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The Voice of the Industrial Base

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Mr. Randy Fowler
ADUSD/MR
3500 Defense Pentagon
Room 5A1066
Washington, DC 20301

Mr. Nick Torelli
Director, SE/MA
3900 Defense Pentagon
Room 5A1076
Washington, DC 20301

Dear Messrs Fowler & Torelli:

Attached is a document titled Institutionalizing Affordability in DoD Systems, Point Paper, NDIA-DoD Joint Affordability/LCC Initiative. This document was prepared by members of the Systems Engineering and Logistics Management Divisions of NDIA and submitted in support of both the PSAT effort and the current OSD Affordability Task Force. The purpose is to define and recommend an approach to institutionalize Operations and Support cost reduction as an overarching priority objective influencing the broader issues of Affordability and Life Cycle Cost reduction throughout acquisition, operation, and sustainment of DoD systems. Request this Point Paper be distributed within offices of AT&L as a defense industry view of these initiatives.

NDIA endorses efforts to achieve the USD/AT&L stated objective to restore affordability to defense. In that regard we offer continued support in actions necessary to institutionalize the attached recommendations in DoD policy, guidance, and processes.

Co-Chairs for the preparation of this document were Jerry Cothran, Lockheed Martin Corporation and Bruce Pieper, Raytheon Company.

Sincerely, & Respectfully

Lawrence P. Farrell, Jr.
Lieutenant General, USAF (Ret)
President & CEO

Institutionalizing Affordability in DoD Systems
Point Paper
NDIA-DoD Joint Affordability/LCC Initiative

Purpose: To define and recommend an approach to institutionalize Operations and Support (O&S) cost reduction as an overarching priority objective influencing the broader issues of Affordability and Life Cycle Cost (LCC) reduction throughout acquisition, operation, and sustainment of DoD systems.

Background: The NDIA LCS committee held a joint DoD-Industry LCC/Affordability workshop on 27 April 2010, co-sponsored by Randy Fowler (ADUSD/MR) and Nic Torelli (Director, Mission Assurance Systems Engineering, DDR&E). That workshop resulted in identification of 23 LCC/Affordability issues, root causes, and potential solutions. The LCS committee accomplished follow-on work to consolidate the common issue areas into four overarching core issues. It then conducted a gap analysis vis-à-vis existing known LCC/Affordability efforts, primarily those in work under the OSD Product Support Assessment effort, and moved those already in work to a lower priority. The remaining issue focus, representative of an identified gap in the PSAT effort, concentrates on emphasizing and institutionalizing Reliability, Availability, and Maintainability (RAM) and Reliability, Maintainability, and Supportability (RMS) in DoD policy, guidance, and processes. Our intent is to submit these recommendations in support of both the PSAT effort and the current OSD Affordability Task Force (ATF), chaired by the ADUSD/MR, Mr. Randy Fowler, and Mr. Nic Torelli, Director, Mission Assurance Systems Engineering, DDR&E.

Approach:

- A recognized gap in the OSD LCC/Affordability policy, guidance, and current Affordability initiative focus is the absence of actions targeting the area of largest current Operations and Support (O&S) cost – fielded operational systems. The majority of existing policy and initiatives focus on Acquisition programs and processes – where the benefits are not near term. This drives our NDIA recommendations toward a strong focus on fielded operational systems (e.g. greater than 75% of the ships comprising the Navy fleet today will still be in active use in 2020).
- Our recommendations also address Acquisition phase programs and processes, and to that extent are somewhat duplicative of Affordability Task Force recommendations, but that will serve to a) reinforce the ATF recommendations, and b) our recommendations are written in more detailed, “implementation actions” terms.
- Effective implementation of these recommendations must include the early and continuous sharing of reliability, maintenance, and materiel availability data between the Program Office, the prime systems contractor, and major subcontractors to facilitate the identification of cost drivers enabling both government and industry to work collectively to determine the appropriate actions, target metrics, and the risk and benefit of corrective initiatives to achieve cost savings.

Recommendations:

Fielded Operational Systems

- Fielded systems have fewer opportunities to significantly affect O&S cost than acquisition systems – which means that when those opportunities arise they should not be taken lightly. Those opportunities fall into two categories – iterative and continuing.
- **Iterative opportunities:**
 - History clearly shows that the majority of defense systems are kept in use far beyond their initial projected life span. The reality is that DoD is buying fewer systems and keeping them longer. Extending the service lives of existing systems requires periodic investments, either as major modifications, service life extension programs (SLEPs), or major upgrades (to change or enhance mission or performance).

