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THE USE OF PERFORMANCE-BASED SERVICE ACQUISITION WITHIN THE DEPARTMENT OF NATIONAL DEFENCE

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ABSTRACT

Traditional contracting models have been deemed by the Department of National Defence (DND) to be fragmented, costly and operationally ineffective and therefore the DND has embarked on a contracting strategy that puts all sub-system responsibility under a single prime contractor responsible for overall weapons systems availability. The DND is presently contracting for long-term in-service support contracts to meet specified systems availability for major new acquisitions. Although the United States Department of Defense has extensively employed Performance Based Logistics, the DND's current attempts are much broader in scope and duration than previous similar contracting models. In order to foster success with the adoption of Performance-Based Service Acquisition (PBSA) this paper examines the DoD experience and proposes five recommendations for improving the current DND framework. Specifically it will be recommended that the DND framework:

a. strengthen the requirement to tie performance metrics to the top-level operational requirements through a results hierarchy,
b. provide concrete guidance on when and how to use measures not specifically tied to operational requirements,
c. encourage the use of PBSA in small component and sub-system level contracts, in addition to weapons system level contracts,
d. provide direction on how to identify and implement changes to performance requirements based on the dynamic nature of military operations, and
e. create and provide, as a priority, detailed direction and formal training on PBSA.

THE USE OF PERFORMANCE-BASED SERVICE ACQUISITION WITHIN THE DEPARTMENT OF NATIONAL DEFENCE

Fools say that they learn by experience,
I prefer to profit by other's experience

~Otto Von Bismarck

INTRODUCTION

The May 2008 Canada First Defence Strategy (CFDS) identifies a government commitment to long-term stable funding to ensure that the Department of National Defence (DND) and the Canadian Forces (CF) are able to meet Canada's defence and security requirements. The funding commitment will be invested where most needed "…across the four pillars upon which military capabilities are built – personnel, equipment, readiness and infrastructure."[1] The DND is also embarking upon a procurement and equipment sustainment transformation to ensure that weapons systems are delivered to the war-fighter in a mission-ready state when required. As part of this transformation, many of the current major capital acquisitions are including comprehensive long-term Performance-Based Service Acquisition (PBSA) frameworks for equipment support. Although other military services and commercial equipment operators are also turning to long-term in-service support arrangements; in terms of contract scope the DND is set to become a world leader in performance-based acquisition initiatives. It is doing so however, with very little organic experience with which to manage the process.

Two key documents within the Assistant Deputy Minister (Materiel) (ADM(Mat)) organisation, the In-Service Support Contracting Framework (ISSCF) and the Contract Performance Management Framework (CPMF), provide PBSA guidance to DND

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[1] Department of National Defence, *Canada First Defence Strategy* (Ottawa, ON: Department of National Defence, 2008), 5, http://www.forces.gc.ca/site/focus/first-premier/June18_0910_CFDS_english_low-res.pdf Internet; accessed 12 March 2009.

personnel. Based on an examination of the initiatives taken by United States Department of Defense (DoD) and others, this paper identifies five specific areas for improvement within the DND approach to PBSA which, if implemented, will improve the likelihood of PBSA success.

PBSA BACKGROUND

Weapons system support including initial procurement, supply chain management, and maintenance and engineering is commonly the responsibility of the government. For many militaries, and Canada in particular, many of these support activities rely in whole or in part on contracted support from vendors. In delivering this support, vendors are normally required to deliver outputs in conformance with prescriptive specifications which can limit the vendor's flexibility to utilise more effective or efficient solutions.

In the face of declining budgets and an increased level of effort to sustain large systems, operators have been turning to PBSA to improve efficiency and operational effectiveness. PBSA is a form of acquisition and support contracting that aims to capitalize on the best industry practices by allowing the vendor broader control over the processes by emphasizing system performance outcomes instead of defining prescriptive item or service process specifications. In this arrangement, the vendor has the opportunity to determine the most appropriate methods to deliver the services consistent with best available practices.[2]

For operators of long-life and capital-intensive systems the migration of several support activities to a prime vendor who is responsible for performance-based support increases the flexibility and opportunities for the service vendor. At the same time, it also

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[2] Kenneth Doerr, Ira Lewis and Donald R. Eaton, "Measurement Issues in Performance-Based Logistics," *Journal of Public Procurement* 5, no. 2 (2005), 165, http://proquest.umi.com/pqdweb?did=903179171&Fmt=7&clientId=65345&RQT=309&VName=PQD Internet; accessed 20 March 2009.

relieves the operator of the burden of managing a disparate collection of support contracts. Long-term contracts help foster a strong vendor/customer relationship and allow the vendor to consider strategic investments to deliver sustained readiness. For support of its regional trains, RENFE, the Spanish railway state company, has awarded a fourteen-year PBSA contract to CAF, the original manufacturer of the trains. The trains have a thirty-year life expectancy and the long-term contract provides CAF with contractual certainty and flexibility to make capital investments and implement its own best business practices.[3]

To meet overall operational objectives, PBSA requires the customer to articulate precisely the performance outcomes for the support activities it expects from the vendor. The vendor is paid based on the system's ability to achieve the desired performance outcomes. Failure to meet the desired outcomes results in a reduction of the service fee paid while a bonus scheme may be offered for certain performance achievements. As part of the train support contract, CAF earns rewards or penalties based on specified operational performance measures such as availability and mission reliability.

