoustic weapons locating system, the lightweight counter mortar radar system, and additional electronic warfare systems were fielded in 2007.

Explanations of Variances:

Initial deliveries were estimated to occur in 2005-2006, but the unforecasted operational requirement for a UAV and other sensor upgrades resulted in the delivery of a partial tactical UAV and electronic warfare capability in Afghanistan in 2003-2004. The implementation of the other sub-projects was delayed as the project team delivered numerous other aspects of the projects that were also unforecasted operational requirements to Afghanistan.[145] Current estimates are that the project will be completed in 2018. This delay is associated with the U.S. government's contracting delays for equipment acquired through foreign military sales and by other delays incurred in deliveries.[146] The project benefited from the ability to make maximum use of its project management resources and reallocate project staff towards urgent requirements quickly as well as project management continuity. [147] The medium-range radar contract was awarded in summer 2015 for initial delivery in June 2017 (first radar), the man-portable surveillance and target acquisition radar (MSTAR) and remote viewing terminal will start delivery in early FY 2016-2017, and the ISTAR C2 will continue to deliver the final items of the advance patrol collection kit until the end of 2017.[148]

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144 This estimate is for the LF ISTAR Omnibus project.

145 RPP 2014/2015

146 RPP 2015/2016

147 Dempster, "Navigating Complexity," *Vanguard*.

148 http://www.forces.gc.ca/en/about-reports-pubs-departmental-performance/2016-status-report-on-transformational-and-major-crown-projects.page#futurefightercapability

Major Milestones:	**Initial**[149]	**2014**	**2015**	**2016**
Preliminary Project Approval	April 3, 2003	✓		
TUAV Unforecasted Operational Requirement (UOR)				
Minister of National Defence Approval		May 2003	✓	
FOC		Dec. 2005	✓	
Emergency Beyond Line-of-Sight Communication				
Effective Project Approval		Nov. 2005	✓	
FOC		March 2010	✓	
Communications & Data Link Component				
Effective Project Approval		Dec. 2006	✓	
FOC		Dec. 2014	March 2015	June 2015
Command and Control (C2)				
Effective Project Approval		Feb. 2008	✓	
FOC		Nov. 2015	Nov. 2015	Nov. 2017
Electronic Warfare Warning (EW) Sensors				
Effective Project Approval		Nov. 2005	✓	
FOC		June 2015	June 2015	✓
In-Service Sensors Enhancement				
Effective Project Approval		Jan. 2012	✓	
FOC		March 2016	March 2016	March 2018
Weapon-Locating Sensors (WLS) Acoustic Sensor				
Effective Project Approval		Nov. 2005	✓	
FOC		April 2010	✓	
Family of UAV				
Effective Project Approval – UOR		Nov. 2005	✓	
FOC		March 2016	March 2016	March 2018
Light Weight Counter Mortar Radar				
Effective Project Approval		March 2007	✓	
FOC		Dec. 2015	Dec. 2015	July 2016

[149] DPR2006/2007

Medium-Range Radar				
Effective Project Approval		Jan. 2012	✓	
IOC		June 2017	June 2017	July 2017
FOC		Dec. 2017	Dec. 2017	June 2018
Deliveries on All Sub-projects 2012		May 2018	May 2018	May 2018
Project Close-Out	March 2013	March 2018	Sept. 2018	Sept. 2018

Progress in 2016:

In August 2016 the government announced that it would be purchasing a small unmanned aerial vehicle from the United States Navy through a foreign military sale. The sale includes five unmanned aircraft, two ground control stations and one launch and recovery system for $14.2 million, to be delivered in 2017.[150]

[150] http://news.gc.ca/web/article-en.do?nid=1117239

Joint Support Ship

Estimated Total Cost: $2.329 billion

Project Description:

This project is replacing the RCN's auxiliary oiler replenishment vessels. It was first discussed in the 1994 white paper,[151] and the Liberal Party committed to purchase the vessels in its 2004 campaign, as did the Conservative Party in 2006.[152] Early iterations of the project envisioned a vessel that would replace the existing capability and provide significant additional joint capabilities in the form of command and control, sealift and medical facilities. In August 2008, the project was cancelled when both submitted bids were "significantly over the established budget provisions."[153] The failure of this project and one for the Canadian Coast Guard spurred the establishment of the National Shipbuilding Procurement Strategy, launched June 3, 2010.[154] The ships will be based on an adaptation of the German navy's Berlin-class.

