04 June 2008 Revision 4.1

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DIMINISHING MANUFACTURING SOURCES AND MATERIAL SHORTAGES (DMSMS) PLAN

FOR

Joint Counter Radio-Controlled IED Warfare (JCREW)

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Prepared by: Naval Surface Warfare Center, Crane Division, 300 Hwy 361, Crane, IN 47522-5001

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FOR

Joint Counter Radio-Controlled IED Warfare (JCREW)

REVIEWED BY: _____ Date: 23 Sept 08
PMS 408 Logistics

REVIEWED BY: _____ Date: 1 October 08
PMS 408 DPM

APPROVED BY: _____ for Date: 1 October 08
PMS 408 Program Manager

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RECORD OF CHANGES AND REVISIONS

Rev	Chg No	Date of Chg or Rev	Description
0		16 Apr 07	Initial submission
1		13 Jun 07	Update required due to 2.1 ILA comments
2		26 Nov 07	Update required to incorporate 3.2 requirements
3		4 Feb 08	Update required to incorporate 3.1 requirements
4		14 May 08	Update required to incorporate 3.3 requirements
4.1		04 June 08	Update required to create consistency amongst documents

EXECUTIVE SUMMARY

The Joint Counter Radio-Controlled Improvised Explosive Device Electronic Warfare (JCREW) Diminishing Manufacturing Sources and Material Shortages (DMSMS) Management Plan identifies the methodologies, processes, tools, resources and strategies required to provide sustained operational availability for JCREW systems. The management approach described in this Plan addresses life cycle obsolescence issues related to all PMS-408 JCREW systems. Details for each specific JCREW system are then contained within the appropriate appendix.

PMS-408 has developed a proactive management strategy with the objective of preempting the adverse impact of product and technology obsolescence. It incorporates the concept of planning and budgeting for obsolescence mitigation including the identification of cost-effective DMSMS solutions at the most appropriate equipment level of indenture as future warfare system needs are incorporated into the system baseline. The strategic goals stated in the plan will determine, to a significant degree, the success achieved in reducing total ownership cost of PMS-408 JCREW systems over their life cycles.

This plan ascertains the need for the monitoring of change influences to the architecture baseline, for example, technology and product life cycles and programmatic mandates, in determining the technical and sustainment direction required for the system. Obsolescence management tools and disciplined management techniques will be utilized to lessen the impact of these change influences with extensive evaluation of solutions through a sustainment engineering process. Utilizing a common tool, Horizon Solution Suite, to consolidate obsolescence data across all PMS-408 JCREW systems will allow each to leverage off obsolescence studies and solutions currently included in the Horizon database. A planning and budgeting process will be a key component of the DMSMS management process that will provide repeatable and defendable cost estimates and plans to support Future Years Defense Plan (FYDP) inputs and to provide data required to effectively implement the change.

To effectively combat the effect of obsolescence, a JCREW DMSMS Working Group (JDWG) will be established by PMS-408 to implement the overall DMSMS strategy, investigate technology trends that impact system supportability, develop Commercial off the Shelf (COTS) refresh recommendations, and propose courses of sustainment action to resolve high priority obsolescence issues. The JDWG will be a chartered subgroup within the ILSMT and will consist of the Program Office, personnel from the prime contractors, and cognizant engineering and logistics support activities.

A structured case management process will be implemented that will identify emergent obsolescence issues, verify the extent of the issue, analyze various solution scenarios, and implement an effective resolution. Case metrics including the number of cases opened and closed, cost avoidance, and resolution costs will be monitored and tracked. Case resolution information will be distributed and shared through the Department of Defense Shared Data Warehouse initiative, when implemented.

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1.0 INTRODUCTION

The Joint Counter Radio-Controlled IED Electronic Warfare (JCREW) Diminishing Manufacturing Sources and Material Shortages (DMSMS) Management Plan documents the formal infrastructure and the processes, strategies, and tools used in the effective management of obsolescence for the program. The infrastructure has been established through a chartered management group with specific roles and responsibilities. Processes and tools will be used to aid the decision-making process for managing obsolescence by integrating Commercial off the Shelf (COTS) and component resolutions. A predictive approach for identifying obsolete items has been formulated which will allow for proactive obsolescence mitigation. Metrics will be captured and analyzed through a structured Case Management approach. Finally, all obsolescence data and case resolution metrics will be provided to the Shared Data Warehouse to allow for leveraging of solutions and data across the Department of Defense (DoD). The plan is also developed in response to the Assistant Secretary of the Navy (Research, Development and Acquisition) Memorandum for DMSMS Management Guidance dated January 27, 2005.

The goal of this plan is to establish and manage a proactive and effective DMSMS processes and program which will result in the achievement of the following objectives, actions and benefits to the JCREW program:

- Ensure that all parts and material to produce or repair the systems are available
- Reduce, or control, Total Ownership Cost (TOC)
- Minimize Total Life Cycle Systems Management (TLCSM) cost
- Eliminate, or at least minimize, reactive DMSMS actions
- Evaluate design alternatives
- Provide for risk mitigation as it applies to DMSMS
- Evaluate more than one approach to resolve DMSMS issues
- Collect metrics to monitor process effectiveness

1.1 Scope

This Diminishing Manufacturing Sources and Material Shortages (DMSMS) plan will cover the following systems:

- Quick Reaction Dismounted (QRD) Systems
- Symphony
- JCREW 2.1 Mounted Systems
- JCREW 3.1 Dismounted Systems
- JCREW 3.2 Mounted Systems
- JCREW 3.3 Systems

This plan does not cover the portion of legacy systems that will be replaced by an upgrade to dismounted, mounted and/or fixed Joint CREW systems, nor does it cover existing US Army or USMC Crew 2.0 systems. These systems are either being removed from service with the upgrade

to the newer JCREW systems or are separately managed by their respective Program Management Offices (PMOs). Equipment will be removed from the platforms and placed in storage to provide support for the remaining equipment that has not yet been upgraded.

1.2 System Description

JCREW devices generate electromagnetic energy intended to defeat (i.e., jam) the Improvised Explosive Device (IED) threat by preventing or inhibiting the intended operation of a Radio-Controlled IED (RCIED) receiver. Thus, JCREW is considered a type of Electronic Warfare (EW) that attacks RCIEDs, and by doing so protects operating force personnel, equipment, and facilities. JCREW devices come in both a dismounted (carried by personnel on foot) and mounted (tactical vehicle) configuration. The JCREW Program will implement an incremental development process, with the first increment using current COTS technology to address the near-term threat to infantry/marines and motorized vehicles. Follow on increments will progressively mature the CREW technology and culminate in a full development program to design, fabricate, test and deliver a full System of Systems (SoS) providing dismounted infantry, motorized convoys, riverine and fixed locations comprehensive protection from RCIEDs).