THE DOD EXPERIENCE

For the DoD the sustainment of defence systems accounts for eighty percent of the multibillion dollar defence logistics services budget.[4] As an operator of diverse and complex systems, the DoD has also embraced the PBSA approach to equipment procurement, sustainment and operation and has achieved equipment availability improvements in many of its programmes. Tailoring PBSA to meet specific DoD

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[3] Alberto Sols, David Nowick and Dinesh Verma, "Defining the Fundamental Framework of an Effective Performance-Based Logistics (PBL) Contract," *Engineering Management Journal* 19, no. 2 (Jun, 2007), 40, http://proquest.umi.com/pqdweb?did=1366821891&Fmt=7&clientId=65345&RQT=309&VName=PQD Internet; accessed 12 March 2009.

[4] *Ibid*., 40.

regulatory and military needs, the DoD has identified Performance-Based Life Cycle Product Support (PBL) as its "…preferred product support strategy to improve weapons system readiness by procuring performance."[5]

The DoD path to the current PBL structure has been developed over a number of years and the ensuing dialog with industry and lessons learned along the way are worthy of consideration as part of any PBSA initiative that Canada pursues. The 1997 decision to close the Sacramento Air Logistics Center, which was home to the F-117 stealth fighter, lead to Lockheed-Martin Skunkworks assuming

> …responsibility for the majority of F-117 non-core support functions in a contracting approach that was based on achieving specified support metrics targets, a significant change from traditional 'providing transactional goods and services' contract support….[6]

The success of the F-117 programme and support from industry for similar initiatives lead to the formation of a team from the Office of the Secretary of Defence, the three services, the Joint Staff and the Logistics Agencies to investigate and develop a migration strategy towards performance-based contracting. In 2000, the Under Secretary of Defence established a goal that a minimum of "…50 percent of all service acquisitions…[were] to be performance-based by the year 2005."[7] He also stressed the need for training and tools

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[5] United States, Department of Defense, *Performance Based Logistics: A Program Manager's Product Support Guide* (Fort Belvoir, VA: Defense Acquisition University Press, 2005), vii, https://acc.dau.mil/CommunityBrowser.aspx?id=32536 Internet; accessed 23 March 2009.

[6] Kate Vitasek and others, *Performance Based Logistics: The Changing Landscape in Support Contracting* (Knoxville, TN: University of Tennessee, 2006), 2, http://bus.utk.edu/utpbl/documents/White_Papers/White_Paper_PBL_Changing_Landscape_of_Support_Logistics.pdf Internet; accessed 7 March 2009.

[7] J. S. Gansler, *Memorandum: Performance Based Services Acquisition (PBSA)* (Washington, DC: Undersecretary of Defense (Acquisition and Technology), 5 April 2000), http://www.amc.army.mil/amc/rda/rda-ac/pbsc/usd-5apr00.pdf Internet; accessed 24 March 2009.

to "…define, acquire, and manage service requirements efficiently and effectively."[8] To this end, he directed the Military Departments and Defense Logistics Agencies to ensure that their acquisition workforce participated in PBSA related training being provided through the Defence Acquisition University and to utilise a series of on-line guides and templates. As recently as July 2008 the current Undersecretary of Defence, John J. Young Jr., again reiterated the priority of further implementing PBL with an emphasis on the alignment of metrics with war-fighter readiness.[9]

The iterative approach to improving the maturity of the performance framework used by the DoD has also provided practical development of the knowledge and understanding of both the government and industry personnel involved with the PBL contracts. Aside from extensive training, the growth in PBL experience has been achieved through the implementation of contracts with increasing scope and complexity that spans four levels. Level-one component contracts purchase service for the "…consistent and timely delivery of needed components… focussing primarily on supply chain activities."[10] Level-two major subsystems performance contracts

> …include not only supply chain activities but also encompass repair processes, engineering and technical support, configuration management, and even minor modifications and process improvements.[11]

Level-three platform availability is closely related to direct war-fighter performance and focuses attention on major systems such as aircraft, ships and tanks. In addition to repair

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[8] *Ibid*.

[9] John J. Jr Young, *Memorandum: Implementing a Life Cycle Management Framework* (Washington, DC: Undersecretary of Defense, 2008), 3, https://acc.dau.mil/CommunityBrowser.aspx?id=227085 Internet; accessed 24 March 2009).

[10] Vitasek and others, *Performance Based Logistics: The Changing Landscape in Support Contracting*, 3.

[11] *Ibid*., 4.

and supply chain activities, the contractor assumes responsibilities in "…configuration management, technical support, training, facilities, data systems, and related areas of support."[12] Finally, level-four mission availability aims to procure both the ability of weapons systems to be able to perform their mission as well as to successfully complete the mission.[13] With a view to achieving this level of performance, Young's 2008 memorandum directed policy reforms to "…ensure the integration of acquisition and sustainment processes in a life cycle framework."[14] Of particular note, throughout this evolutionary period, direction to implement PBL has been promulgated from the Under Secretary of Defense level ensuring that all of the services and procurement agencies adopted complementary approaches.