Progress Report and Explanations of Variances:

The initial delay in acquiring this project was attributable to a shortage of capital funds in the 1990s. Subsequently, the first iteration of the project failed due to a significant deterioration of the government's knowledge of the Canadian shipbuilding industry, and the industry's condition by the mid-2000s. As with the other projects of the National Shipbuilding Procurement Strategy, this one was delayed as the overall strategy was implemented. The Joint Support Ship Project will be the third class of ship built at the Seaspan Vancouver shipyards, following three offshore fisheries science vessels and then an offshore oceanographic science vessel for the Canadian Coast Guard. An agreement in principle for the construction of the first class was only reached and first steel cut in June 2015. Their production was originally to take until 2017, to be followed by the second class, and only then will work start on the joint support ship. While work is progressing on the vessels' initial design review, the project is impacted both by delays associated with the earlier projects that precede it, and the resource-intensive efforts to make progress on those same projects by both the shipyard and Canada.[155] On June 23, 2015 the government announced that it was pursuing an interim auxiliary oiler replenishment capability to be used until the joint support ship is delivered. In November the assistant deputy minister of materiel stated that a build contract was 12 to 14 months away and the first steel would be cut on the project in 2019.[156]

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[151] Department of National Defence, *1994 White Paper*. (Ottawa: 1994). http://www.forces.gc.ca/admpol/downloads/1994%20White%20Paper%20on%20Defence.pdf

[152] Conservative Party of Canada, "Conservatives will Boost Defence on West Coast to Protect Canadian Sovereignty," Dec. 27, 2015.

[153] Government of Canada, "Archived - Bidders fail to meet budget requirements," Aug. 22, 2008 http://news.gc.ca/web/article-eng.do?crtr.sj1D=&mthd=tp&crtr.mnthndVl=&nid=416189

[154] Public Works and Government Services Canada, "National Shipbuilding Procurement Secretariat."

[155] Royal Canadian Navy, Joint Support Ship, last modified June 10, 2015 http://www.navy-marine.forces.gc.ca/en/fleet-units/jss-home.page

[156] Evidence, House of Commons Standing Committee on National Defence. 42nd Parliament, 1st Session, No. 28. Nov. 17, 2016. His chief of staff cited 2018 as the start date for construction in separate testimony, however. http://www.parl.gc.ca/content/sen/committee/421/NFFN/52946-E.HTM

Major Milestones:	Initial[157]	2014	2015	2016
Memorandum to Cabinet	April 2004			
Preliminary Project Approval	Nov. 2004			
Project Definition Contract	Dec. 2006			
Effective Project Approval	2008			
First Delivery	2012			
IOC	2013			
FOC	2016			
----------Project was cancelled and re-launched----------				
Revised Preliminary Project Approval	June 2010[158]	✓		
Effective Project Approval	Feb. 2013[159]	2016	Fall 2017	Fall 2017
Implementation Contract	March 2013[160]	2016	Fall 2017	Fall 2017
IOC	Spring 2018[161]	2019	2020	2021
FOC	Fall 2019[162]	2020	2021	2022
Project Close-Out		2020	2022	2022

Progress in 2016

In March 2016 a contract was announced for long lead items for JSS. This $35.4 million (including taxes) contract will enable Vancouver Shipyards Co. Ltd. to engage suppliers and select the equipment needed to finalize the design and to build the JSS. The contract value will increase as the design progresses and additional commitments are made regarding equipment purchases. The first group of long lead items includes propulsion systems, generators, switchboards, and other specialized parts and equipment.[163]

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157 DPR 2006/2007

158 DPR 2009/2010

159 RPP 2011/2012

160 RPP 2011/2012

161 RPP 2011/2012

162 RPP 2011/2012

163 http://news.gc.ca/web/article-en.do?nid=1039769#bckgrnd

Joint Unmanned Surveillance and Target Acquisition System

Estimated Total Cost: N/A

Project Description:

The project was initially slated to procure and field a mature medium-altitude long-endurance unmanned aerial vehicle system to provide capabilities for domestic and international operations. It was intended to complement existing reconnaissance, surveillance, and target acquisition capabilities, increase maritime and Arctic domain awareness and provide a "precision force application" capability in support of Land and Special Operations Forces.[164] The project was mentioned in the 2006 Conservative Party of Canada platform, which committed to "providing eastern and western Arctic air surveillance through stationing new long-range uninhabited aerial vehicle (UAV) squadrons."[165] In 2016, the project description called for a "long-range, long-endurance"[166] capability and the chief of the defence staff stated that the project had been assigned increased importance, and that he would like to see the acquisition of an armed platform.[167]

Explanation of Variance:

The project has been in the options analysis stage since 2005. As a result of the limited market for unmanned aircraft that would satisfy all mandatory operational requirements in 2007, the project was delayed to enable a competitive procurement strategy, as a sole-source procurement was deemed unacceptable at the time by the contracting authority, resulting in a more than three-year delay. In the meantime, the project office delivered a leased solution for operations in Afghanistan between 2009 and 2011, which delayed progress on the acquisition further. The project was again slowed down by changing capability requirements for speed, range, endurance and intelligence functions.[168]

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[164] RPP 2011/2012

[165] Conservative Party of Canada, "Stephen Harper Stands Up for Canada's Sovereignty in the Arctic," Dec. 22, 2015.