Near–term acquisitions, those providing immediate support to forces in Iraq and Afghanistan, will use streamlined acquisitions. The long-term acquisition efforts, i.e. JCREW 3.3 will be designed for worldwide use. As required, the Program Office will request approval to implement the National Defense Authorization Act for Fiscal Year 2005 (PL 108-375) Section 811 (Rapid Acquisition Authority to Respond to Combat Emergencies), which allows waivers to acquisition requirements that may otherwise impede rapid delivery of the required JCREW systems.

1.3 References

The JCREW DMSMS Program will adhere to guidance from the following Department of Defense and Navy directives, memorandums and instructions:

- DoD 4140.1-R "DoD Supply Chain Material Management Regulation", dated 23 May 2003
- DoD "Diminishing Manufacturing Sources and Material Shortages Guidebook", dated 1 November 2005
- DoN DASN (RD&A) Memorandum "Supportability Policy for Navy
- Implementation of Department of Defense Policy on Acquisition Reform", dated 14 Feb 1996
- NAVSEAINST 9083.1, "Commercial Off The Shelf (COTS) Policy", dated 21 Jul 2000
- NAVSEA 0416 "Case Resolution Procedures Guide", no date
- DASN (L) Memorandum "Evaluation Criteria for DMSMS", dated 20 Aug 2004
- DASN (RD&A) Memorandum "Diminishing Manufacturing Sources and Material Shortages (DMSMS) Management Guidance", dated 27 Jan 2005

- DASN (L) Memorandum "Diminishing Manufacturing Sources and Material Shortages (DMSMS) Program Management Plans and Metrics", dated 12 April 2005
- ASN (RD&A(memo DMSMS Guidance for Developing Contractual Requirements (and attached Contractual Guidance), dated 12 May 2006
- DoD Guide, Performance Based Logistics: A Program Manager's Product Support Guide, dated 31 March 2005
- DoD Guide, Designing and Assessing Supportability in DoD Weapon Systems: A Guide to Increased Reliability and Reduced Logistics Footprint, dated 24 October 2003

In addition, the following Program Plans provide direction to the processes within the DMSMS Management Program:

- JCREW DMSMS Working Group (JDWG) Charter" (in process)

2.0 MANAGEMENT

JCREW program management has embraced an efficient, proactive DMSMS management process which is critical to providing more effective, affordable, and operational JCREW systems by proactively identifying and mitigating DMSMS issues that affect system availability and supportability with resultant TOC impacts. Effective management of obsolescence consists of defining a structured and discipline approach, possessing a sufficient budget for implementing the approach and resolving issues, and having an infrastructure with key personnel and expertise to ensure integrated and cost-effective mitigation strategies are employed throughout JCREW system life-cycles.

2.1 Approach

This section describes the managerial approaches and strategies that have been defined by the JCREW DMSMS Management Program to effectively manage obsolescence.

2.1.1 Iterative Process

The DMSMS approach requires an iterative process in which the assessment of product and technology obsolescence and the associated impacts to system sustainment is conducted on a recurring basis as required. Commercial product and component life cycles will be closely monitored and product surveys will be performed periodically with cycle times defined according to the volatility of the associated technology.

2.1.2 Proactive and Reactive Approaches

The DMSMS process is inherently a proactive process, which attempts to preempt the consequences of obsolescence prior to major impacts to the program. Commercial technology and product lifecycles will be anticipated and an obsolescence health assessment report, addressing both commercial product assemblies and build-to-print components, will be developed and updated annually to identify impacts, sustainment strategies, and their associated

budgets for obsolescence mitigation. Contingency plans are required for those occasions when products or technologies go end-of life prior to their forecasted timeframes. These plans will require the use of DMSMS Case Management studies to determine the impact of the obsolescence issue by analyzing the influence to the system, developing solution scenarios, and determining ways to implement the solution in a way that is less costly and preserves readiness of the effected system(s).

2.1.3 Configuration Analysis

Not all of the products and technologies used on JCREW systems will be vulnerable to obsolescence or require detailed analysis due to the characteristics of the product. A filtering process will be used to determine which products and technologies must be analyzed. The filtering process will be applied to the Bill of Material (BOM) and/or Engineering Parts List (EPL) for applicable equipment to establish a "watch list" of items at both the component (piece part) and assembly levels that will require ongoing surveillance for obsolescence. A process is established to continually review and update the "watch list" as the system configuration is altered due to engineering changes that are required throughout the life of the system.

2.1.4 Level of Indenture

This plan addresses life cycle obsolescence issues related to parts and materials and covers both build-to-print and COTS categories of equipment. Obsolescence for build-to-print designs will be managed at the component level while COTS equipment will be managed at the Line Replaceable Unit (LRU) levels. Obsolescence of COTS equipment is driven by many factors. Those include:

- The manufacturer can no longer get parts for use on his product
- Sales of the item begin to drop below a particular profit threshold
- Competition requires the manufacturer to migrate to new products and technologies as soon as possible to capitalize on market share.

In the majority of cases the manufacturer's obsolescence is based on dynamic sales and accelerating rates of product introductions, thus tracking obsolescence at the device level provides very little value in predicting obsolescence of the LRU. The quality and quantity of COTS documentation that is provided by the manufacturer is not typically sufficient to be able to redesign, reverse engineer, and/or emulate the product in a cost-effective manner. Establishing relationships with the vendor and looking at long-term technology trends is more valuable in determining future product obsolescence than monitoring components on COTS products. The exception to this rule is when a program chooses to use life extension programs such as the Sunset Supply Base (SSB) and Availability Assurance Program (AAP). Both programs require a detailed parts list of the product to determine the obsolescence profile of the item to adequately determine stock quantities required to extend the life of the product.

2.1.5 Obsolescence Mitigation Strategies

All components and products that have been determined to be vulnerable to obsolescence will be categorized based on cost, complexity, and system criticality to determine the appropriate obsolescence mitigation strategy. Solution scenario alternative analysis will address all aspects of the life cycle with weighted criteria and the appropriate trade-offs of cost, technical, supportability, and schedule. Evaluation of all product changes will include parameters for physical, performance, quality, environmental, and interoperability.

A design approach for engineering solutions to minimize future impacts of DMSMS will address the use of open system architecture, selection of preferred parts that are not prone to DMSMS impacts in the foreseeable future, identification of shelf and operating life requirements, and the identification of technology life expectancies.