THE CANADIAN CONTEXT

The migration to PBSA within the DND, particularly on Air Force programmes, is being pursued in ambitious steps. Following the 1994 Defence Budget the Aerospace Equipment Programme Management (AEPM) Division was forced to reduce the military and civil service work force by forty-five percent.[15] To mitigate the impact of this reduction, the AEPM Division began the process of streamlining internal processes, consolidating multiple contracts and refocused contracting efforts to managing versus doing. ADM(Mat) promulgated an Optimised Weapons System Management (OWSM) concept of operations that espoused contract bundling, total system responsibility,

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[12] *Ibid*., 5.

[13] *Ibid*., 6.

[14] Young, *Memorandum: Implementing a Life Cycle Management Framework*, 2.

[15] Department of National Defence, *Optimised Weapons System Management Program Guidance: The Way Ahead* (Ottawa, ON: Director General Aerospace Equipment Programme Management, 2005), 2.

performance-based and incentivized contracts, and internal organisational restructuring as weapons systems support reforms.[16] The OWSM document directed programme managers to select a mix of any of these four elements to provide the most appropriate solution based on a business case analysis. A DGAEPM Directive issued in 2005 specified that OWSM for the AEPM community shall include total system responsibility for each platform or major sub-system and directed support contracts to be performance-based and incentivised.[17] At present, DGAEPM is refining its CPMF document to standardise the OWSM approach across all weapons systems platforms within the Division. Due in part to the challenges associated with transforming a well ingrained contracted weapon system support network and a culture within the DND and the military contractor community that favours the traditional level of effort and time and materials form of contracting, the transformation has not progressed as quickly as originally envisaged.[18]

As a new procurement opportunity without a legacy network, the Canadian Search and Rescue Helicopter represented the first true opportunity to embrace a comprehensive PBSA approach that could be tied to the original weapons system platform. In 1998, E.H. Industries won the contract to supply the DND with 15 search and rescue helicopters. In 2000, the IMP Group was awarded a separate contract to provide maintenance, lifecycle

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[16] Department of National Defence, *Concept of Operation: Optimised Weapons System Management* (Ottawa, ON: Associate Deputy Minister (Materiel) DMASP 5, 2004), 1-15.

[17] Department of National Defence, *Optimised Weapons System Management Program Guidance: The Way Ahead*, 1-13.

[18] Department of National Defence, *An In-Service Support Contracting Framework (ISSCF) for Canadian Forces Platforms During the Initial Acquisition Stage* (Ottawa, ON: Associate Deputy Minister (Materiel), 2009), 3.

and supply chain support for the helicopters.[19] This contract was performance-based and was designed to impose significant penalties for "…non-performance for each hour below the required aircraft availability."[20] Due to a series of reliability and capability issues arising from the aircraft design, the level of effort and cost to support the aircraft was much greater than envisaged. The support contractor has argued that the increased level of effort to support the aircraft is higher than was contracted for and was outside of their control as the support service provider resulting in an increased cost to the DND.[21] To prevent a repeat of this problem, in 2004 the DND contracted for the acquisition and life cycle support for 28 Maritime Helicopters as linked contracts to a single vendor, Sikorsky International Operations Inc.[22] This move extracted the DND from between the aircraft manufacturer and the service provider thus making accountability for aircraft availability more clear. In addition, this approach affords the aircraft designer the opportunity to incorporate reliability and maintainability features that will lessen their (and therefore the customers) support cost over the lifecycle of the aircraft.

Predicated on these initial lessons, the DND created the ISSCF as a branch of OWSM dedicated to new procurement activities. The ISSCF provides guidance to programme managers during the initial acquisition stage of weapons systems regarding the inclusion of performance-based services throughout the lifecycle of the equipment

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[19] Alan S. Williams, *Canadian Defence Procurement: A View from the Inside* (Kingston, ON: Breakout Educational Network, 2006), 28.

[20] Department of National Defence, *An In-Service Support Contracting Framework (ISSCF) for Canadian Forces Platforms During the Initial Acquisition Stage*, 4.

[21] Williams, *Canadian Defence Procurement: A View from the Inside*, 28.

[22] Department of National Defence, "Backgrounder: The Maritime Helicopter Project (BG-04.025)," Department of National Defence, http://www.forces.gc.ca/site/news-nouvelles/view-news-afficher-nouvelles-eng.asp?id=1414 Internet; accessed 28 March, 2009.

specifically intended for weapons systems level contracts.[23] This guidance document is presently going through the process of becoming a policy directive and is being used on several other capital acquisition programmes such as the Airlift Capability Project-Tactical (ACPT)[24], Arctic/Offshore Patrol Ships (A/OPS)[25] and Joint Support Ships Projects (JSS).[26] Similar to the 2008 direction by Young to the DoD, ISSCF specifically recognises that certain performance objectives can best be met by incorporation of specific features early in the system design. Although the ISSCF and CPMF both had their genesis in the OWSM transformation, they have developed independently and differences in approach are noticeable. As already observed by the AEPM Division, without clear direction, individual programmes will develop independent methodologies thereby frustrating industry and not capitalising on mutual experience.

SELECTING THE METRIC

Not everything that counts can be counted;
and not everything that can be counted, counts.

