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THE FUTURE OF INTEGRATED SUPPLY CHAIN MANAGEMENT UTILIZING PERFORMANCE BASED LOGISTICS

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Current logistics concepts yield predictive, linear supply chains that operate in traditional, hierarchical command and control structures. Current efforts to modernize logistics focus on increasing system efficiency, reducing mobility footprint, implementing Performance Based Logistics (PBL) strategies, and creating a transactional data-sharing environment. Logistics support in a transformed military will require prioritized support at the point of effect, with a streamlined end-to-end process back to the source of supply to satisfy the full range of military operations. Sense and Respond Logistics and PBL strategies hold great promise to reengineer our supply chain process and provide improved, cost-effective support to the warfighter.

We must transform … the DoD … by encouraging a culture of creativity and intelligent risk-taking.
—Donald Rumsfeld, Secretary of Defense (2002)[1]

The high cost to support the Global War on Terrorism (GWOT), most recently referred to as the Long War, has generated a requirement for all federal agencies to review current and future operations, and budget to identify areas of cost savings. The Navy has coined the phrase cost-wise readiness outlining the concept

of support for our military combat operations while minimizing overall costs to the taxpayer. During the 1980s, in the midst of the Cold War, then-President Ronald Reagan increased military spending, building up a military that would be able to project force abroad and protect national interests around the globe, in an attempt to stop the spread of communist ideology. The result is now evident; we outspent the Soviet Union and won the Cold War. Since the termination of the Cold War, however, military spending has decreased dramatically, and the subsequent recapitalization of military weaponry has slowed. With the government's focus now shifting towards military capabilities, and the emergent requirements resulting from the Long War, the period of military drawdown and realignment has exposed our military's vulnerabilities to support protracted as well as prolonged engagements.

This article focuses on integrated supply chain management and the potential cost and readiness benefits of utilizing two industry best business practices: Sense and Respond Logistics (S&RL) and Performance Based Agreements (PBA). The S&RL framework exploits advanced technologies through highly adaptive, self-synchronizing functional processes designed to drive shorter decision cycles and faster responses. The commercial-military support structure has evolved through necessity to cut costs, reducing both research and development spending as well as warehousing and transportation costs, while maintaining the ability to deliver the right material to the warfighter in the right quantities at the right time. Two primary determinations upon which I focus the research and arguments presented in this article are: 1) whether commercial best business practices such as S&RL are applicable to Department of Defense (DoD) logistical support methodology; and 2) whether S&RL and PBAs can satisfy the future requirement for joint, integrated supply chain management and distant support.

BACKGROUND

The security environment and the joint forces' role in it have changed. The future joint force will operate in a complex and uncertain global security environment. The ultimate success of military deployment and mission capabilities is tied to the readiness of the warfighters and the ability to sustain them, getting needed material from the "factory to foxhole" (Catano-Pardo, Lin, & Williams, 2006, p. 6).

The application of new military concepts and advanced technology has led to the development of capabilities that can transform the structure and operations of the military forces and DoD enterprise to succeed in the known security environment and to anticipate and prepare for other, yet unknown threats. This emerging global security environment represents a new set of challenges, sometimes contrary to the rules by which the United States fights its wars. The new threats are broader and include global, regional, and local elements. International organizations, allied nation states, rogue nations, hostile states, and terrorist groups all contend within this environment. Adversaries include state and non-state actors, criminal organizations, and transnational groups, and are often difficult to distinguish from noncombatants. They are multi-dimensional, flexible, distributed, information-aware, and rapidly adaptive to U.S. tactics. Increasingly, these threats have at their disposal readily

available, inexpensive, and efficient methods of creating large-scale effects. Recent examples of basic asymmetric warfare include 9/11 suicide terrorists, employment of improvised explosive devices, and cyber attacks on U.S. computer networks. Military agencies worldwide have found it increasingly difficult to meet these challenges with traditional logistics operations (Castano-Pardo, Lin, & Williams, 2006).