2.1.6 Predictive DMSMS and Cost Estimating Tools

The data needed to support this plan (BOMs, product data, system information, schedules, etc.) will be stored and maintained in a Department of Navy (DON) recognized predictive tool. The JCREW program will utilize Naval Surface Warfare Center (NSWC) Crane's Horizon Solution Suite, which is a DMSMS predictive tool that includes an obsolescence database and associated cost estimation tools for both COTS and build to print equipment. Cost estimating for refresh and insertion will indicate the total cost of implementing engineering solutions and includes procurement, engineering, test and evaluation, configuration management, and logistics costs. Technology refresh costs will be generated using Horizon's Technology Refresh Cost Model. Technology insertion costs will be generated through the use of a Business Case Analysis or trade study. For piece part solutions the Defense Microelectronics Agency (DMEA) obsolescence resolution cost metrics will be used as a reference for estimating mitigation costs. The associated cost output will be used to defend outyear budgets and will be used as inputs to the Program Objective Memorandum (POM) process.

2.1.7 Technology Roadmap Integration

The DMSMS and acquisition strategies for the JCREW system embrace technology roadmap integration. The road mapping process considers identification of critical items/technologies and identification of emerging technologies. Contracting efforts will first procure existing off the shelf technology to provide interim "first capability" protection for the foot soldier/marine, and motorized vehicle convoys. PMS-408 will also execute an incremental design process to develop a system of systems that will provide the needed flexibility to add new capabilities to enhance force protection and defeat the evolving threat. This final system of systems will provide an integrated approach to addressing the requirements of the fixed site, dismounted (foot soldier/marine) and mounted (motorized), while resolving the existing integration, interoperability, and compatibility challenges. This allows items and technologies that are critical to advanced capabilities to be fielded very quickly. DMSMS planning is based on this acquisition approach and will be reevaluated if the acquisition plans change.

2.1.8 Development of Technology Evolution Management Plan

A Technology Evolution Management Plan will be developed and updated annually to document obsolescence mitigation plans for the architecture baseline, potential installation dates/schedules from a backfit and in-line perspective, and the estimate of resources required for implementation.

2.1.9 Change Management

Obsolescence mitigation solutions that require changes to the product baseline will need to be adjudicated through the JCREW Change Management process. All changes must be addressed both from an in-line production and a retrofit environment. The coordination of technology refresh and insertion solutions will be accomplished concurrently with programmed implementation of system modernization through spiral developments and war fighting system improvements via approved Engineering Change Proposals (ECPs).

2.1.10 Performance Based Logistics (PBL)

Where possible, PBL strategies shall be developed and implemented for JCREW systems as an enabler to obsolescence mitigation. PBL offers an effective way to deal with obsolescence throughout the life of JCREW systems. PBL will holistically manage the product support of JCREW systems, assemblies, subassemblies, and components. As the point of responsibility for meeting performance requirements, as outlined in the Performance Based Agreement (PBA), shifts to the Product Support Integrator (PSI) under the Program Manager, PBL will provide a powerful tool for mitigating obsolescence and making continuous modernization (CM) through technology insertions a reality for current and future JCREW systems, assemblies, subassemblies, and components (where a PBL application is feasible).

PBL clearly fulfills the need for CM and obsolescence mitigation. It is the intent of the JCREW program to maximize the use of PBL in order to inject obsolescence management "best practices" into the system design to influence availability, supportability, TOC and TLCSM. This initiative will ensure that supportability can be effectively planned and implemented with the desired logistics support structure built for JCREW necessary to control TOC, improve operational availability and reliability, mitigate obsolescence, and to reduce the Logistics footprint. PBL strategies will be considered for all support areas (including Supply Support, Depot Repairs, Technical Assistance, Support Equipment, Training, Technical Data and Technology Insertions) which will incentivize Contractor performance, are metrics-based, and will consider legacy systems and Foreign Military Sales (FMS) participation.

2.2 Budgeting

DMSMS budgets for PMS-408 JCREW systems have presently been limited to the development of an overall JCREW obsolescence framework. This includes the formation of an obsolescence working group and case management approach and the establishment of obsolescence management processes, tools, and resources. Obsolescence management requirements that result from specific equipment assessment will be used to justify out-year dollars for assessing,

analyzing, and implementing obsolescence mitigation strategies and will be included in the Appendix for each particular JCREW system.

2.3 Contractual Requirements

Naval Surface Warfare Center, Crane Division, Crane, Indiana (NSWC Crane), is the lead for DMSMS management and provides organic support. Should any specific requirements for procurement arise, contractor support is in place. Naval Inventory Control Point (NAVICP) has a Performance Based Logistics (PBL) contract for supply support with various contractors. PMS-408 has a SEATASK in place with NSWC Crane and Naval Explosive Ordnance Disposal Technology Division (NSWC Crane) for In-Service Engineering Services (ISEA) including Integrated Logistics Support (ILS). Specific contractual requirements will be included in the Appendix for each JCREW system.

2.4 Schedule

An integrated master schedule for DMSMS actions has not been completed. For the remaining FY08 period, the obsolescence framework will be formed including the development of an overall obsolescence support master schedule for all JCREW systems. Specific schedules will be included in the Appendix for each JCREW system as they become solidified.

2.5 DMSMS Management Structure and Team Members

PMS-408 is responsible for the oversight and management of JCREW systems development and fielding, as well as making programmatic decisions on issues regarding DMSMS. PMS 408 hosts Supportability Integrated Product Team (SIPT) meetings monthly and the ILS Management Team (ILSMT) four times a year. The focus of the SIPT is to track issues related to fielded systems, including DMSMS issues. The ILSMT will charter a JCREW DMSMS Working Group (JDWG) to track DMSMS issues and their impacts, open, resolve, and mitigate obsolete cases, and develop cost-effective solutions for all JCREW systems. The JDWG evaluates all factors associated with DMSMS management for JCREW systems including sharing obsolescence forecasting information and solutions in order to leverage lessons learned across all systems. The JDWG will include representatives from the following organizations.

- PMS-408 (Chair)
    - JCREW Assistant Program Manager (APM)
    - JCREW Deputy APM
    - JCREW APM Logistics
- NSWC Crane
    - JCREW Obsolescence Management Lead
    - JCREW ILS Manager
    - JCREW Systems Engineer

- Contractors (Original Equipment Manufacturer (OEM))
- PBL Contractors
- NAVICP – Mechanicsburg
- Defense Logistics Agency (DLA)
- Naval Supply (NAVSUP) Systems Command
- NAVEODTECHDIV Indian Head

The JDWG will pursue all functions addressed in the PMS-408 DMSMS Plan for the PMS-408 JCREW Program Office in addition to those listed below.