~Albert Einstein

If the essence of PBSA is buying performance, the heart and soul is the appropriate identification of metrics that when measured and managed enable support responses to be implemented to deliver the required performance outcome. Each measured metric must be directly tied to operational mission objectives and must enable the organisations involved

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[23] Department of National Defence, *An In-Service Support Contracting Framework (ISSCF) for Canadian Forces Platforms During the Initial Acquisition Stage*, 1-39.

[24] Department of National Defence, "Backgrounder: Canada First Defence Procurement - Tactical Airlift (BG-06.019)," Department of National Defence, http://www.forces.gc.ca/site/news-nouvelles/view-news-afficher-nouvelles-eng.asp?id=1791 Internet; accessed 28 March, 2009.

[25] Department of National Defence, "Backgrounder: Arctic/Offshore Patrol Ships (BG-07.023)," Department of National Defence, http://www.forces.gc.ca/site/news-nouvelles/view-news-afficher-nouvelles-eng.asp?id=2370 Internet; accessed 28 March, 2009.

[26] Department of National Defence, *Backgrounder: The Maritime Helicopter Project (BG-04.025).*

to be able to identify the cause of any performance variations by any of the supporting sub-systems. For weapons systems, it has long been argued that the most effective overarching metric for understanding a weapons systems support to the war-fighter is Operational Availability (A_o).[27] A common fault by organisations embarking on PBSA ventures is the failure to recognize that there is a fundamental difference between a performance metrics programme and a performance management programme[28] leading to measures being put in place that are not part of the results hierarchy supporting operational mission success. To effectively meet war-fighter requirements, performance management requires active analysis and effective reactions to the measures at each level enable corrections and trade offs at the root cause level to be implemented.

Recently the DoD identified the Key Performance Parameter of Material Availability (A_o) along with two Key System Attribute metrics of Material Reliability and Ownership Cost as the mandatory top level metrics for all weapons systems programmes. [29] These metrics are intended to be applied to the entire weapons system level and therefore when multiple contracts coupled with organic support are involved in supporting a weapons system, each of their performance outcomes must be part of the performance hierarchy and considered as to how they contribute to these three metrics. For example, the DoD has a level-one PBL contract with Michelin and Lockheed-Martin to provide tires for Navy aircraft. The Navy was maintaining a huge inventory of tires but often not in the

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[27] Lawrence B. Residori, "Contracting for Operational Availability: An Impossible Goal?" (Program Management Course 76-1, Department of Defense Systems Management School, 1976), 1-55.

[28] Kate Vitasek and Steve Geary, "Metrics & Management," *Traffic World* (Feb 24, 2003), 1, http://proquest.umi.com/pqdweb?did=348974491&Fmt=7&clientId=1711&RQT=309&VName=PQD Internet; accessed 12 March 2009.

[29] Young, *Memorandum: Implementing a Life Cycle Management Framework*, 1.

right mix resulting in the correct tires being available only eighty-six percent of the time[30] and aircraft awaiting tires for the remainder. To improve the key performance parameter of aircraft availability, the PBL contract selected a performance metric of ninety-five percent on time delivery of tires to all Navy locations. Utilising their inventory control and supply chain processes, Michelin and Lockheed-Martin were able to reduce Navy tire holdings by seventy-five percent while achieving sustained performance above ninety-eight percent[31] thereby contributing to improved A_o as well as to reducing the Key System Attribute of ownership cost.

Meaningful performance measures that are well defined, segregate customer/vendor responsibility and are practicably measureable must be used and understood by all involved. In the rail services contract between RENFE and CAF, the metrics being used included operational availability (trains ready for departure at a specified time) and mission reliability (trains arrive at destination in the scheduled amount of time). In practice it was found that some trains did not arrive at their destination in the scheduled amount of time but for reasons beyond the control of the vendor. This contract allowed a penalty to be applied against poor reliability because the definition of responsibilities did not contemplate certain possibilities and likely scenarios. This lead to several disputes because

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[30]Davi Mahadevia, Robert J. Engel and Randy Fowler, "Performance-Based Logistics: Putting Rubber on the Ramp," *Defense & AT-L* 35, no. 4 (2006), 31, http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=21531942&site=bsi-live Internet; accessed 12 March 2009.

[31]*Ibid*.

of "…an ill definition of the effectiveness metrics and of the domain of responsibility of each party."[32]

Although the DND has relatively few performance-based contracts in place, they too are learning comparable lessons. As was observed with the Canadian Search and Rescue programme, the responsibility to meet the metric must be within the control of the providing organisation. Similarly, in an early version of a CPMF contract, the programme manager for the CC-130 fleet included a single performance metric threshold for on-time delivery of aircraft from scheduled heavy maintenance. The contract allowed for an early delivery bonus and a late delivery penalty for each aircraft being delivered. For the first aircraft, the contractor claimed the full incentive but after the necessary negotiation and a review of all of the excusable delays, the contractor was levied the full penalty.[33] This evolution from reward to penalty highlights the need to have well defined and easily measurable and verifiable metrics in place. Without a rigorous metric collection system in place, unwarranted bonuses/penalties will be given or recurring disputes leading to increased management burden and contractor/customer friction will ensue. To help minimize the possibility of dispute, the ability of customer and vendor information systems to be able to connect is essential to ensure that all parties are measuring common data[34] to agreed to terms.

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[32] Sols, Nowick and Verma, *Defining the Fundamental Framework of an Effective Performance-Based Logistics (PBL) Contract*, 41.