DOD LOGISTICS TRANSFORMATION

DoD leadership has begun to evaluate and understand the changing security environment and now has taken action to steer the direction of future combat supportability through an overhaul and complete transformation of how we do business. In an October 14, 2005, memorandum, then-Assistant Secretary of the Navy for Research, Development and Acquisition John Young[2] outlined key logistics priorities and initiatives focused on life-cycle management principles, particularly radio frequency identification, Lean Six Sigma, Defense Logistics Agency (DLA) consumable war reserve management, distribution process owner roles and responsibilities, supply chain roadmap, and sustainment. This was the climax to a decade-long push by Congress to streamline acquisition and reduce military budgetary spending. Traditional logistics concepts yield predictive, optimized, linear supply chains that operate in hierarchical command and control structures. Logistics in a transformed military defense structure will require prioritized support at the point of effect, with a streamlined end-to-end process back to the source of supply, for the full range of military operations. Improvements begin with implementing real-time visibility across the entire organization. With a common shared logistical picture, organizations spend less money and time in an attempt to compensate.

Historically, military logistics has taken the approach of satisfying operational needs through mass production, which resulted in iron mountains of equipment, commodities, and spare parts.

Combat operations modernization and evolutionary security threats present a particularly unique challenge to sustainability. Historically, military logistics has taken the approach of satisfying operational needs through mass production, which resulted in *iron mountains* of equipment, commodities, and spare parts. Due to high inventory levels and storage costs, DLA took a look at its own economic retention models. What they found was astounding. In 2006, the Government Accountability Office (GAO) reported that DLA storage of Navy-owned material for which no demand was generated over a 3-year period comprised over 155,000 line items, with an inventory value of $4.01 billion, and accounted for 1.90 million cubic feet of storage space.

Clearly, a new approach to traditional supply chain management must be investigated.

In 2005, the U.S. Navy ranked 8th in the Fortune 500 annual ranking of America's largest corporations with an annual budget of $131 billion. Of that, the Navy supply chain spending was $31 billion, nearly one-fourth of the total budget. Traditionally, we have used historical performance measures to determine effectiveness of the supply system to the needs of the warfighter. The primary measure employed was based on two primary criteria: 1) effectiveness of days, which measured a day's worth of items and compared it to material availability; and 2) historical demand data that adjust the item's normal rate used for resupply calculations.

JUST IN TIME LOGISTICS

As a baseline, DoD logistics agencies receive on average 54,000 requisitions each day, do business with more than 24,000 suppliers, and stock over 5.2 million line items. This conventional methodology may continue to work where demand is predictable and, if time permits, for buildup of stockpiled items. In response, DoD initiated the concept of *just in time* logistics, a product of the 1990s corporate concentration on lowering distribution and storage cost. Just in time logistics was an attempt to apply commercial best practices to lean-out huge inventory requirements, reduce waste post-conflict, and make the transactional logistics system more efficient. Its prime metric is flow rate. Flow rate is the volume of transactions, issues, and receipts measured against a given time period. Just in time logistics works well, but creates a very brittle supply chain and potentially fails due to wartime frictions and changing environments.

ENTERPRISE RESOURCE PLANNING

Current efforts to modernize logistics focus on increasing system efficiency, reducing the mobility footprint, implementing performance-based contracts, and creating a transactional data-sharing environment. In order to respond faster, the logistics professional will depend on Enterprise Resource Planning (ERP) systems, which have been tested and proven to work in the commercial sector. The ERP systems and networks are being applied to DoD logistics in an effort to create a connected environment in which near real-time data can be exchanged and response time shortened. Yet, the latest modernizing approaches have not yielded the kind of adaptive, effects-based logistics system that will support highly modular, dynamic, distributed, and adaptive operations.

SENSE AND RESPOND—A SHIFT IN MINDSET

Advancing technologies and key enterprise functions now allow for a broadening of supply across all potential sources as well as logistics operations in a networked, distributed environment that emphasizes speed of command, quality of effects, and adaptation. Today's logistics must be commander's intent-focused and capabilities-centric to operational tasks, mission, and effects.