- Ensure only changes that are necessary or offer substantial benefits to the end user are recommended as substitutes or alternatives.
- Ensure that all parts considered will not degrade operability.
- Ensure that technical integrity of the design, engineering documentation and logistics support requirements are effectively maintained.
- Ensure that all business aspects of the obsolete part replacement are thoroughly examined and the most prudent action is recommended to minimize delay, disruption and cost.
- Liaison with organizations within NAVSUP and DLA obsolescence communities to ensure that the most current DMSMS policies, tools and databases are disseminated to PEO LMW.
- Maintain and update the DMSMS plan as required.
- Establish procedures for providing resources for resolution of technical issues to NAVSUP and DLA obsolescence communities.

3.0 PROCESS

The PMS-408 Program Office has implemented a DMSMS methodology to preempt the consequences of impending obsolescence and to develop solution scenarios that are linked to cost, risk, and implementation strategies. The key processes that are utilized by the program for effective mitigation of technology and product obsolescence are as indicated in Figure 1. This methodology incorporates the concept of proactive planning and budgeting obsolescence mitigation approaches at the system level for sustaining the existing baseline or as future warfare system requirements are incorporated. This approach requires an iterative process in which the assessment of product and technology obsolescence and the associated impacts to system sustainment is conducted on a recurring basis as required. Commercial product and component life cycles will be closely monitored and product surveys will be performed periodically with cycle times defined according to the volatility of the associated technology.

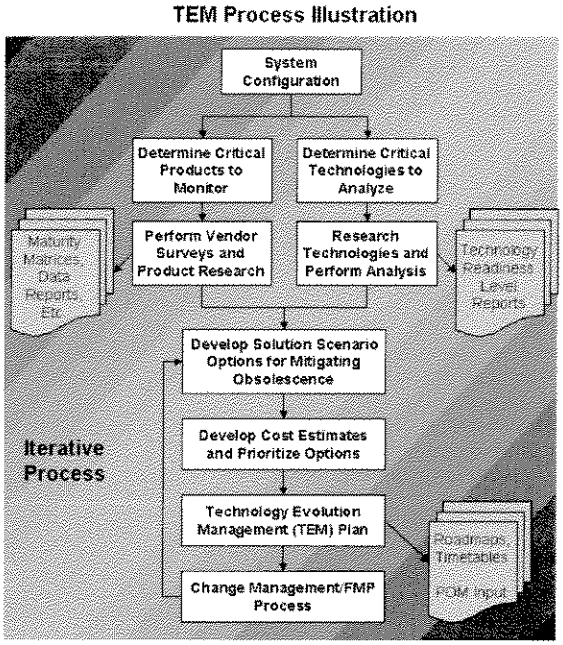

Figure 1: Obsolescence Management Methodology

3.1 System Configurations

Effective Obsolescence Management begins with having a well-defined and documented architectural baseline that comprises the following:

- Well-defined interfaces between systems
- Hierarchical configuration requirements of each system
- Defined baseline that includes the functional, physical, logical layouts, and hardware/software configurations

The system configuration data is used to identify component and LRU usage in each unit, system, and platform that will be analyzed. The configuration data contains the functional description of the LRUs and the actual material, part, or electronic assembly used. The data will include developmental drawings, performance specifications, As-Built-Lists (ABLs), ECPs, BOMs, vendors and vendor parts numbers. This information will be captured at all levels of integration and sustainment (i.e. LRUs, units, systems, vehicles, and any spares and installation kits) in order to ensure accurate analysis.

3.2 Determining Critical Technologies and Products to Monitor

Not all of the products and technologies used on JCREW systems will be vulnerable to obsolescence or require detailed analysis due to the characteristics of the product. A filtering process, as shown in Figure 2, is used to determine which products and technologies will be

analyzed. The filtering process will be applied to the BOM and/or EPL for applicable equipment to establish a "watch list" of items at both the piece part and assembly level that will require on-going surveillance for obsolescence.

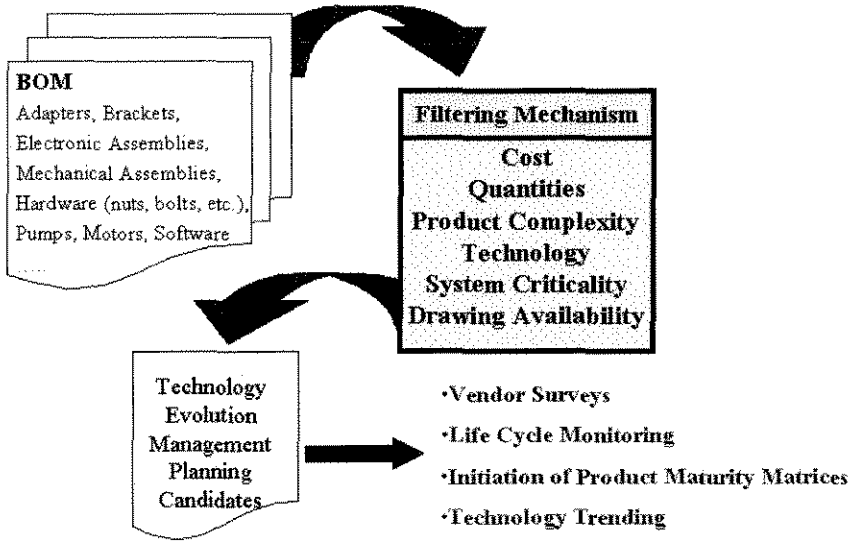

Figure 2: Filtering Process – Development of Product "Watch List"

From the filtering process and initial sustainment analysis, a Product Categorization Matrix is developed to identify the list of components, products, and technologies for further research. An example of the matrix is shown as Figure 3. All items in Quad 1 will be analyzed due to the rapid turnover of their associated technologies and the potential change impacts to form, fit, and function. Items in Quad 2 and 4 will need to be evaluated to determine the applicability to the Obsolescence Management process. Items in Quad 3 are considered to have minor change impact and a low rate of change. These items will be included based upon JDWG determination of criticality.