[33] Lise Davidson, *Email: Performance Based Contracts Guidance (11 March 2009)*ADM(Mat) Director Materiel Policies and Procedures, 2009).

[34] Henry Canaday, "PBL Grows and Changes," *Overhaul and Maintenance*, August 2008, 2008, , http://www.aviationweek.com/aw/generic/story_generic.jsp?channel=om&id=news/ompbl808.xml Internet; accessed 9 March 2008.

The ISSCF promotes the usefulness of an integrated IT solution that couples the DND and the vendor information systems. It also identifies the need for a results hierarchy stemming from the final outcome which is "…normally…mission-ready platforms…"[35] noting that the hierarchy:

> a. aids the project team in shifting its thinking from inputs and activities to clearly defined results (outputs and outcomes) for the ISS program;
> b. highlights the division of responsibilities between the [Government of Canada] and contractor; and,
> c. highlights the results that will be within the contractor's control and therefore aids in the development of the performance measures for the ISSC.[36]

Conversely, the CPMF accepts that due to a mix of DND and contractor support activity responsibilities, the segregation of accountability for achieving weapons system availability is difficult to measure with available tools. Rather than supporting an overarching operational requirement, it specifies formulas for thirteen specific metrics covering service quality, service quantity, timeliness of service delivery and cost control which are output centric, such as parts availability and repair turn around time. While the availability of spares and quick turn around times may contribute to weapons system availability, the CPMF does not provide any guidance on how to determine the output thresholds required to support the overall operational requirement. As with the results hierarchy discussed above, the same analysis should be conducted by the DND in order to determine the required outputs at the sub-system level. Without the analysis, the metric threshold is likely to be set based on what has been achieved previously rather than what is required. The CPMF could be improved by emphasising the performance results hierarchy for the

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[35] Department of National Defence, *An In-Service Support Contracting Framework (ISSCF) for Canadian Forces Platforms During the Initial Acquisition Stage*, 29.

[36] *Ibid.*

selection of contracted performance metrics and by providing direction on how to choose and set thresholds for lower level PBSA support contracts in order to achieve overall fleet availability.

Recommendation 1:

Both the ISSCF and CPMF should stress the use of metrics that are tied to the top-level operational requirements through a results hierarchy.

The CPMF experience suggests that performance measures for services outside of A_o help to motivate the contractor to provide good service in the non-core but still meaningful tasks. This experience is not reflected in the ISSCF framework. Attention to the key operational requirement may diminish without clear and specific direction as to how and when to use secondary non-core metrics.

Recommendation 2:

Explicit direction on when and how to use additional measures should be added to both the ISSCF and CPMF documents to ensure that operational requirements remain the focus of PBSA initiatives.

A PREFERENCE FOR PBSA AT THE WEAPONS SYSTEM LEVEL

In 2004, a US Senate sub-committee was concerned with the direction from the Deputy Secretary of Defense stating that PBL was "…a best business practice"[37] and the resultant DoD policy making PBL the "…preferred product support strategy within the

[37] Paul Wolfowitz, *Memorandum: Implementation of Defense Business Practice Implementation Board (DBB) Recommendations to the Senior Executive Council (SEC) on Continued Progress on Performance Based Logistics* (Washington, DC: Deputy Secretary of Defense, 4 February 2004), https://acc.dau.mil/CommunityBrowser.aspx?id=32571&lang=en-US Internet; accessed 24 March 2009.

Department of Defence."[38] The committee requested the US Government Accountability Office (GAO) to report on the implementation of PBL as a preferred practice in comparison to industry best practices. The GAO conducted an extensive review of DoD and commercial experiences and found that PBL was not a best business practice amongst notable private sector firms that support complex equipment and was highly critical of the DoD emphasis of PBL at the weapons system level.[39] While the public sector uses PBSA/PBL, it does so as a tool and not as a preferred support strategy. According to the report, industry has found it difficult to develop reliable cost and performance data to support the business case at the platform level for new systems[40] and therefore PBSA/PBL arrangements are normally limited to existing systems that have established baseline cost and performance data. In addition, it was felt that long-term contracts stifle competition and are likely to have higher long-term costs. Therefore, public sector industries often limit using PBSA/PBL to instances where support is only available from single sources (as is common for aircraft engines) or performance history and support costs are well understood. The report cited a DoD support contract for the Navy's T-45 trainer aircraft as an example supporting the industry practice.[41]

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[38] Michael W. Wynne, *Memorandum: Performance Based Logistics (PBL) and Business Case Analysis (BCA)* (Washington, DC: Undersecretary of Defense (Acquisition Technology and Logistics), 20 March 2004), https://acc.dau.mil/CommunityBrowser.aspx?id=32573&lang=en-US Internet; accessed 24 March 2009.

[39] United States, Government Accountability Office, *Defense Management: Opportunities to Enhance the Implementation of Performance-Based Logistics: GAO-04-715* (Washington, DC: U.S. Government Accountability Office, 2004), 1-30, http://www.gao.gov/new.items/d04715.pdf Internet; accessed 27 March 2009.

[40] *Ibid*., 21.

[41] *Ibid*., 15.