- Each of these events should be considered as a cost reduction opportunity equal in importance to the design, development, and production of an acquisition program.
- **Recommendation:**
 - **For all Major Modification, Block Upgrades, and/or SLEP events**
 - **Require a RAM parameters review to assess the opportunities to utilize RAM analysis and actions to achieve Materiel Availability, Materiel Reliability, and O&S cost objectives**
 - Identify the top drivers/degraders for reliability, availability, supportability, and cost and develop actions necessary to mitigate/resolve
 - Establish an O&S percentage cost reduction target based on the results of the analysis
 - Consistently monitor progress towards achievement of the O&S cost reduction target
 - Document these actions in the program Life Cycle Sustainment Plan
 - Incorporate the RAM parameters review into all appropriate policy, guidance, and applicable governance activities
 - Establish a set of common elements and conventions that will facilitate application of Modeling and Simulation to assess and identify design approaches enabling optimal performance while minimizing O&S cost. For systems that do not have a Modification, Upgrade, and/or SLEP event program/plan require a comprehensive RAM review every 'X' (e.g. 3-5 years) , or as indicated by degradation of cost or performance, to identify O&S cost reduction opportunities consistent with those programs that have a scheduled assessment plan in place
- **Continuing opportunities:**
 - As systems phase out of production and into operational use, the primary sustainment focus is to “keep them operating”. Program office staffs are reduced and resources are provided from general consolidated Service budgets and working capital funds that are oriented towards buying “spares and repairs” rather than identifying and initiating actions that accomplish reliability and/or process improvements to reduce O&S cost. The end result is that as the system ages, maintenance and supply costs increase while reliability and performance decline. If the system is or becomes critical, more funds are allocated – but only to the degree that they can pay for the additional spares and repairs required to keep the system at an acceptable operational readiness level.
 - Rarely are there resources (or a concerted effort) supporting a consistent RAM analysis for fielded operational systems. Yet there are numerous examples where these systems have shown they are excellent opportunities for RAM analysis and resulting actions that can reduce O&S cost while improving performance. The Navy, primarily through NAVAIR sustainment contracts implemented by the Naval Inventory Control Point Philadelphia (NAVICP), has documented significant improvements in reliability and availability achieved through innovative, outcome-based sustainment strategies at equal or less cost than predecessor support strategies.
 - **Recommendation:**
 - **Require an ongoing formal RAM analysis (e.g. FRACAS, Reliability Growth plan) process throughout the life cycle that will identify RAM issues, cost drivers, and resulting actions to alleviate or resolve those issues resulting in O&S cost reduction**
 - Augment the Sustainment Quad Chart process to address the cost, availability, maintainability, supportability, and reliability drivers for subsequent RAM analysis

and actions necessary to meet Materiel Availability, Materiel Reliability, and O&S cost objectives

- Identify the top drivers/degraders for cost, availability, maintainability, supportability, and reliability and develop actions necessary to mitigate/resolve
- Develop an outcome-based unified business and engineering approach with support providers that will inherently incentivize investments in product or process improvements leading to improved reliability and reduction in O&S cost over time
 - This approach should encompass both prime (i.e. OEM) and sub-tier subcontract suppliers, and similar organic support activities. The objective, consistent with current statute and policy, is to leverage the use of performance-based business arrangements structured to motivate support providers to invest their own funds working under a fixed price contract, resulting in reliability improvement and cost reduction at no added contract cost to the government. This “self-funding” approach will overcome the lack of DoD investment funds through innovative contracting mechanisms. Historical precedent has shown that performance-based business arrangements, structured appropriately, have accomplished this objective.
 - For systems driven by shorter life cycles a different business approach is applicable. For example, on COTS subsystems or Information Technology systems the life-cycle is driven by rapid technology cycles (e.g. every 2-3 years). Systems of this type are less amenable to long term RAM improvement investments and benefit more from an increased emphasis on technology management, including technology refresh and technology insertion strategies consistent with emerging technology cycles prevalent in a robust, competitive commercial technology base

Acquisition Programs/Systems

- It is generally accepted that the majority of a systems Life Cycle Cost (estimates as high as 90%) is locked in during the first 10% of the system life – when critical decisions are made regarding the material solution and the design of the system. In the DoD acquisition process, users identify needed capabilities based on threats or capability needs in the capabilities development process governed by the Joint Capabilities Integration and Development System (JCIDS). Once documented, these parameters and system requirements form the basis for issuance of the Request for Proposal (RFP) which initiates the process to contract for the design and development of the system. The documentation of supportability parameters and systems requirements is a critical event in determining the degree to which a program will include an emphasis on, and subsequently accomplish, “Design for Affordable System Operational Effectiveness (ASOE)”. Failure to document and emphasize RAM factors as part of the requirements process will constrain the achievement of those characteristics in the resulting acquired system. That window of opportunity will seldom open again.
- **Recommendation:**
 - **Require conduct and outcomes of RAM-C analysis to be institutionalized into the Acquisition decision process**
 - Revise the JCIDs process to specifically require inclusion of RAM-C (Reliability, Availability, Maintainability – Cost) parameters in all documents
 - Direct that the RAM-C analysis and resulting parameters be initiated in the conceptual design from Material Solution Analysis (MSA) and Analysis of Alternatives (AOA) through all subsequent Technical Reviews and Milestone Decision activities

- Establish a set of common elements and conventions that will facilitate application of Modeling and Simulation to assess and identify optimum design approaches enabling optimal performance while minimizing O&S cost
- Strengthen the LCC estimating process to require the iterative tracking of LCC estimates at all reviews accompanied by a portrayal of deltas from previous estimates, reasons for deltas, and RAM-C actions underway to analyze and counteract any increases.
- Require all Component Acquisition Executives to assign responsibility to their Development organizations to identify and advocate overarching LCC reduction initiatives with associated cost/benefit analysis and recommendations for implementation

Summary/Conclusion:

This set of discrete and tightly focused recommendations are based on a proven methodology that reflects a consistent track record of accomplishing cost reduction, both short term and over the life cycle. Successful implementation of these recommendations is reliant on a holistic approach that addresses not only that methodology but the underlying enablers including visibility and understanding of the cost drivers of a system, sufficient data as defined in the Defense Acquisition Guidebook Chapter 4.2.3.1.7.4. Definition and Scope of Data, general and specialized tools, education and training, and the skilled personnel required to effectively address complex and disciplined LCC/TOC/ASOE-oriented analytics throughout the life cycle.