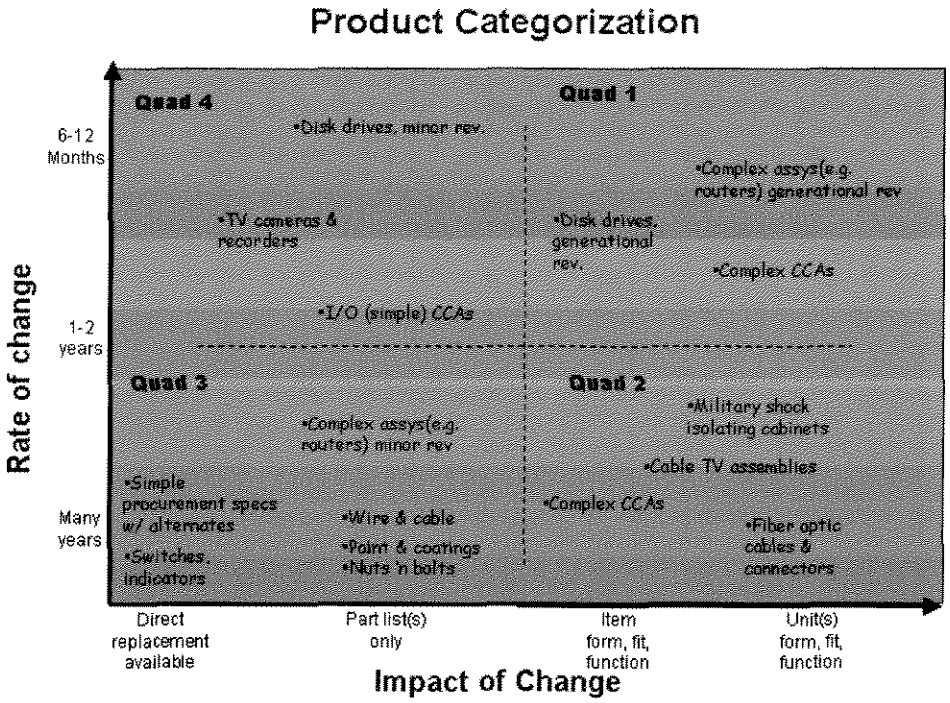

Figure 3: Product and Component Categorization Matrix

3.3 Performing Product and Technology Research

For those items that are targeted for further research, data is gathered and analyzed on each product through vendor surveys and commercial subscriptions for component sustainment, which will provide estimates of when the product is approaching end-of-life, and/or when the vendor will no longer support the product. Commercial obsolescence tools such as Q-Star, Total Parts Plus, and others will be used for components not currently archived in the Horizon Solution Suite database. Technology life cycles will be used to determine when specific architecture technology is beginning to be phased out of the current marketplace and determine if a technology insertion is required to extend the life of the system. All of the data is documented and maintained in Horizon Solution Suite. The database provides a structure to maintain relational data for analysis. The tool consists of a database that interfaces with additional cost modeling and reporting tools. Various reports are available via a secure password protected website.

Data elements captured at the System Level are:

- OEM Name
- OEM Commercial and Government Entity (CAGE)
- OEM Part Number
- Next Higher Assembly

- Reference Designator
- Nomenclature
- Quantity on Platform
- National Item Identification Number (NIIN)

Data elements captured at the LRU Level are:

- OEM Name
- OEM CAGE
- OEM Part Number
- Known Alternate Part Numbers
- Next Higher Assembly
- Reference Designator
- Nomenclature
- Quantity in System
- NIIN

Data elements captured for the Component Level are:

- OEM Name
- OEM CAGE
- OEM/Source Control Drawing (SCD) Piece-Part Numbers
- Next Higher Assembly
- OEM/SCD Piece-Part Reference Designator
- OEM/SCD Piece-Part Nomenclature
- OEM/SCD Piece-Part Quantity on LRU
- Actual Vendor Piece-Part Numbers
- Actual Vendor Piece-Part CAGE
- Known Alternate Piece-Part Numbers and CAGEs
- NIIN

COTS product obsolescence will be managed to the LRU level due to the cost associated with capturing the data elements at the BOM level, the price of the LRU parts, and the tech refresh schedule.

An assessment of piece part DMSMS management will be performed on build to print assemblies and integrated with the COTS assessment to determine the total health of the system. The assessment provides manufacturing source availability information of electronic components used in a system. It will also identify whether a part is still manufactured by an original manufacturer, alternate availability, if it has no known manufacturers, or if additional part information is required to further research the product. It will then relate this information to assemblies that will identify where problems exist in the system and what is the most cost affective approach to supporting the system. Additionally, the following information is provided for each piece part: (a) stock assets & cost, (b) alternate or suggested substitute replacements of the original component, (c) aftermarket source availability, (d) assets availability through the distributor system, (e) Life Type Buy opportunities with the specific dates identified, and (f) identifies any other solution options and recommendations.

Technology life cycles will be developed used to determine when specific architecture technology is starting to be phased out of the current marketplace and determine if a technology insertion is required to extend the life of the system. Forecasting principles will be used to anticipate technology life cycles. For this process, critical technologies used in the system being analyzed will be identified. Factors such as market share, maturity of next product or technology, competitiveness of the market, vendor financial status, etc. is all-important when determining life cycles. Each technology will be analyzed to determine where it is located within one of the following life cycle phases:

- Introduction: The introduction phase of a technology life cycle is the period when initial products for a new technology become available. Normally, only a few vendors are providing products.
- Growth: The growth phase of a technology life cycle is the period when the technology gains broad acceptance. Customers begin to demand product prompting greater industry production and more vendors.
- Mature: The mature phase of a technology life cycle is the period when the technology is fully understood and the benefits from its use have saturated. Most of the product production occurs during this period. Customers are beginning to consider new technologies for the latest product designs.
- Decline: The decline phase of a technology life cycle is the period when fewer designs are using the technology. Replacement technologies are probably in the introduction life cycle phase.
- Phase-Out: The phase-out phase of a technology life cycle is the period when no new designs are considering the technology. Production is limited to quantities required to support existing products. New technologies are in growth.

Supportability Readiness Levels (SRL) will result from this analysis and will be developed to identify the sustainment profile for the existing technology. All of the predictive obsolescence data will be rolled up to determine the most effective mitigation strategies.

3.4 Solution Analysis

This stage of the DMSMS Management process consists of analyzing the data and interpreting the results. It consists of projecting the obsolescence data at the system level and determining the impacts on schedules, engineering, logistics, test and evaluation, and configuration management. The process also identifies short-term obsolescence issues, which triggers a Case Management approach that provides an avenue for analyzing the issue in the most expedient manner. Solution alternatives are identified and involve the extraction of potential system sustainment problems identified during the assessment and determining the best solution(s) for the customer based on technical, logistical, and cost considerations. The benefits of the solution will:

- Align with the program plans of the customer;
- Will be analyzed for advantages and disadvantages;
- Will identify both schedule and cost risks;
- Will be adequately defined to determine possible impacts to the existing system and platform.