The Navy contract was a weapons system performance-based arrangement using the sole metric of daily aircraft ready-for-training. At the end of the five year contract term, the Navy felt that the costs were too high for the availability rates achieved and elected to negotiate two separate support contracts. They awarded a sole source performance-based contract to the OEM for engine support (consistent with commercial practice) and tendered a competitive support contract for the airframe. This sub-system approach subsequently saved the Navy "…$37 million in the first year…"[42] attributed to the reduction in overhead costs that the original contractor had included in the base rate to manage the engine portion of the contract.[43]

In spite of the move towards weapons system level support, the majority of PBL contracts within the DoD remain at the component and sub-system level. In response to the report, the DoD agreed to emphasize the use of PBL "…to achieve economies at the subsystem or component level…"[44] in addition to the weapons system level opportunities. The most recent acquisition policy document directs that

> "…acquisition managers shall consider and use performance-based strategies for acquiring and sustaining products and services whenever feasible. For products, this includes all new procurements and major modifications and upgrades, as well as reprocurements of systems, subsystems, and spares that are procured beyond the initial production contract award."[45]

The use of PBSA at the component and sub-system level can produce the required operational capability for lower costs than those for weapons system level contracts while

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[42] *Ibid*., 15.

[43] *Ibid*.

[44] *Ibid*., 26.

[45] United States, Department of Defense, *Department of Defense Directive 5000.1: The Defense Acquisition System* (Washington, DC: Department of Defense, 2007), 7, https://akss.dau.mil/dag/DoD5000.asp?view=document&doc=1 Internet; accessed 20 March 2009.

providing increased PBSA experience opportunities. While some contract consolidation has occurred within the AEPM Division, several hundred component level contracts remain active.[46] The decision to bundle these components and sub-systems into level-two and three PBSA contracts should only be done when able to achieve key operational requirements and when supported by a rigorous business case. In the alternative, each case should be considered as a performance-based contracting opportunity at the component or sub-system level that develops both improved availability and PBSA contracting experience with lower financial and operational risk consequence to the DND.

Recommendation 3:

It is recommended that the CPMF be expanded to include contracting strategies for level-one and two PBSA contracts.

LONG-TERM PBSA CONTRACTS

Given the long-term nature of PBSA contracts, starting with and maintaining a good customer/vendor relationship is essential to achieving operational effectiveness over the lifecycle. To this end the DND is engaging industry earlier in the process to foster both a stronger relationship with the vendors as well as to ensure a solid understanding of defence objectives. For the Maritime Helicopter Project, the programme management team circulated draft request for proposals to industry to solicit pre-tendering feedback. Over 1,000 suggestions were received which lead to 400 changes to the document.[47] Similarly,

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[46] Department of National Defence, *OWSM Newsletter*, Vol. Spring (Ottawa, ON: Director General Aerospace Equipment Programme Management, 2007), 2, http://www.cf18avsowss.com/english/newsletters/OWSMLetter-May2007.pdf Internet; accessed 8 March 2009.

[47] Williams, *Canadian Defence Procurement: A View from the Inside*, 43.

other DND projects such as the A/OPS project will also be circulating the draft RFP for vendor comment and clarification of the performance expectations.[48]

While long-term contracts may bring stability to the vendor and foster stronger customer/vendor relationships, long-term contracts also bring a number of challenges. Some analysts have suggested that attempts at PBSA often fail to achieve the desired results because many of the expectations are impracticable. Despite a customer's best efforts, many of the requirements in the contract award are not "…clear, specific, objective, and measureable…."[49] Regardless of how thoroughly future needs are considered, "…contracts will include things that will not be needed and leave out things that will be. Specifications and expectations must be adjusted over the course of time."[50] Further, in military environments over long periods of time, the operational needs and objectives of the war-fighters will change. This dynamic operational environment requires that the contracted performance requirements also be dynamic and "…PBL methodology [be] robust and agile, easily adapting to the evolving operational environments."[51] The DoD has a level-three platform availability contract with Boeing for support of the C-17 Globemaster aircraft. The contract specifies six performance objectives but of these the overarching measure is aircraft availability, "…the number of C-17 aircraft available to

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[48] Department of National Defence, *Backgrounder: Arctic/Offshore Patrol Ships (BG-07.023).*

[49] Vernon J. Edwards and Ralph C. Nash Jr, "A Proposal for a New Approach to Performance-Based Services Acquisition," *Defense AR Journal* 14, no. 2 (Sep, 2007), 355, http://proquest.umi.com/pqdweb?did=1381347351&Fmt=7&clientId=1711&RQT=309&VName=PQD Internet; accessed 12 March 2009.

[50] *Ibid*., 355.

[51] Sols, Nowick and Verma, *Defining the Fundamental Framework of an Effective Performance-Based Logistics (PBL) Contract*, 44.

meet daily mission requirements."[52] The programme started with initial success in all six performance measures. Since 2004 all of the metrics except the most important, aircraft availability, have been met.[53] The contractor has argued that the UASF is using the aircraft outside of the contracted flying envelope in a war time role[54] highlighting the reality that changing military requirements need to have a contract that is responsive to operational requirement changes.

