The Secretary of Defense Performance-Based Logistics Awards Program
for
Excellence in Performance-Based Logistics
in
Life Cycle Product Support

Section 2
Summary of Criteria Accomplishments

Warfighter-Based Capabilities and Outcomes

Mission Success: The AN/UYQ-70(V) Advanced Display System (Q-70) is the Navy's current generation of Commercial-Off-The-Shelf (COTS) display and processor systems for tactical and Command, Control, Communications, Computers Intelligence (C41) applications for target acquisition and tracking, weapons control, theater air defense, anti-submarine warfare, battle-group communication and airborne surveillance and control. Q-70 equipment is embedded in over twenty weapon systems under multiple program offices with different technology evolution plans and funding profiles. The Q-70 Program recently delivered the 7000th Q-70 combat computer suite. The Q-70's effective use of COTS electronic components and open system architectures in place of specialized hardware/software has saved the U.S. Navy more than $1.5 billion in total ownership costs over the past twelve years. A 1995 strategic partnership between the Navy and the Contractor defined the roles, responsibilities and processes for the back-fit of supply support requirements into the NAVSEA Q-70 acquisition contract. The Q-70 performance-base supply support was established in 1997 under a Just-in-Time (JIT) methodology; later called Commercial Direct Vendor Delivery (CDVD); and has continued to evolve to be a premiere Performance Based Logistics (PBL) supported system. The Q-70 Supply Support PBL team is comprised of Lockheed Martin Maritime Systems & Sensors (LM MS2), Naval Inventory Control Point (NAVICP), Naval Surface Warfare Center Port Hueneme (NSWC PHD), and Naval Undersea Warfare Center Newport (NUWC NPT). The current PBL contract is a two-year base with two two-year options for a total of six years, with a ceiling price

of $72.1M. The contract covers approximately 1,000 line items and performs a broad range of functions, including requisition support per stringent availability and delivery metrics through configuration, inventory and obsolescence management, transportation and real-time data exchange. The Government realizes cost savings through no wholesale inventory investment and a carcass exchange agreement, which lowers program costs through reduced transactional workload, inventory and infrastructure. NSWC PHD and NUWC NPT provide distance support to Q-70 customers, with Q-70 hardware/software support through the Q-70 Web Site and Support Center. The Q-70 web site maintains a hot line and on-line guidance to assist the user community with problems and issues. The web site and support center is accessible 24/7 or by phoning/emailing the Global Distance Support Center. [See Figure 1.]

Material Availability: Over the past five-years, Q-70 has provided outstanding support to the Fleet with an average requisition Fill Rate of 97.4 percent processing 10,956 demands. Additionally achieving a 99.4 percent average fill rate against 1,115 CASREP demands. These accomplishments speak to the team work and dedication of the Navy/LM MS2 Supply Support Team and how they always put the Fleet customer first. [See Figure 2.]

Material Reliability: LM MS2's approach to design for supportability is a continuous closed-loop process that results in high-quality products which optimizes reliability and maintainability. All selected components are verified by a government witnessed maintenance evaluation or maintenance demo conducted by NSWC PHD. All Q-70 components' reliability is actively tracked, analyzed and issues resolved through internal Navy / LM MS2 processes. Through the Q-70 team's collective and well-orchestrated efforts they sustained greater than 97 percent operational availability (A_o) average over the past five years.

Ownership Cost Management: Under acquisition reform, the NAVICP has made no investment into wholesale inventory in support of fielded Q-70 equipment. The current $13M in

wholesale inventory is vendor-owned and managed inventory by LM MS2, which reduces the U.S. Navy's material, storage and disposal ownership costs. By exchanging failed Depot Level Repairable (DLR) items, the Navy gains an added economic advantage. The Navy pays a lower price for the replacement item by exchanging a failed DLR item as a partial payment for the replacement item. An annual cost avoidance of $16.2M in exchanged material is credited to the NAVICP based on historical carcass return value. Had traditional support methodology been deployed by the NAVICP, the projected wholesale investment would have been $22.9M plus the added annual inventory costs for storage, repair, upgrade; and the disposal of obsolete parts no longer utilized in Q-70 equipment baselines.

LM MS2 has repeatedly demonstrated their commitment to operational excellence by making an upfront investment in internal Lean Six Sigma and Kaizen events with sub-vendors. A lean event at the Q-70 Supply Support Depot resulted in significant enhancements to overall process flows and the automation warehouse management system using part Unique Identification (UID) marking to improve inventory control functions. The projected cost savings is an estimated $300K over five years. These cost savings will be passed on to the Navy and further reduces total ownership cost over the Q-70 product life cycle.

Sustainment of Warfighter Capabilities

Public Private Partnering: The NAVICP, LM MS2, NSWC PHD and NUWC NPT chartered a Supply Support Integrated Product Team (SSIPT) very early in the program's development to address the Q-70 supply chain impacts resulting from continuous technology changes associated with obsolescence, technical updates, software changes and enhancements associated with a commercial product. NSWC PHD provides Navy technical support in regards to engineering changes, maintainability, reliability, provisioning and supportability. NUWC NPT acts as the Q-

70 Software Support Activity (SSA) managing multiple software baselines, engineering changes and maintaining an accurate configuration database of the Q-70 equipment.