Solutions can be as simple as finding alternative parts or making bridge buy purchases (freezing the baseline) or as complex as replacing an obsolete architecture (freshening the baseline) with a new one. For complex scenarios a detailed analysis and evaluation of alternative solutions and products is required to guarantee that the replacement product is a functional equivalent to the refreshed product and that the inserted product/technology meets the specified requirements. A detailed risk assessment for each solution will be provided to identify cost and schedule risk and will be adequately defined to determine possible impacts to the existing system and platform. This analysis is part of the sustainment engineering process used to define the performance requirements, perform market analysis, perform a trade study, evaluate alternatives, and qualify the alternative solution(s). The process used to perform this analysis is identified in Figure 4.

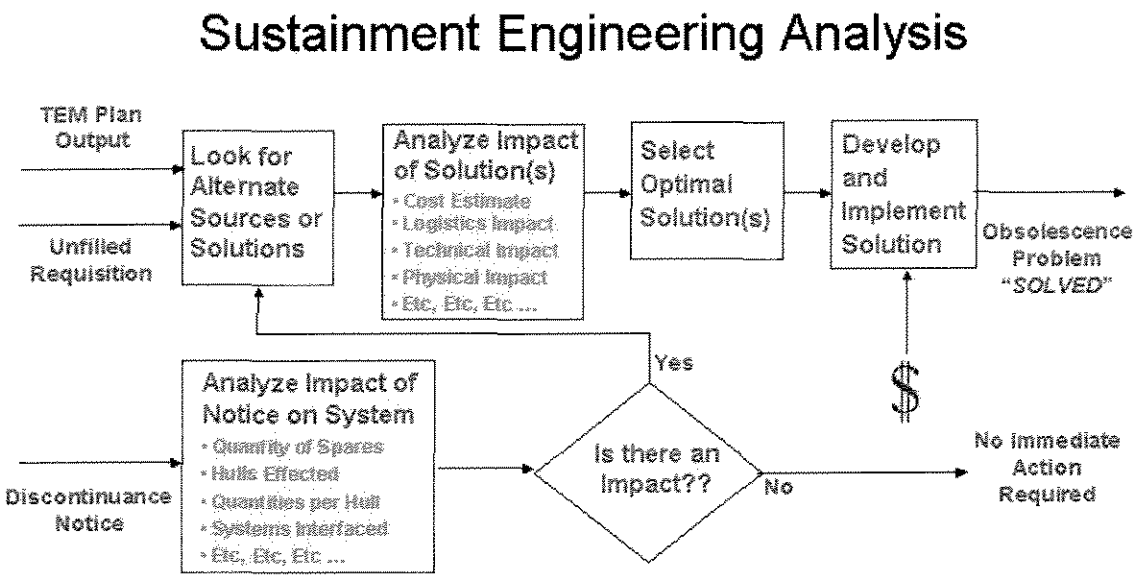

Figure 4: Sustaining Engineering Process

3.5 Cost Estimation and Prioritize Options

The implementation of a solution scenario requires a robust cost estimation process that provides defendable cost model-based analysis, and furnishes a basis for prioritization that includes recommendations for obsolescence solutions. The cost estimation consists of all of the costs associated with a required change, including engineering, logistics, and implementation costs. For piece part solutions the DMEA obsolescence resolution cost metrics will be used as a reference for estimating mitigation costs. For complex changes, a Business Case Analysis (BCA) or trade study analysis will be performed. The results from the BCA will compare solution alternatives based upon technical feasibility, cost, and risk and provide a summary report of findings and recommendations. In most cases, the BCA compares the Ownership Cost difference between solutions and may possibly include detailed trade studies between alternative solutions. Technology refresh estimates will be required to identify refresh costs when a solution requires a replacement. All of the cost outputs and the associated assessments will be robust enough to support the POM.

3.6 Technology Evolution Management Plan

A JCREW Technology Evolution Management Plan will be developed and updated annually to determine the overall obsolescence mitigation plan for the system architecture baselines. It will include recommended installation dates/schedules, and the estimate of resources required for implementation. The Plan will tie technology refresh and insertion solutions to a platform installation date and specific availability. It will also identify the funding required for procurement, planning, installation, training, spares, and support. It will include detailed

roadmaps generated from the various obsolescence mitigation scenarios. Technology roadmaps will be included in the Appendix for each JCREW system.

3.7 Change Management Process

Any modifications required to the configuration baseline or documentation due to technology or product obsolescence that results in the need to revise performance, functional, physical, or supportability specifications will manifest themselves as engineering changes. Recommendations of obsolescence mitigation solutions such as technology refresh and insertion that have been documented in the Technology Evolution Management Plan will be submitted through the JCREW Change Management Process for initial screening. If approved the proposed changes are entered as a change candidate and will be scheduled for review by the Change Control Board.

4.0 DMSMS CASE MANAGEMENT

DMSMS Case Management follows a progression of high level steps as depicted in Figure 5. Identification, Verification and Analysis are integrated into the Obsolescence Management Methodology as additional components of Product and Technology Research. Cases will be documented, managed, and resolved within the framework of the Case Management Module of the Horizon Solution Suite tool.