The former ADM(Mat), Alan Williams, a proponent of PBSA recognised that it is not a "…panacea…[and] because it is a new approach, caution should be exhibited as both the government and suppliers ascend the learning curve."[55] He suggested that re-evaluation opportunities be built into the contact on a recurring basis to adjust the measures and exercise off-ramps if required. Presently, the ISSCF guidance to the DND specifies that PBSA "…should be a long-term contract (e.g. 20 years)…"[56] with provisions for an early exit strategy based on clearly defined parameters. Although it does recognise the possibility of an early exit or the extension beyond the original term of the contract, it does not provide any guidance regarding mid-course corrections.

The CPMF model allows for the relative weighting across each of the thirteen performance metrics to be changed by DND but it does not discuss the need to revisit either

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[52] Deirdre Mahon, "Performance-Based Logistics: Transforming Sustainment," *Journal of Contract Management* (Summer, 2007), 62, http://www.ncmahq.org/files/Articles/JCM07_pp53-71.pdf Internet; accessed 12 March 2009.

[53] *Ibid*., 66.

[54] Department of National Defence, *An In-Service Support Contracting Framework (ISSCF) for Canadian Forces Platforms During the Initial Acquisition Stage*, 6.

[55] Williams, *Canadian Defence Procurement: A View from the Inside*, 42.

[56] Department of National Defence, *An In-Service Support Contracting Framework (ISSCF) for Canadian Forces Platforms During the Initial Acquisition Stage*, 28.

the metric threshold or definition of the metric. Building on previous experience an expanded level-two support contract was competitively awarded to a new contractor to provide maintenance, engineering publication and spares support for the CC-130 aircraft. In January 2008, the CC-130 programme manager proposed a number of changes to the metrics being used in this contract.[57] In part the changes were to align the metrics with the newly released CPMF but more significantly many of the changes were intended to rectify issues regarding the algorithms and customer/vendor data interfaces.

Before suggesting that mid-course corrections should automatically form part of long-term PBSA contracts, it is also important to recognise that too much flexibility will not challenge the contractor over the long-term. Re-evaluation intervals bear the risk of encouraging underperforming contractors to hang on till the next interval rather than invest in corrective measures resulting in a reduction in operational performance or an increase in agreed to costs. These risks to performance objectives must be balanced against the benefits of contractual flexibility.[58] Getting the measures right at the beginning of the contract will reduce the need for change to the essential minimum. To do so, requires experience and policy direction regarding what elements of a performance-based contract should be firm over the long-term and what elements may be subject to adjustment due to operational changes. The lessons on the need to re-evaluate the metrics from the CC-130 OWSM experience should be incorporated into both the CPMF and ISSCF documents. As suggested earlier, the broadening of the skill base can be improved through more practical

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[57] Department of National Defence, "CC130 PAV OWSM: Extraordinary CPRB Presentation - Performance Metrics Improvements" (Presentation, Directorate Aerospace Equipment Programme Management (Transports and Helicopters), Ottawa, ON, 2008).

[58] Laura H. Baldwin and Sarah Hunter, *Defining Needs and Managing Performance of Installation Support Contracts: Perspectives from the Commercial Sector* (Santa Monica, CA: RAND Corporation, 2004), 29.

experience gained through the use of PBSA contacts across all four levels. Programme managers with access to comprehensive policy and people with practical experience in PBSA will have an increased likelihood of well defined level-three and four PBSA contracts returning maximised operational performance at minimal contractual risk.

Recommendation 4:

The ISSCF and CPMF should include guidance on how to identify and implement changes to performance requirements based on the dynamic nature of military operations.

DIRECTION AND TRAINING

The DoD has awarded over 200 PBL contracts[59] from which valuable experience has been gained. The top-down leadership from the Under Secretary of Defense made PBL a priority and is achieving a culture shift within the DoD. Although senior leadership within the DND, particularly within ADM(Mat) has embraced PBSA through the adoption of CPMF and ISSCF, there are very few mandatory policies in place. Based on the guidance provided in the ADM(Mat) OWSM concept of operations the move to performance-based contracting remains optional for programme managers.[60] It should be noted that the CPMF applies only to the AEPM Division and parallel approaches were not investigated within the Land and Maritime programme management divisions. However, during discussions with the Performance-Based Accountability and R&M Manager within the Major Projects Division, the eagerness to adopt PBSA contracts appears to be lower

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[59] Randy T. Fowler, "Performance-Based Logistics," *Defense AT&L* 38, no. 1; 1 (2009), 13, http://search.ebscohost.com/login.aspx?direct=true&db=mth&AN=36266151&site=ehost-live Internet; accessed 12 March 2009.

[60] Department of National Defence, *Concept of Operation: Optimised Weapons System Management*, 5.

within the maritime and land environments.[61] In the absence of firm well documented direction, the move to PBSA will be hampered by a legacy culture and will achieve varying degrees of success. Directive policy coupled with success stories from level-one, two, and three PBSA initiatives from within the Department will yield a culture shift to adopt PBSA.

Since the 2000 DoD memorandum[62] directing PBSA related training, the DoD has vastly expanded the training curriculum available to both DoD and industry personnel. In spite of these efforts, an August 2004 DOD Inspector General Report found that too high level direction and inadequate training lead to "…ad hoc implementation by the services, ultimately resulting in ineffective implementation of PBL strategies."[63] At present, the DND finds itself repeating the same cycle, in a compressed timeline and while procuring predominantly weapons systems PBSA contracts. The ISSCF document provides only general guidance to the performance-based contracting approach and no formal training for implementation by DND personnel is in place. As with the experiences reported in the DoD, the likely outcome will be diverse approaches with certain contracts garnering less benefit than is achievable. The DND is starting to accumulate experience through its CPMF initiatives. The benefits from this activity need to be reinforced. A policy framework that addresses PBSA across all four levels and a training strategy that provides tools to facilitate the decision as to which level of PBSA to implement will allow cost effective operational requirements to be met.