[166] http://www.forces.gc.ca/en/business-defence-acquisition-guide-2016/aerospace-systems-59.page

[167] Evidence, Standing Senate Committee on National Security and Defence. The new policy specifies that this poject will acquire and armed platform.

[168] Chief Review Services, Internal Audit of Joint Unmanned Surveillance and Target Acquisition System (JUSTAS) Project (Ottawa: Department of National Defence, March 2014)

Major Milestones:	Initial[169]	2014	2015	2016
Preliminary Project Approval	TBD	2016-2018	2017	TBD
Effective Project Approval	TBD	2019-2020	2020	TBD
Contract Award	TBD	2019-2020	2020	TBD
First Delivery	TBD	TBD	TBD	TBD
IOC	TBD	TBD	TBD	TBD
FOC	TBD	TBD	TBD	TBD
Project Close-Out	TBD	TBD	TBD	TBD

Progress in 2016:

In January 2016 a request for information on the project was released and responses were provided to the government April 15.[170]

[169] 2011/2012

[170] https://buyandsell.gc.ca/procurement-data/tender-notice/PW-BL-298-25611

Light Armoured Vehicle III Upgrade Project

Estimated Total Cost: $1.320 billion

Project Description:

This project was part of the family of Land Combat Vehicles projects announced in the 2008 *Canada First Defence Strategy*. The CAF's experience in Afghanistan demonstrated the ongoing requirement for a highly protected, yet highly mobile light armoured vehicle. The threats of mines, improvised explosive devices, explosively formed projectiles and anti-armour weapons were deemed likely to be present in most medium- to high-threat missions. Despite improvements to the protection of the light armoured vehicle (LAV) III fleet deployed to Afghanistan, it had insufficient armour to defeat modern threats, and insufficient mobility given the increased weight of the vehicle due to the protection kits and the increased stowage of combat supplies. Further, the target acquisition and fire control systems require upgrading to overcome obsolescence issues and to improve lethality. Contract award was announced in October 2011, and in November 2012 a contract amendment was announced exercising an option to upgrade 66 additional vehicles for a reconnaissance and surveillance capability.[171]

Explanation of Variance:

First deliveries of the vehicles occurred in December 2012 and initial operational capability occurred in June 2014.[172]

Major Milestones:	**Initial**[173]	**2014**	**2015**	**2016**
Preliminary Project Approval	June 2009	✓		
Contract Approval	Early 2010	✓		
Implementation Start	Spring 2011	Oct. 2011	✓	
First Delivery	Late 2011[174]	Dec. 2012	✓	
IOC	Fall 2013[175]	Spring 2014	✓	
FOC	2018	2018	Spring 2019	2019
Project Completed	Spring 2019	March 2019	June 2019	2019

Progress in 2016

In 2016 the number of vehicles inducted into production rose from 185 to 420, the number produced increased from 143 to 332 and the number fielded to operational units has risen from 64 to 262.[176]

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171 National Defence and the Canadian Armed Forces, "Light Armoured Vehicle (LAV) III Upgrade Project," Feb. 8, 2013 http://www.forces.gc.ca/en/news/article.page?doc=light-armoured-vehicle-lav-iii-upgrade-project/hie8w7nv

172 RPP 2016/2017

173 RPP 2010/2011

174 RPP 2010/2011

175 RPP 2013/2014

176 DPR 2015/2016

Lightweight Towed Howitzer

Estimated Total Cost: $265 million

Project Description:

The lightweight towed howitzer will bridge a key facet of the army's current indirect fire capability deficiency. It will field 25 M777 lightweight 155mm towed howitzers, each with a digital gun management system (DGMS), supported by improved ammunition and a modern truck. These howitzers will augment the 12 M777 howitzers currently in service. These capability enhancements in terms of lethality, range, precision, mobility and digitization are needed to support future missions and tasks likely to be assigned to the Canadian Army.

Explanation of Variance:

Deliveries of the M777 howitzers and the digital gun management system components started in 2010 and were completed in the summer of 2011. IOC was originally forecasted to occur in July 2011 and was shifted to October 2011 as a result of unforeseen issues with technical integration. In October 2012 the project achieved full IOC. The M777 infrastructure initiative is currently in the construction phase. The majority of infrastructure initiatives are expected to be completed by 2015-2016.