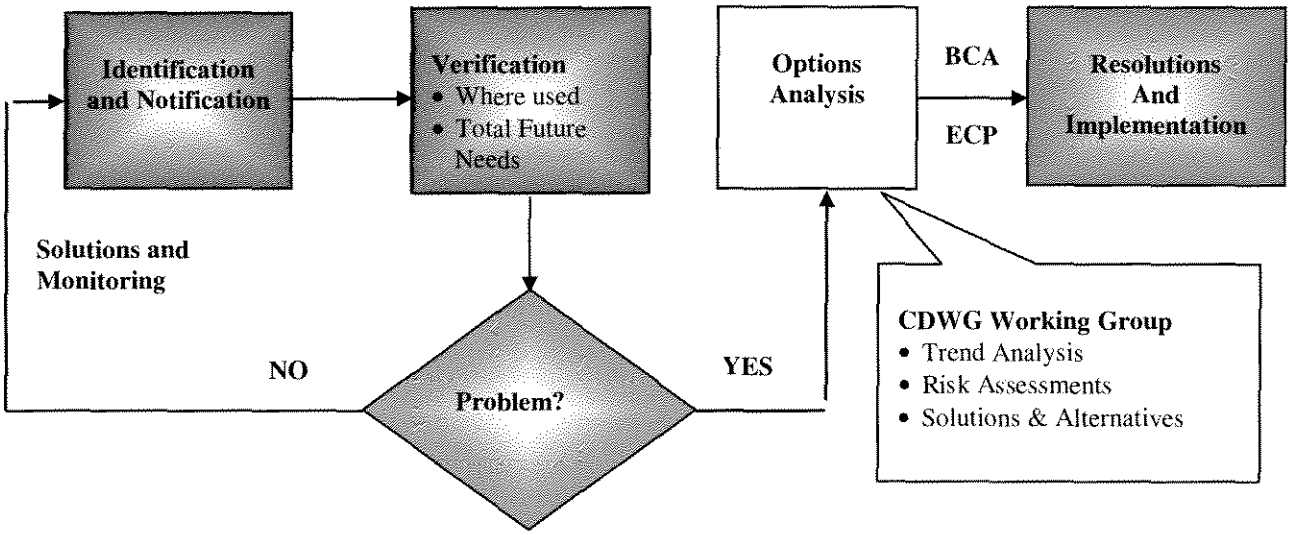

Figure 5: DMSMS Case Management Process

4.1 Identification

The DMSMS Case Management process begins with the receipt of an obsolescence notification. The notification may originate as a result of commercial product vendor surveys and NSWC Crane Alert Notifications or through programs such as GIDEP (Government-Industry Data Exchange Program). This is a cooperative activity between government and industry participants seeking to reduce or eliminate expenditures of resources by sharing technical information essential during research, design, development, production and operational phases of the life cycle of systems, facilities and equipment. The majority of GIDEP DMSMS notices have been issued on piece parts, especially in the electronics area (primary microcircuits). The DMSMS obsolescence notification is then compared to the system's current configuration. If the part identified in the alert is matched to a part within the configuration, a DMSMS Case will be generated and entered in the Horizon Case Management module. If there's no correlation between the notification and current configuration, no case is generated and notification disregarded.

In addition, DMSMS Cases may be generated on items that are nearing obsolescence as a result of proactive DMSMS research thus allowing for a greater list of options for mitigating the issue and allowing more time for effective budgeting. These items will be identified as a result of the Health Assessment or Technology Evolution Management Plan generated for the specific system.

4.2 Verification

Once a case is established, the next step is to estimate the extent to which a problem may exist. For example, the fact that a part is being discontinued may not ultimately present a problem if an adequate life-cycle stock is on hand. Alternatively, the program may assess historical demand data to assure future requirements can be met. If the requirement exceeds existing inventory, additional analysis is necessary to determine the preferred acquisition option. In summary, to identify the scope of a DMSMS problem, it is necessary to determine where the discontinued item is used and what the total future requirements are for each application. If the case is deemed a problem, the JDWG will be notified of the issue and coordination of a resolution commences. If the case is not assessed as a DMSMS problem, the case will be documented and closed.

All DMSMS cases are prioritized. Priority 1 cases are DMSMS issues in which the last known approved source of active production has announced the discontinuance of a part used in a current production configuration. Immediate actions are usually required to ensure that production and fleet support will not be impacted.

Priority 2 cases refer to those part types that have only one manufacturer still producing the part, but the source is indicating financial difficulties, quality issues, or is expressing interest in discontinuing this part type or support of the part. They also are identified if the original manufacturer has indicated their plans for discontinuing the product within the next twelve months. These instances do not require immediate action but the situation is monitored and included in obsolescence assessment exercises.

4.3 Analysis

Once the scope of the problem has been determined, the process of options analysis begins. If it is determined that no real problem exists at the time or for which a program needs to initiate risk management, the item under investigation remains an object of continuous surveillance and monitoring. A key support group for options analysis is the JDWG. The group attempts to focus the options analysis on areas of the system that are critical to effective sustainment. For example, they may choose to focus on discontinued components of the system that are common to multiple weapon systems or multiple sub-systems and units within the system and, for which there are no available sources. The objective is to determine situations when a joint resolution can be implemented that can result in lower costs (e.g. based on shared non-recurring engineering costs or economies-of-scale).

Alternatives will be tailored to provide the best solution in an appropriate time frame at the lowest possible cost. Focused Solutions and Alternatives reporting will assist a program in accomplishing this as cost of implementation is considered for each viable option. Additionally, integration of solutions with planned technology changes should be evaluated. From the analysis, options will be developed and selected for submission to PMS-408 in a decision package documented within the Horizon Solution Suite.

4.4 Resolution

Once engineering and cost, schedule, and performance impacts of potential case resolution options are identified, the most cost efficient and technically effective approach (or blend of approaches) to resolve the particular DMSMS situation must be selected and implemented.

A Resolution Decision Package is prepared and presented by the JDWG to PMS-408 for a decision. The end result of this activity in the process often results in development of an ECP for proper review, approval, funding and implementation of the resolution or resolutions. A case is documented as "resolved" when PMS-408 comes to an agreement on a resolution, but the case will not be closed until implementation of the resolution.

5.0 DATA SHARING

All obsolescence data that surfaces through the assessment of JCREW systems will be shared through the NAVSEA Warfare Center Data Sharing Database and all unique Obsolescence Management Cases will be added to the Shared Data Warehouse (SDW). The Shared Data Warehouse initiative will present the Navy with a Diminishing Manufacturing Sources Shared Data Warehouse (DMS_SDW) module designed to accommodate Navy-specific business processes for managing obsolescence. The development of the Navy Module will facilitate the Navy's integration with other DOD obsolescence managing activities using the DMS_SDW case management modules and common-use tools. This integration will provide an environment to collect and share critical obsolescence information such as parts obsolescence, solutions, and metrics.

6.0 METRICS

The JCREW DMSMS Management Program will be evaluated against standards established by the Deputy Assistant Secretary of the Navy for Logistics (DASN (L)) in the "Diminishing Manufacturing Sources and Material Shortages (DMSMS) Management Plan Guidance". The DMSMS Metrics Spreadsheet in section 6.1 will be used to document by fiscal year the number of DMSMS Cases opened, resolved, and closed. An open case is a case that the program identifies with an item (e.g. piece part, LRU, etc.) that is obsolete due to DMSMS or projected to be obsolete. A resolved case is a case where the mitigation action has been determined and the implementation process has been initiated and/or closed. Cost avoidance and resolution costs will be documented.