Historically, logistics has been the functional capability that determined the success or the failure of a military campaign. Gary Gagliardi's translation of *Sun Tzu's The Art of War* relates the importance of logistics when preparing for war:

> *Everything depends on your use of military philosophy. Moving the army requires thousands of vehicles. These vehicles must be loaded thousands of times. The army must carry a huge supply of arms. You need ten thousand acres of grain. This results in internal and external shortages. Any army consumes resources like an invader (Gagliardi, 2003).*

Clearly, using a large conventional army makes war very expensive and requires a large support system to maintain effectiveness. Long delays in supplying the forces create a dull, drained army and exhaust all available resources. Sense and Respond environments present commanders a prioritized picture of available weapon systems' real-time operational status and historical patterns, allowing them to respond rapidly to momentary strategic strike opportunities.

It is very difficult to change long-standing patterns in the human mind. For the DoD to be effective, we must rethink the way we do business, the context of the future wars we will fight, and the necessary preparation required for sustaining a conflict abroad.

Exactly what is the future of integrated supply chain management utilizing S&RL and PBAs? As previously mentioned, the joint force will operate in a complex and uncertain security environment. New concepts and advanced technology have led to the development of capabilities that have transformed the structure and operations of our forces, as well as supportability factors. Distance support using direct from vendor replenishment and streamlined acquisition procedures will reduce inventory requirements, logistical footprint, and emergent funding requirements for spares and interim parts support. However, to fully implement change, we must be critical of our own procedures. Being effective requires an internal look at the system by which we operate and an intensive probe that transcends the routine. If not, we will continue to do what does not work or what is less effective for years and years. It is time for us to really evaluate how we are doing and shift our mindset (Dukes, 2006).

It is very difficult to change long-standing patterns in the human mind. For the DoD to be effective, we must rethink the way we do business, the context of the future wars we will fight, and the necessary preparation required for sustaining a conflict abroad. From a biblical context, Romans 12:1 states, "we cannot be conformed to this world, but be ye transformed by the renewing of our mind. …"

(Zondervan, 1994, pp. 1242–1244). DoD leadership, in recent years pursued the most comprehensive transformation of its forces since the early years of World War II, with the goal of improving joint warfighting capabilities to meet current and future full-spectrum requirements. The S&RL is the primary means to provide the framework of focused logistics. It is grounded in network-centric warfare theory and Joint Adaptive Expeditionary Warfare practice. Its concept is based on research from the commercial business industry leader, IBM, and has been modified to fit the managerial framework of the DoD. It maintains some key ideas that are found in both science and business.

The principal tenet of S&RL is the fusion of operations, intelligence, and logistics, resulting in information that is real-time and manageable. The S&RL is the means to provide greater range, depth, and flexibility to the warfighter. When utilizing S&RL and PBAs with the weapon system vendors, the process owner takes on more responsibility for life-cycle support. Through this relationship, military forces can maximize readiness, improve material reliability and effectiveness, and capitalize on network-centric enterprises as all parties collaborate real-time within and across communities of interest. Even a conservative estimate of savings based on improved supply chain procedures can be substantial. For example a 2 percent savings based on the current DoD budget would equate to a net savings of $150 million in 2005 and $2.3 billion by 2009.

The next goal of S&RL is to enable logisticians to accurately observe, orient, decide, and act quicker than the supported customer, shortening the decision cycle and steadily moving from reactive to proactive. The S&RL moves logistics to the realm of prediction and preemption, anticipating the warfighter's needs more accurately and more quickly, at the same or reduced cost. Total supply chain integration improves tracking, information exchange, platform autonomics, and employs flexible business rules, which shortens the logistician's decision cycle and better sustains the dynamic battlefield of the 21st century. Through shared situational awareness and better decision support, uncertainty can be reduced and warfighters can make real-time adjustments as they track vehicle fuel levels, meals in stock, bullets fired, and battery life remaining. The S&RL allows for horizontal collaboration and rapid reconfiguration of business rules, process flows, and decision-making models in an extremely dynamic environment.