The project is planning to achieve effective project closure in March 2018, a delay from the original date of June 2016. This is due to the requirement to deliver infrastructure, the medium-support vehicle system gun tractor variant, ammunition components and the ammunition storage and handling system before doing so. The project had significant interdependencies with the medium-support vehicle system project, which has been much delayed. In 2014/2015, the project was also informed that delivery of the improved ammunitions was delayed to address improvements after completion of the evaluation trial, delaying systems integration work until the ammunition is delivered.[177]

Major Milestones:	**Initial**[178]	**2014**	**2015**	**2016**
Preliminary Project Approval	Jan. 2008	✓		
FMS Sales Agreement	Nov. 2008	✓		
DGMS Contract Award	April 2009	Nov. 2009	✓	
Effective Project Approval	June 2009	Jan. 2010	✓	
IOC	April 2011	Oct. 2011	Oct. 2012	✓
FOC	Dec. 2012	March 2016	Dec. 2017	Dec. 2017
Project Close-Out	June 2013	June 2016	March 2018	March 2018

Progress in 2016:

No Information Publicly Available.

[177] RPP 2015/2016

[178] RPP 2009/2010

Maritime Helicopter Project

Estimated Total Cost: $3.174 billion

Project Description:

This project was originally begun in 1986 under the New Shipborne Aircraft Project to acquire a fleet of maritime helicopters. The latest iteration, the Maritime Helicopter Project, is scheduled to replace the fleet of CH-124 Sea Kings with 28 new fully equipped Sikorsky Cyclone helicopters. The acquisition contract is bundled with a long-term in-service support contract and modifies the modernized frigates discussed earlier to accommodate them.[179]

Explanation of Variance:

This project has been much delayed, beginning when the New Shipborne Aircraft Project was cancelled in 1993. When the project was re-launched, it was initially intended to award contracts separately for the basic vehicle and integrated mission system. The change in procurement strategy to letting a single contract for the helicopter and its in-service support led to some early delays and was later abandoned.[180] Since the Maritime Helicopter Project contract was signed in 2004, the project has experienced multiple further delays, largely related to problems achieving the desired level of capability. In 2008, after a request from the prime contractor, the contract was amended to allow for a delayed, tiered delivery schedule. This schedule was amended a second time in 2010. This was followed by a third-party review and analysis of possible alternatives in 2013 to assess the project's feasibility.[181] While this was approved as an off-the-shelf project, in reality it was not, as the helicopter that will ultimately be produced never existed before. This resulted in difficulties achieving the capabilities set out in the original contract, and required time-consuming systems integration. Further, the incorrect assessment of the project's developmental nature resulted in an inappropriate management framework and project schedule.[182]

In June 2014, another contract amendment was signed extending the in-service support arrangements to 2038 at the original rates, and revising the project schedule, allowing for eight initial capability Block 1 aircraft to be delivered starting in June 2015. To date, 27 helicopters have completed initial build, and four of these have completed the Block 1 upgrade program. The initial build of the 28th helicopter is underway. The project is running within its authorized budget.[183]

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[179] Plamandon, *The Politics of Procurement.*

[180] RPP 2001-2002

[181] National Defence and the Canadian Armed Forces, "Archived - Maritime Helicopter Project: Status (Fact Sheet)," June 19, 2014 http://news.gc.ca/web/article-en.do?mthd=index&crtr.page=1&nid=859129

[182] Office of the Auditor General of Canada, *Chapter 6: Acquisition of Military Helicopters.* (Ottawa: Minister of Public Works and Government Services Canada, 2010).

[183] National Defence and the Canadian Armed Forces, "Archived - Maritime Helicopter Project: Status (Fact Sheet)."

Major Milestones:	Initial	2014	2015	2016
Preliminary Project Approval	June 2003	✓		
Invitation for Bids Posted	Dec. 2003	✓		
Effective Project Approval	Nov. 2004	✓		
Contract Award	Nov. 2004	✓		
First Delivery	Jan. 2009	✓		
---------The Project Scheduled Was Revised Following a Contract Amendment in 2014---------				
Amended Project Approval		June 2014	✓	
First Delivery (Block 1)		2015	✓	
First Delivery (Block 2)		2018	2018	2018
Project Close-Out	2013	2021	2022	2022

Progress in 2016:

As of December 2016, Canada had accepted 10 helicopters. Initial cadre training started in May 2016. The contract was amended Jan. 28, 2016 and again Aug. 23, 2016. Testing for ship's helicopter and operating limits was conducted in the first four months of 2016 on HMCS Halifax. Block 2 critical design review was successfully completed in April 2016.[184]

[184] http://www.forces.gc.ca/en/business-equipment/maritime-helicoper.page

Medium-Support Vehicle System Project

Estimated Total Cost: $1.513 billion

Project Description:

On June 29, 2006 the government announced that it would acquire medium-sized logistics trucks as part of its *Canada First Defence Strategy* procurements. At the time of the announcement, this was articulated as the purchase of 1,500 vehicles designed for military use; up to 300 load-handling system companion trailers; 800 commercial vehicles adapted for military use; 1,000 specially equipped vehicle kits, such as mobile kitchens, offices and medical or dental stations; and 300 armour protection systems.[185] The Medium-Support Vehicle System Project was subsequently divided into five phases to reflect the aforementioned components, plus an additional fifth phase to provide for infrastructure. These are: Phase 1 – militarized commercial-off-the-shelf (Milcots); Phase 2 – special equipment vehicle baseline shelters (shelters); Phase 3 – modification of the SEV shelters (kitting); and Phase 4 – standard military pattern (SMP) trucks. Contracts were awarded for the shelters and Milcots phases in 2009 and for the kitting in 2012.[186] A contract for the SMP was awarded to Mack Defence LLC in June 2015. First delivery is expected in fall 2017.[187]

Explanation of Variance:

While most components of this acquisition progressed without problems, the standard military pattern vehicle experienced greater difficulty. An RFP was released in 2011, but was ultimately cancelled just before the deadline in 2012.[188] Since it was originally launched, project requirements had evolved in lieu of the 2008 *Canada First Defence Strategy* and market factors had changed, as they had for a parallel logistics vehicle modernization project which will also procure trucks for the army. Following a 2009 price and availability request to industry, it was determined that additional funds were needed for the project, which were reallocated from the Logistics Vehicle Modernization Project. While the total project budgets for each project combined remained unchanged, this financial reallocation was deemed not to have been properly communicated in official documentation. This was in part because of the introduction of the new reporting requirements related to the adoption of the Treasury Board's investment planning policy, described earlier. This led to the request for proposal's cancellation, resulting in an 18-month project delay.[189]

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185 Canada, National Defence, "Backgrounder: 'Canada First' Defence Strategy Procurement, BG–06.014," June 29, 2006.

186 RPP 2015/2016

187 http://www.forces.gc.ca/en/business-equipment/medium-support-vehicle.page

188 The Canadian Press, "Military Truck Purchase Cancelled Due to Cost Concerns," July 11, 2012 http://www.cbc.ca/news/canada/military-truck-purchase-cancelled-due-to-cost-concerns-1.1273570

189 Canada, Department of National Defence, Chief Review Services. *Internal Audit of the Medium Support Vehicle System Project*. (Ottawa: Department of National Defence, 2014).

Major Milestones:	Initial[190]	2014	2015	2016
Preliminary Project Approval	June 2006	✓		
Effective Project Approval	June 2008	✓		
First Delivery (Milcots)	March 2009	June 2009	✓	
Final Delivery (Milcots)	Sept. 2010	Oct. 2012	March 2011	✓
Contract Award (Shelters)	June 2008	July 2009	✓	
First Delivery (Shelters)	July 2008	April 2012	May 2012	✓
Final Delivery (Shelters)	June 2010	Fall 2014	Feb. 2015	✓
Contract Award (Kitting)	Dec. 2012	✓		
First Delivery (Kitting)		Jan. 2014	✓	
Final Delivery (Kitting)	TBD	Fall 2016	✓	
Contract Award (SMP)	Nov. 2008	June 2015	✓	
First Delivery (SMP)	Aug. 2009	2017	Spring 2017	Fall 2017
Final Delivery (SMP)	Aug. 2011	2018	Fall 2018	Spring 2019
IOC	2013			
FOC	2016			
Project Close-Out	March 2010	2020	Dec. 2020	Dec. 2020

Progress in 2016:

In November 2016, the government received final delivery of the last kitted shelters on time and on budget.[191]

[190] DPR 2006/2007

[191] http://www.forces.gc.ca/en/business-equipment/medium-support-vehicle.page

Medium-to-Heavy Lift Helicopter

Estimated Total Cost: $2.313 billion

Project Description:

The project has delivered 15 Chinook CH-147Fs and is establishing a new transport helicopter capability to support land-based domestic and international operations. The project includes the associated infrastructure and support elements to create a new helicopter unit based at Garrison Petawawa. It was included in the 2005 budget, and the 2005 *Defence Policy Statement*. It was first brought forward for cabinet approval in the fall of 2005, but not approved. It was therefore delayed awaiting approval by the new Harper cabinet after the 2006 election.[192] As originally conceived, the project was to deliver its first helicopter in 2008, but this did not occur until 2013.[193]

Explanation of Variance:

The delays in acquiring the helicopter resulted from the evolution of the requirements after 2006, which were not finalized until a contract was signed in 2009. While an existing model of the aircraft could have met the original requirements developed for the project, the specifications actually provided to the contractor could not. They required significant changes to a basic helicopter model, requiring an additional two years to define the statement of work, and adding costs. This also impacted the timing and complexity of achieving certification for airworthiness.[194]

All 15 aircraft have been delivered, the last being accepted in June 2014. A reduction in the size of the project office, commensurate with the work remaining, commenced in 2014 and will continue until project closure.[195]

Major Milestones:	**Initial**	**2014**	**2015**	**2016**
Preliminary Project Approval	June 2006	✓		
Advanced Contract Award Notice	July 2006	✓		
Effective Project Approval	March 2008	June 2009	✓	
Contract Award	March 2008	June 2009	✓	
First Delivery	March 2011	June 2013	✓	
IOC	March 2013	Fall 2014	Feb. 2015	✓
FOC	Spring 2015	June 2017	June 2017	June 2017
Project Close-Out	Fall 2015	June 2018	June 2018	June 2018

Progress in 2016:

The first Chinook pilot, flight engineer and load master graduated from the Garrison Petawawa Operational Training Centre Feb. 12, 2016. The aircraft deployed on their first domestic humanitarian deployment on Operation LENTUS in response to the massive Fort McMurray wildfires.

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[192] Hillier, *A Soldier First.*

[193] Office of the Auditor General of Canada. *Chapter 6: Acquisition of Military Helicopters.* (Ottawa: Minister of Public Works and Government Services Canada, 2010).

[194] Ibid.

[195] RPP 2015/2016

Mercury Global

Estimated Total Cost: $439 million

Project Description:

The project will provide wideband global satellite communications that are guaranteed and directly interoperable with our principal allies. The project will deliver a Canadian wideband global system military satellite communications system for near-worldwide assured, wideband communications to the Canadian military for the command and control of deployed Canadian commanders and forces, as well as interoperability with some of our principal allies, the United States, Australia, Denmark, the Netherlands, Luxembourg and New Zealand.

Progress Report and Explanations of Variances:

In Phase 1, procurement of early access terminals and participation in the U.S. Department of Defense Wideband Global Satellite constellation was obtained through a 2012 memorandum of understanding for the construction and launch of the ninth wideband global system satellite. Effective approval for Phase 2 was achieved in 2014 for the procurement and installation of the associated wideband global satellite anchor station. General Dynamics Mission Systems-Canada was awarded contracts for both the installation of the anchor stations and in-service support of the system for seven years, with options for support up to an additional 10 years. Construction of the central anchor station commenced on Oct. 13, 2015.

Major Milestones:	**Initial**[196]	**2014**	**2015**	**2016**
Preliminary Project Approval	Oct. 2011	✓		
Initial Satellite Access	Nov. 2011	June 2012	✓	
Effective Project Approval	Jan. 2014	Oct. 2014	✓	
Terminal Implementation Complete	Oct. 2016	Oct. 2016	Oct. 2016	June 2018
IOC			May 2013	✓
FOC	Oct. 2017	Oct. 2016	Oct. 2016	Sept. 2018
Project Complete	Winter 2018	Jan. 2017	Jan. 2017	Dec. 2018

Progress in 2016:

With the initial operating capability, the project has supported Operations Impact, Unifier, Caribbe, Nanook, Reassurance and Renaissance.[197] In July 2016, a request for information was released for strategic deployable terminals,[198] followed by a notice of proposed procurement in October.[199]

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196 DPR 2011/2012

197 http://www.forces.gc.ca/en/about-reports-pubs-departmental-performance/2016-status-report-on-transformational-and-major-crown-projects.page#lightarmouredvehicleiii

198 https://buyandsell.gc.ca/procurement-data/tender-notice/PW-ST-006-30354

199 https://buyandsell.gc.ca/procurement-data/tender-notice/PW-ST-006-30555

Protected Military Satellite Communications

Estimated Total Cost: $555 million

Project Description:

The Department of National Defence and the Canadian Forces require global communications that are secure, guaranteed and directly interoperable with our allies. The project's aim is to overcome current Canadian interoperability and global command and control limitations. Upon completion, this project will enable long-range communications to deployed forces and facilitate their interoperability with allies.

Explanations of Variances:

In Phase 1, procurement of guaranteed access to the U.S. Department of Defense advanced extremely high frequency satellite constellation was obtained through a military satellite communications memorandum of understanding. Phase 2 has been underway since November 2003, when effective project approval for the procurement and installation of the satellite terminals was granted. The Canadian project is late due to delays to the American satellite launch schedule and the Victoria-class submarine installation.