Systems Engineering Approach: Q-70's Design for Supportability approach leverages LM MS2's Systems Engineering, Design Engineering, & Integrated Logistics Support to ensure only the hardware with highest predictive reliability rate are selectively chosen and rigorously environmental qualification tested prior to being introduced into the Q-70 product line. Selected components are required to perform to a 30-minute Mean Time To Repair (MTTR) and a 60-minute Maximum Corrective Maintenance Time (MMAX), both of which ensure high standards of performance and ease of maintainability, significantly reducing touch-times by the sailor and maximizing the operational availability (A_o) of the weapon systems for the war fighter. [See Figure 3.]

Footprint Reduction: Through LM MS2's highly integrated systems and design engineering efforts they reduced the number of Q-70 consoles by three from prior AEGIS Destroyer Modernization Program developments to the most recent Cruiser Modernization Program, while increasing the overall capabilities. Additionally, LM MS2's Systems Engineering team qualified COTS hardware components for three key Q-70 consoles that resulted in an overall improvement of 61 percent in Mean Time Between Failure (MTBF) component reliability.

Obsolescence Management: LM MS2 proactively tracks COTS obsolescence by conducting ongoing market surveys of vendors and market trend analyses. This keeps the Q-70 Program abreast of the volatile commercial-based market where Integrated Circuitry (IC) technology changes rapidly at a pace of approximately every eighteen months. To provide the war fighter with state of the art technology solutions, LM MS2 employs an obsolescence management processes and database system, whose objectives are to lower cost, risk, & schedule associated

with producing and maintaining related families of COTS-based solutions. The Q-70 obsolescence management approach integrates a wide-variety of activities and leverages that data in a holistic manner to ensure life cycle sustainability of the Q-70 product line. [See Figure 4.]

Reliability, Maintainability and Supportability Improvements: The Q-70 SSIPT integration of engineering and logistics disciplines allows the team to proactively address software updates; and hardware reliabilty, safety, supportability, and maintainability issues to ensure uninterrupted Fleet support.

Figure 1:

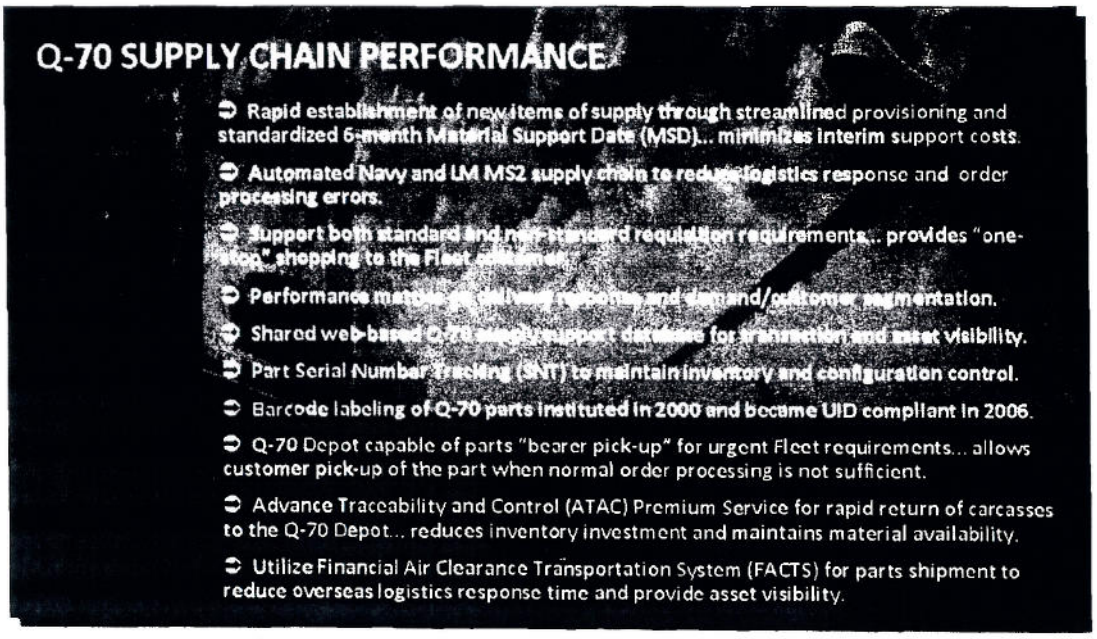


Figure 2:

Figure 3:

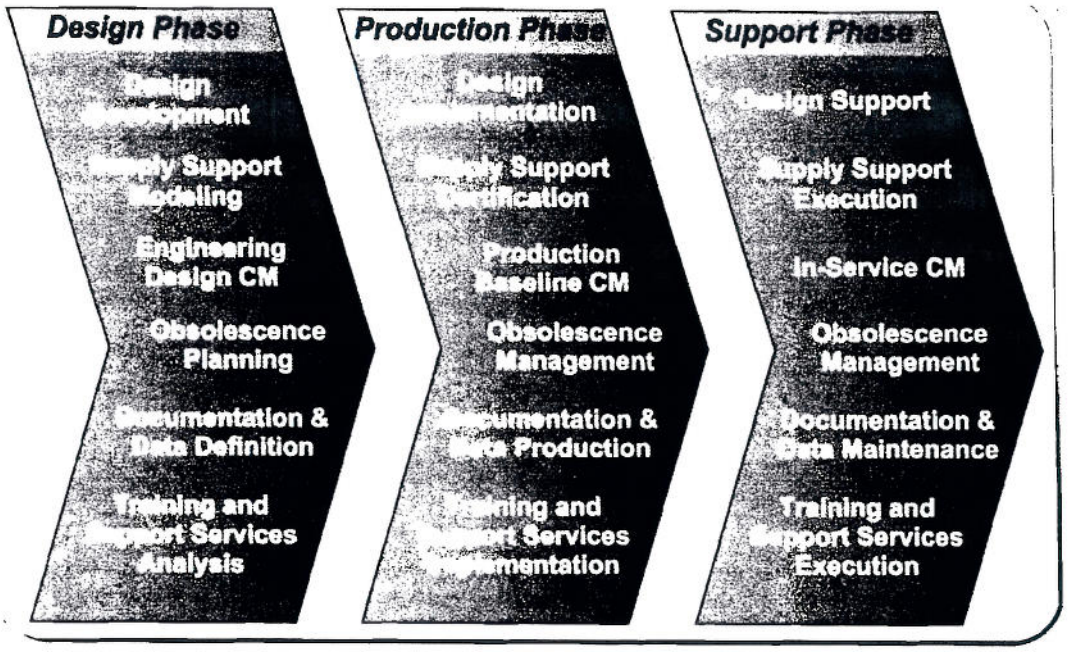
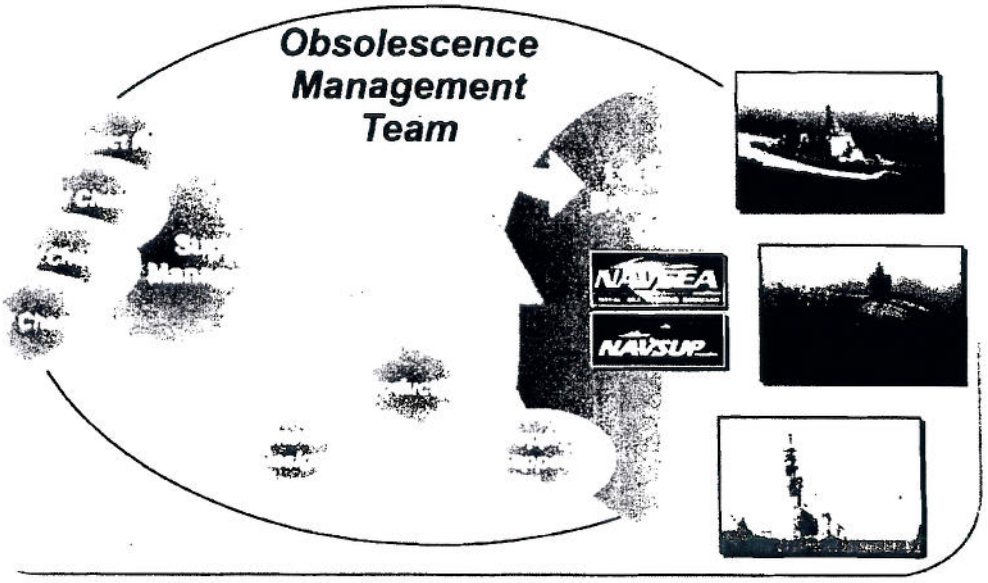


Figure 4:



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Section 4
Achievements

The AN/UYQ-70 Advanced Display System team is recognized for their early innovations in the field of PBL and their dedication to the warfighter. The Q-70 team supports embedded Q-70 equipment in multiple weapon systems with varied missions through a single streamlined supply chain. The Q-70's two-year base with two two-year options for a total of six years contract provides continued seamless rapid Fleet support, as well as, incorporating rapid technology changes inherent to the Q-70 system. The Government will realize cost savings through the effective support of a single source provider managed inventory and the carcass exchange agreement. To date, performance has consistently exceeded the NAVSUP goal of 85 percent with a Fill Rate of 95 percent or higher. Through an integrated engineering with logistics approach, the team has developed a responsive and flexible supply chain. The Q-70 Team has a long history of innovative supply support solutions and providing outstanding Fleet support. The Q-70 Team has established a world class COTS-based PBL program that provides exceptional performance and globalized support to both U.S. and Foreign Military Navies. The Q-70 Supply Support Program is truly an acquisition reform success story and underscores the value of teamwork.