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[61]Louis Saucier, Interview Regarding Performance Based Services Acquisition Within the DND, 19 March, 2009.

[62] Gansler, *Memorandum: Performance Based Services Acquisition (PBSA).*

[63] Mahon, *Performance-Based Logistics: Transforming Sustainment*, 57.

Recommendation 5:

Given the scope of the contacts being procured as a result of the CFDS, the provision of detailed direction and formal training on PBSA should be a priority for the DND.

SUMMARY AND CONCLUSION

The DND is rapidly implementing ambitious PBSA contracts and has the opportunity to use the experiences of others to shape departmental policy development. At present, the available documentation within the DND (principally the ISSCF and CPMF) is limited and suffers from divergence. In particular, experience has shown that the choice of metrics and the structure of the programme must support the overarching operational requirement in order to meet operational requirements efficiently. The ability to identify appropriate metrics and implement a successful programme is dependent on the experience, training and direction provided to the personnel involved; all of which may be improved within the DND documentation.

Although the use of several component or sub-system level PBSA arrangements has been found to yield a better business case, neither the ISSCF nor the CPMF encourage the use of PBSA at the component level. More importantly, success in PBSA is dependent on the skill and knowledge of programme management personnel. Their skill can be honed through the experience with component and sub-system PBSA activities coupled with a rigorous training programme. Expanding the scope of PBSA activities across all four PBSA levels will build competence and can yield early fiscal dividends. Finally, policy and training needs to be expanded and incorporate the experiences already learned by DND in order to improve future PBSA success within the department. Given the volume and long-

term nature of capital acquisition programmes being pursued by the DND, the adoption of these recommendations should also be pursued with the same vigour.

APPENDIX 1

Summary of Recommendations

1. Metrics Tied to Top-Level Operational Requirements

Performance metrics should be tied to the top-level operational requirement set in consultation with the war-fighter. The ISSCF identifies the need for a results hierarchy stemming from the overarching operational requirement. Normally, this is defined as mission-ready platforms, A_o. This is not the practice within CPMF which utilises a broad range of metrics not all of which support A_o. Without a hierarchical analysis, the metric threshold is likely to be set based on what has been achieved previously rather than what is required. The CPMF could be improved by emphasising the performance results hierarchy for the selection of contracted performance metrics and by providing direction on how to choose and set thresholds for lower level PBSA support contracts in order to achieve overall fleet availability.

Recommendation 1: Both the ISSCF and CPMF should stress the use of metrics that are tied to the top-level operational requirement through a results hierarchy. *(see page 14)*

2. Supplemental Performance Measures

Experience garnered by DND through CPMF initiatives suggests that performance measures for services outside of A_o help to motivate the contractor to provide good service in the non-core but still meaningful tasks. This experience is not reflected in the ISSCF framework. Attention to the key operational requirement may diminish without clear and specific direction as to how and when to use secondary non-core metrics.

Recommendation 2: Consistent direction on when and how to use additional measures should be added to both the ISSCF and CPMF documents. *(see page 14)*

3. Encourage PBSA Across All Four PBSA Levels

Success in tendering PBSA contracts is dependent on the skill of the programme management personnel to properly define their PBSA requirements and for industry to fully appreciate the obligations. Given the rapidity with which the DND is embarking on PBSA contracts the level of experience within the department and industry remains limited. There remains several hundred contracts for components within DGAEPM. Each case should be considered as a performance-based contracting opportunity at the component or sub-system level that develops both improved availability and PBSA contracting experience with lower financial and operational risk consequence to the DND.

Recommendation 3: It is recommended that the CPMF be expanded to include contracting strategies for smaller level-one and level-two PBSA contracts. *(see page 17)*

4. Dynamic Operational Requirements

Experience within the DoD, industry and DGAEPM suggests that in spite of best intentions to forecast future requirements, the dynamic nature of military operations and/or the practical implementation of the contract is likely to result in a need to change the performance requirements. Implementation of recommendation 3 can maximize the probability of practical success through the development of PBSA skills from experience on smaller contracts. Changes in operational requirements due to military necessity will remain extant. Challenging the contractor to deliver performance should not be reduced

through an expectation of an opportunity to renegotiate performance requirements. The nature and type of contractual performance changes should be limited to absolute military necessity.

Recommendation 4: The ISSCF and CPMF should include guidance on how to identify and implement changes to performance requirements based on the dynamic nature of military operations. *(see page 21)*

5. Policy and Training

The DoD is beginning to claim benefits from their implementation of PBL. The present success is founded on extensive policy which has unified the approach by all three services and has been accompanied by extensive training opportunities. Programme managers with access to consistent policy and people with practical experience in PBSA will have an increased likelihood of well defined level three and four PBSA contracts returning maximised operational performance at minimal contractual risk.

Recommendation 5: The provision of detailed direction and formal training on PBSA should be a priority for the DND. *(see page 23)*

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