Major Milestones:	**Initial**[200]	**2014**	**2015**	**2016**
Preliminary Project Approval	Aug. 1999	✓		
Effective Project Approval	Nov. 2003	✓		
Initial Terminal Delivery	Summer 2005	Nov. 2011	✓	
IOC	Nov. 2013[201]	N/A	✓	
FOC	Fall 2017[202]	Dec. 2020	Dec. 2020	Dec. 2020
Project Complete	Summer 2009	March 2021	March 2021	March 2021

Progress in 2016:

No Information Publicly Available.

[200] RPP 2000/2001, 58.

[201] RPP 2014/2015

[202] RPP 2011/2012

Submarine Capability Life Extension

Estimated Total Cost: $877 million

Project Description:

The Submarine Capability Life Extension Project replaced the Oberon-class submarine fleet with four existing British Upholder-class (renamed Canadian Victoria-class) submarines. The project will ensure that Canada preserves its submarine capability within the existing capital budget. The project supports Canada's ability to conduct surveillance and control of its territory, airspace and maritime areas of jurisdiction, as well as Canada's ability to participate in bilateral and multilateral operations.

The project delivered four functional Victoria-class submarines with up-to-date, safe-to-dive certificates, four crew trainers (including a combat systems trainer, a ship control trainer, a machinery control trainer, and a torpedo handling and discharge trainer), and four trained crews.

Explanation of Variance:

Although effective project close-out was expected in 2015/2016, a small number of engineering changes still require installation in HMCS Corner Brook during her ongoing deep maintenance phase, as well as the procurement of several long-lead supply items. The engineering changes are related to weapon systems modifications which could not be performed during the submarine reactivation period and the purchase of long lead items is in support of these engineering changes.

Major Milestones:	**Initial**[203]	**2014**	**2015**	**2016**
Effective Project Approval	June 1998	✓		
Main Contract Award	July 1998	✓		
Initial Support Contract Award	July 1998	✓		
IOC	April 2006[204]	✓		
FOC	Dec. 2011[205]	Nov. 2012	✓	
Project Close-Out	March 2013[206]	2017	2018	2018

Progress in 2016:

HMCS Windsor participated in NATO exercise Dynamic Mongoose over the summer of 2016 followed by a NATO Anti-Submarine Warfare operation in the region.[207]

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[203] RPP 1999/2000, 81.

[204] RPP 2009/2010

[205] RPP 2009/2010

[206] RPP 2009/2010

[207] Royal Canadian Navy, "Victoria-Class Submarines Reach Operational Steady State," Feb. 26, 2015. http://www.navy-marine.forces.gc.ca/en/news-operations/news-view.page?doc=victoria-class-submarines-reach-operational-steady-state/i6miwqrg

Tactical Armoured Patrol Vehicle

Estimated Total Cost: $1.250 billion

Project Description:

The project will deliver to the Canadian Army a wheeled combat vehicle that will overcome deficiencies with the G-wagon light utility vehicle wheeled, the RG-31 armoured patrol vehicle, and the Coyote light armoured vehicle related to capacity, protection, mobility, weapons effects, information and human dimensions. This vehicle will fulfil a wide variety of roles on the battlefield, including but not limited to surveillance, security, command and control, cargo and personnel carrier. It will have a high degree of tactical mobility and provide a very high degree of crew protection. The project scope includes an estimated initial purchase of 500 vehicles and an optional purchase of up to 100 more, plus associated long-term in-service support.

Explanation of Variance:

The project proceeded initially under an accelerated project schedule that compressed its options analysis stage by 10 months. As a result, the preliminary statement of operational requirement, concept development and experimentation, and formal price and availability studies were delayed. Because of this, and the need to re-engineer the available pre-existing vehicles to meet the requirement, the definition stage was extended from 15 to 35 months.[208]

Following the contract award in June 2012, six pre-production vehicles were received in July 2013 for qualification testing at Canadian Forces Base Valcartier and at the United States Army's Aberdeen Test Center in Maryland. In August 2014 as part of this process, the first round of testing identified design problems. The project returned to the contract design phase in order to allow the complex, interrelated designs for the vehicle's structure, suspension and steering to be improved. Reliability testing resumed in the summer of 2015 and concluded by early 2016. Repeat engineering qualification testing will be conducted as necessary.[209]

Major Milestones:	**Initial**[210]	**2014**	**2015**	**2016**
Identification Phase Approval	March 2008	✓		
Preliminary Project Approval	June 2009	✓		
Effective Project Approval	Summer 2011	June 2012	✓	
Contract Awarded	Fall 2011	June 2012	✓	
IOC	2013	Spring 2015	2016	End 2016
FOC	2015	Spring 2016	2017	Mid-2018
Project Complete	2017	Fall 2016	2017	End 2018

Progress in 2016

A second round of reliability testing, at the U.S.'s Nevada Automotive Test Center was completed in April 2016.[211] Vehicle deliveries began Aug. 12, 2016.[212]

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[208] Chief Review Services, *Internal Audit: Tactical Armoured Patrol Vehicle (TAPV).* (Ottawa: Department of National Defence, 2011).