DoD logistics transformation is comprised of three central concepts: Focused Logistics, Force-centric Logistics Enterprise, and Sense and Respond Logistics Theory.

- ***Focused Logistics*** is recognized as a Joint Requirements Oversight Council (JROC)-approved concept, fully reconciled and incorporated into the focused logistics campaign plan. It is the strategic concept that defines broad joint logistics capabilities that are necessary to deploy, employ, sustain, and redeploy forces across the full spectrum of combat operations.
- ***Force-centric Logistics Enterprise*** is the vision to accelerate logistics improvements, enhance support to the warfighter, and align logistics processes with the operational demands of the 21st century.
- ***Sense and Respond Logistics Theory*** must be fully implemented by DoD to complete this transformation. It provides the framework that enables faster

> combat operations by sensing material needs and responding to those needs before they hinder or slow operations (Office of Force Transformation, 2004).

These concepts are being reconciled into a coherent logistics transformation strategy that will embody a joint focused logistics capability. The DoD must continue to look at ways to incorporate near-term aspects of S&RL into the mindset of Service logistics capabilities and attributes. Ultimately, combat logisticians must provide the warfighter the right personnel, equipment, supplies, and support in the right place, at the right time, and in the right quantities.

Based on today's trend, S&RL principles will mature and evolve into a predictive and preemptive capability. Based on network-centric infrastructure and improved technology, S&RL will enable future battlespace and distributed operations as well as sea basing.

What exactly is the policy shift to S&RL? Sense and Respond Logistics provides timely delivery of improved material readiness and enhanced assets visibility, connectivity, and interoperability. As mentioned earlier, S&RL is grounded in network-centric warfare theory and Joint Adaptive Expeditionary Warfare practice. Bobby Chin, a logistics management specialist and strategic planner for the U.S. Army, describes S&RL in his 2005 white paper.

> *It [S&RL] is focused on commander's intent, and emphasizes speed and quality of effects across the full range of military operations—prepares the Services for responsive and adaptive logistics operations in a dynamic environment. It enables operations-driven control of theatre logistics, strategic connectivity, and integration of combat operations and support. It helps eliminate stovepipe sub optimization and improve data standardization (Chinn, 2005).*

With real-time operations, intelligence, and logistics collaboration, S&RL provides a dynamic picture of the battlefield. A more powerful outcome of this fusion is the use of cognitive agent technologies to mine and present information to the right players across the continuum of operations. Transformed logistics capabilities must support future joint forces that are fully integrated, expeditionary, networked, decentralized, and increasingly lethal. The S&RL measures the effectiveness, and real-time analytics will meet the two primary metrics for speed of response and quality of effects. Based on today's trend, S&RL principles will mature and evolve into a predictive and preemptive capability. Based on network-centric infrastructure and improved technology, S&RL will enable future battlespace and distributed operations as well as sea basing.

Performance Based Logistics (PBL) is a support strategy that places primary emphasis on optimizing weapon system support to meet the needs of the warfighter. Performance requirements are measurable metrics. The PBLs designate a single point of accountability for performance with a Product Support Integrator (PSI) and develop support metrics and accompanying incentives to ensure that the performance objectives are met. In short, PBAs buy performance, not transactional goods and services. The PBL strategies often provide incentives for the process owner to evaluate the entire supply chain, from manufacturing to distribution. The process owner looks at all procedures, removing any non-value-added processes, to obtain outcome-measured goals. Inherent benefits that have been commercially demonstrated are streamlined acquisitions, fewer material defects, delineated outcome performance goals, and process ownership. They facilitate the overall life-cycle management of reliability, supportability, and costs. The PBL strategies integrate acquisition and logistics processes for buying weapon system capability and are based on sound, source of supply decisions and best value analysis. Decisions are based upon business case analyses, which allow process owners to compare product support capability next to prescribed performance objectives and outcomes. The major shift from traditional support to product support minimizes purchasing, contracting, and warehousing costs. Instead of buying pre-determined levels of spares, repairs, and data, the new focus is on buying availability to meet the warfighter's needs, and responding real-time to surges and slumps. The appendix to this article provides a look at a naval maritime weapon system that is currently supported by PBL to illustrate how pre- and post-PBL availability and cost factors actually function.

When applied in the private sector, supply chains have demonstrated superior customer responsiveness at cost savings as high as 50 percent.

The Defense Department's logistics programs and operations totaled more than $84 billion in FY 2000, accounting for about one-third of the DoD's budget. This rivals the cumulative operations of the 10 largest corporations worldwide. The high cost to support the GWOT and OPERATION IRAQI FREEDOM has generated a requirement for all federal agencies to review current and future operations and budgets for real areas of cost savings (GAO, 2000). Integrated supply chain management is a proven business strategy that has gained wide acceptance in recent years due to increasing customer demands for quality, delivery, and speed of procurement of materials, transformation of material into finished product, and distribution of that product to end customers. When applied in the private sector, supply chains have demonstrated superior customer responsiveness at cost savings as high as 50 percent. The GAO has noted that efforts to reengineer a logistics system are more successful when various logistics activities are viewed as a series of interconnected processes

rather than as isolated functions. As with any business process, supply chain management can benefit from the principles of reengineering, lean manufacturing, DoD level partnering, and streamlining.

Within the Defense Department, organic depot maintenance infrastructure has 22 public and private sector installations and maintains over $50 billion in facilities and equipment. Although evolving depot maintenance legislation, policy, and world events could impact all projections, the most current summary-level depot maintenance data available for the period FY 2002–FY 2009 project an increase of 14.6 percent in estimated depot maintenance expenditures from $20.6 billon to $23.6 billon in then-year dollars.

In FY 2002, over 68,000 personnel accomplished over 79 million hours of organic depot-level maintenance work on a wide array of repairables. In addition to the organic work, DoD spent over $8 billon in the private sector for the accomplishment of depot-level maintenance. Over 17 percent of the depot-level workload accomplished is considered intra-Service (GAO, 2000, p. 78).

Depot maintenance is key to the total DoD logistics process that supports millions of equipment items, including 52,000 combat vehicles, 350 ships, and 17,000 aircraft. Depot maintenance is a vast undertaking that requires extensive shop facilities, specialized equipment, and highly skilled technical and engineering personnel to perform major overhauls of weapon systems and equipment, to completely rebuild parts and end items. Depot maintenance facilities also manufacture obsolete material no longer available in the private sector, provide oversight for warranty management, and integrate software and hardware for many of the aging weapon systems.

The PBL strategy has become a potential source of operational advantage and a capabilities multiplier for operational forces. Its capability multiplier effect is derived from its capacity to provide the operational commander an increased range of support options earlier, that are synchronized with the operational effects. The PBL strategy can also anticipate support problems; identify potential constraints early; respond to changes in operational tasks and reprioritization; and address many support issues, including adaptability and speed, effectiveness, flexibility, modularity, and integration. Historically, logistics demand is ultimately unpredictable. Effective support depends on adaptability and speed of response. Logistics networks should self-synchronize through a common environment and set of shared objectives to achieve satisfaction of operational requirements, at the point-of-effect. To that end, PBL strategies focus on achieving the evolving commander's intent and reducing operational risks. They are flexible and highly optimized; resources can be re-directed to support rapidly evolving tasks and effects-based operations. They depend heavily on the established distribution and transportation networks. They also provide modularity and improved visibility into logistics support organized by modules of support capabilities rather than by traditional Service and organizational elements. Lastly, PBL strategies are cohesive, adaptable, and responsive. They build upon sophisticated information technology support that enables data sharing, a common perspective of the battlespace, early awareness of resource consumption and needs, commitment tracking, and support for reconfiguration.