[209] RPP 2015/2016

[210] DPR 2010/2011

[211] http://www.forces.gc.ca/en/about-reports-pubs-departmental-performance/2016-status-report-on-transformational-and-major-crown-projects.page#lightarmouredvehicleiii

[212] http://www.forces.gc.ca/en/business-equipment/tactical-armoured-patrol-vehicle.page

Tank Replacement Project

Estimated Total Cost: $650 million

Project Description:

The purpose of the Tank Replacement Project is to replace Canada's aging Leopard C2 tank fleet with a modern, heavily protected, mobile, direct-fire support capability. The project is broken into two phases. Phase 1 consisted of the loan of 20 Leopard 2 A6M main battle tanks, two armoured recovery vehicles and logistics support from the German government for immediate deployment to Afghanistan, as well as the purchase of up to 100 surplus Leopard 2 tanks from the Netherlands' government. Phase 2 will upgrade and introduce up to 100 Leopard 2 tanks and variants into service.[213]

Progress Report and Explanations of Variances:

All 82 Leopard 2 A4, A4M and A6M MBT and the first eight Leopard 2 ARVs funded by the TRP project have been delivered. The four ARVs funded by the Force Mobility Enhancement Project have also been delivered. A4M upgrade is progressing with 13 vehicles of 20 complete. Costs continue to be tightly managed within the cost ceiling in accordance with the core deliverables and priorized activities.

At the Senior Review Board (SRB) meeting in June 2015, the SRB endorsed an extension to close-out from May 2015 to December 2017 in order to complete integrated logistics support requirements involving sparing, and special tooling and test equipment (STTE).[214]

Major Milestones:	**Initial**[215]	**2014**	**2015**	**2016**
Memorandum to Cabinet	March 2007	✓		
Preliminary Project Approval	March 2007	✓		
Phase 1 MOU for German Loaners	May 2007	✓		
Phase 1 Contract to Upgrade Loaners	May 2007	✓		
Phase 1 IOC	Aug. 2007	✓		
Phase 1 Acquisition of Dutch Tanks	Dec. 2007	✓		
Effective Project Approval	Mid-2009	June 2009	✓	
FOC Phase 2	2013+	Feb. 2015	Summer 2017	Summer 2017
Project Close-Out	2013+	May 2015	Fall 2017	Dec. 2017

Progress in 2016

No Information Publicly Available.

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213 RPP 2015/2016

214 http://www.forces.gc.ca/en/about-reports-pubs-departmental-performance/2016-status-report-on-transformational-and-major-crown-projects.page#lightarmouredvehicleiii

215 DPR 07/08

Underwater Warfare Suite Upgrade

Estimated Total Cost: N/A.

Project costs have elsewhere been estimated at $100 million to $249 million[216]

Project Description:

The project will provide an upgraded underwater warfare suite to the Halifax-class frigates including sensors, processors and updated software. The project will correct a deficiency in the class's detection ranges of submarines and torpedoes, improve underwater sensor performance in the littoral environment and provide a system design to enable continual improvement in a cost-effective manner. A minimum of six ship-sets of equipment will be acquired. Each ship-set includes new passive towed array sonar, a new sonobuoy processing system, an upgrade to the hull-mounted sonar and a new active intercept capability. The project will also procure a minimum of four towed low-frequency active sonars. All 12 Halifax-class ships will be fitted with the required infrastructure to allow for the transfer of equipment and sensors among ships, as required.[217]

Explanation of Variance:

Major Milestones:	**Initial218**	**2016**
Project Approval (Definition)	May 2015	✓
Request for Proposal	Dec. 2016	Dec. 2016
Project Approval (implementation)	Nov. 2017	Dec. 2017
Contract Award	Dec. 2017	Jan. 2018
Initial Operational Capability	Aug. 2020	Aug. 2020
Full Operational Capability	June 2024	June 202
Contract Close-Out	Sept. 2024	Sept. 2024

Progress in 2016

No Information Publicly Available.

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[216] http://www.forces.gc.ca/en/business-defence-acquisition-guide-2016/naval-systems-36.page

[217] http://www.forces.gc.ca/en/about-reports-pubs-departmental-performance/2014-2015/section-iii-status-report-on-transformational-and-major-crown-projects.page#AIMP

[218] RPP 2016/2017

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