CONCLUSIONS

A performance-based strategy is not a one-size-fits-all approach to alternative product support. The PBL contracts may be executed with organic or commercial providers, at the system, sub-system, or component level, for one or more elements of logistics support, using a range of contractual structures and incentives. In short, PBL strategies provide *properly balanced logistics*—properly balanced between traditional and alternative providers across the spectrum of logistics support requirements. Each PBL strategy is tailored to the specifics of the particular program/system being supported. Most PBL strategies require an up-front investment on the part of industry.

Longer contract terms create strategic, best value relationships, and allow investment costs to be spread over a larger base, contributing significantly to the affordability of PBL arrangements.

Investments can include costs associated with establishment of a commercial infrastructure for delivering and tracking material, additional inventory (both wholesale and piece part), capacity expansion, and warehouse space. The costs associated with these investments vary depending on the scope of the individual program as well as the operational environment of the weapon system. In determining the appropriate contract term, the program manager must consider numerous factors including material lead time, which may be as long as 2–3 years. The timeframe necessary for industry to plan and implement *best value* solutions to managing key program objectives such as material obsolescence and technology insertion must also be considered. Initial investment costs are recouped over the contract term. Longer contract terms create strategic, best value relationships, and allow investment costs to be spread over a larger base, contributing significantly to the affordability of PBL arrangements.

An additional factor is the inherent incentive provided by the pricing structure of PBL arrangements. Pricing on full PBL contracts is typically tied to actual weapon system operating hours through "power-by-the-hour" or operating period pricing (GAO, 2000, p. 101).

Because a contractor is paid the same fixed price regardless of the number of requisitions filled, its incentive is to make in-house investments to improve in-house processes that positively affect the reliability and life cycle costs of the component provided. Many PBL arrangements also include overt performance and benchmark incentives (e.g., parts availability or reliability improvement incentives) to further focus contractor efforts on the requirements of the warfighter.

Many PBLs also improve performance through industry partnerships with organic depots. Organic depots assume the role of subcontractors to industry under PBL, providing touch labor for repair of repair parts. Industry manages the repair process,

provides piece part support, assists with facilitating and promoting defense-industry partnerships, and instills commercial processes. These partnerships have been beneficial for all parties concerned. These organic partnerships also accommodate compliance with core statute provisions (10 U.S.C 2464). To date, no Service component providers have realigned core workload from organic depots to commercial repair under PBL strategies.

In corporate business, the perception prevails that what gets measured gets done. Metrics are essential to evaluating the performance of the contractor in supporting the weapon system and ultimately the warfighter. The need exists to develop sound and realistic performance metrics. Being too aggressive can drive costs up, scare off potential suppliers, and/or make PBLs unaffordable; however, not being aggressive enough can result in inadequate customer support and/or degrade weapon system readiness. The approach is to develop a sound, analytical methodology to determine realistic target goals based on warfighter needs, e.g., a material availability metric must be linked to Operational Availability (Ao). Operational Availability is a performance criterion for repairable systems that accounts for both the reliability and maintainability properties of a component or system. It is defined as a percentage measure of the degree to which machinery and equipment is in an operable and committable state at the point in time when it is needed. The PBL measurements must include operable and committable factors that are contributed to the warfighter's requirement. In short, metrics must be measurable, auditable, and within the scope of the PBL provider's effort.

The PBL strategies hold great promise to reengineer the Defense Department's supply chain process and provide improved, cost-effective support to the warfighter.

Military logistics is mission-critical and can enhance or hinder operation execution. With emerging technologies and techniques, advances in military logistics hold great promise, as DoD logistics organizations become more collaborative and adaptive. Ultimately, military logistics will be able to respond near real time as the environmental conditions change. Sense and Respond logistics offer military leaders the information and decision-making superiority that they need to effectively and efficiently achieve the mission.

The S&RL is focused on commander's intent, and emphasizes speed and quality of effects across the full range of military operations. It prepares the military services and DoD agencies for responsive and adaptive logistics operations in a dynamic environment. It enables operations-driven control of theatre logistics, strategic connectivity, and integration of combat operations and support. It helps eliminate sub optimization and improve data standardization. With real-time operations, intelligence, and logistics collaboration, S&RL provides a dynamic picture of the battlefield. Also, a more powerful outcome of this fusion is the use of cognitive agent technologies to

mine and publish information to the right players across the continuum. Given the nature of modern warfare, it becomes imperative to address logistical and distance support issues with an enormous sense of urgency.

The PBL strategies hold great promise to reengineer the Defense Department's supply chain process and provide improved, cost-effective support to the warfighter. In short, Sense and Respond Logistics helps to keep the finger on the pulse of the warfighter's real-time needs. The PBL strategies have proven to lead to better total life cycle support, improved engineering and technical support, and reduced total ownership costs. They place the decision of cost-effective repair/overhaul/replace back in the hands of process owners. This also hedges DoD against increased emergent spending to satisfy obsolescence and diminishing manufacturing/vendor issues that ultimately arise with technology refresh and improvements.

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ENDNOTES

1. Donald Rumsfeld, former secretary of defense, spoke at the National Defense University on January 31, 2002. The full quotation can be found in the following publication: Office of Force Transformation. (2003, Fall). *Military transformation: A strategic approach.* Washington, DC: Office of the Secretary of Defense.

2. John Young is currently the under secretary of defense for acquisition, technology and logistics, a position to which he was nominated by President Bush on June 20, 2007, and confirmed by the Senate on November 16, 2007.

APPENDIX

PERFORMANCE BASED LOGISTICS CASE STUDY

The Naval Inventory Control Point awarded a five-year, fixed price Performance Based Logistics (PBL) contract with Raytheon Missile Systems in Tucson, AZ, for the maritime Phalanx Close in Weapons System (CIWS). This contract, totaling more than $95 million, is one of the largest and most complex agreements awarded in the inventory control point history, and implemented the first major weapons system to full contractor support. The award (March 2000) culminated 2 years of intense joint negotiations between the government and industry leaders. Raytheon is not only the original equipment manufacturer, but also the repair depot.

Under the PBL contract, Raytheon will assume the full range of requirements determination, inventory management, configuration control, obsolescence management, warehousing, and transportation functions for over 1,000 centrally managed items, a function traditionally assumed by the inventory control point and government repair depots. These items account for more than $25 million dollars in annual sales and approximately 80 percent of the weapons system total demand. In addition, the incentive-based contract will service not only U.S. naval customers, but all preexisting foreign and allied customers as well.

CLOSE IN WEAPON SYSTEM (CIWS)
PHOTO COURTESY OF U.S. DEPT. OF DEFENSE

CIWS is the Navy's all weather automatically controlled gun system, designed to provide fast-reaction defense capabilities against low-flying aircraft and steep-diving, high-speed, anti- ship missiles. There are currently more than 350 systems installed on more than 190 U.S. Navy ships and another 285 systems installed onboard Foreign Military Sales (FMS) ships. This contract takes the central procurement, management, and supply support roles from the government agency and places them in the hands of the equipment and process owner, Raytheon. The PBL inherent benefits are lower total ownership cost, less infrastructure, and customer service-focused. Other benefits include improved readiness and reliability metrics, long-term commercial/government partnership, and matching rewards to performance.

PRE-PBL STATISTICS

- Material availability (12-month average) 85 percent
- Wholesale inventory valued (in FY 2000 dollars) $261 million

- Range and depth of repairable and consumable items—950 line items and over 34,000 assets
- Backorders—over 200 unfilled customer orders

POST-PBL STATISTICS

- Material availability (12-month average) 94 percent
- Backorders—less than 5 unfilled customer orders
- Robust FMS support base
- Reduction in Mean Logistics Delay Time (MDLT) by more than 5 days
- Contractor developed and sponsored automated, real-time online requisition tracking system
- Guaranteed response for high-priority requisitions of less than 24 hours
- $5 million cost avoidance over the life of the contract