6.1 DMSMS Metrics Spreadsheet

Program Name	
ACAT Level	
Program phase	
DMSMS Point of Contact (email and phone)	

FY08 (& previous)	**Opened (qty)	***Resolved (qty)	****Closed (qty)	Number of BOMs in System	Number of BOMs Obtained/ Managed
COTS/Modified COTS					
*Other					
Total					

FY09	Opened (qty)	Resolved (qty)	Closed (qty)
COTS/Modified COTS			
*Other			
Total			

	FY08 (& previous)				FY09			
Mitigation Resolution	Resolved (qty)	Closed (qty)	Est. Cost to resolve/ close ($K)	Est. Cost avoidance ($K)	Resolved (qty)	Closed (qty)	Est. Cost to resolve/ close ($K)	Est. Cost avoidance ($K)
1. Original component								
-Existing Stock								
-Continue to Mfr								
-Reclamation								
2. Alternate								
3. Substitution								
4. Life of Type Buy								
5. Aftermarket								
6. Emulation								
7. Reverse Engineering								
8. Redesign (minor)								
9. Redesign (major)								
Total								

Has any case data been shared across the DoN in a shared data environment?
Observations, Trends, and Comments (for additional space expand text box or attach document)

*__Other__. Refers to MIL-Spec, developmental, custom, etc. (e.g., items that are not COTS/Modified COTS)
**__Open Case__. A case is opened when the program identifies that an item (e.g., piece part, LRU, etc.) is obsolete due to DMSMS or projected to be obsolete.
***__Resolved Case__: A case is resolved when the mitigation action has been determined and the implementation process has been initiated but the action has not been completed.
****__Closed Case__: A case is closed when the solution has been implemented and no further actions are required.

APPENDIX A: QUICK REACTION DISMOUNTED (QRD) SYSTEM

1.0 SYSTEM DESCRIPTION

2.0 DMSMS SCHEDULE

3.0 TECHNOLOGY ROADMAPS

4.0 PROGRAM UNIQUE DMSMS MANAGEMENT FACTORS

5.0 DMSMS METRICS

6.0 FUNDING

APPENDIX B: SYMPHONY

1.0 SYSTEM DESCRIPTION

2.0 DMSMS SCHEDULE

3.0 TECHNOLOGY ROADMAPS

4.0 PROGRAM UNIQUE DMSMS MANAGEMENT FACTORS

5.0 DMSMS METRICS

6.0 FUNDING

APPENDIX C: JCREW 2.1 MOUNTED SYSTEMS

1.0 SYSTEM DESCRIPTION

2.0 DMSMS SCHEDULE

3.0 TECHNOLOGY ROADMAPS

4.0 PROGRAM UNIQUE DMSMS MANAGEMENT FACTORS

5.0 DMSMS METRICS

6.0 FUNDING

APPENDIX D: JCREW 3.1 DISMOUNTED SYSTEMS

1.0 SYSTEM DESCRIPTION

Based on lessons learned from previous CREW systems, JCREW 3.1 will develop first generation improvements to existing dismounted Commercial-Off-The-Shelf (COTS) equipment that is fully compliant with Department of Defense (DoD) standards and requirements. This capability will fill the gap between the Quick Reaction Dismounted (QRD) system and JCREW 3.3 in light of the changing threats.

The JCREW 3.1 dismounted system will include a power source (rechargeable battery), amplifiers, control unit, cabling and antenna, and shall not exceed three man-packs. Units will be able to stand upright on the ground or other flat surfaces without additional support when not being worn, in order to continue operating. Antennas will be flexible with rugged mounts, in order to withstand typical handling by dismounted soldiers conducting tactical missions and adjustable in order to accommodate alternate positions from prone to standing and entry/exit from vehicles and buildings.

The procurement of JCREW 3.1 systems will include both an eighteen month test article contract followed by a production contract for operational systems. At the time of the release of this document, the JCREW 3.1 dismounted system will be entering into Milestone B, Technology Development and System Development and Demonstration.

2.0 DMSMS SCHEDULE

DMSMS events for JCREW 3.1 have been added to the overall Integrated Master Schedule as follows. The DMSMS schedule is based on the objective that obsolescence issues that are identified in each Build Cycle will be assessed to determine the overall impact to the next build cycle. This reduces the overall DMSMS assessment time (especially for ABCL1) to a timeframe that is less than the normal cycle time for a project of this size. DMSMS cycle time reduction efforts, including working additional hours, will be executed to conform to the Integrated Master Schedule.

Note: The following dates are based on a contract award date of 7 December 2007 and Build-Test-Build durations extracted from the 3.1 RFP.

Table D-1 JCREW 3.1 DMSMS Calendar of Events

EVENT	DATE
Test Article Award Contracts 3.1	12/7/07
Build Cycle One (BC1) (5 months ADC)	12/8/07 through 4/8/08
As Built Configuration List (ABCL1)	**4/9/08**
Filter Configuration Items (CI) for Obsolescence Vulnerability	4/28/08
Insert CIs into Horizon Obsolescence Database	5/9/08
Identify Initial Set of Critical Obsolescence Issues	5/19/08
Develop Technology/Item Obsolescence Assessment	6/9/08

EVENT	DATE
Open Cases Identified by Obsolescence Assessment	6/2/08
Develop Solution Mitigation Strategies/Costs	6/30/08
Test Cycle One (TC1) (4 weeks)	4/9/08 through 5/7/08
Build Cycle Two (BC2) (6 weeks)	5/8/08 through 6/19/08
As Built Configuration List (ABCL2)	**6/20/08**
Filter CIs for Obsolescence Vulnerability	6/30/08
Update CIs into Horizon Obsolescence Database	7/14/08
Identify Set of Critical Obsolescence Issues	8/2/08
Develop Technology/Item Obsolescence Assessment	8/25/08
Open Cases Identified by Obsolescence Assessment	8/18/08
Develop Solution Mitigation Strategies/Costs	9/8/08
Test Cycle Two (TC2) (4 weeks)	6/20/08 through 7/18/08
Build Cycle Three (BC3) (3 weeks)	7/19/08 through 8/9/08
As Built Configuration List (ABCL3)	**8/10/08**
Filter CIs for Obsolescence Vulnerability	8/17/08
Update CIs into Horizon Obsolescence Database	8/31/08
Identify Set of Critical Obsolescence Issues	9/7/08
Develop Technology/Item Obsolescence Assessment	10/5/08
Open Cases Identified by Obsolescence Assessment	9/21/08
Develop Solution Mitigation Strategies/Costs	10/19/08

3.0 TECHNOLOGY ROADMAPS

Technology roadmaps define how the program integrates DMSMS forecasts and solution mitigation with refresh and upgrade plans for the system. The program determines whether obsolescence impacts will steer these plans or whether a roadmap is developed and DMSMS analysis is performed on the existing configuration to determine whether components and assemblies will be are available to meet planned milestones. The following paragraphs identify the existing JCREW 3.1 roadmap and its impacts to DMSMS management implementation.

3.1 Industrial Base

The DoD has previously procured several mounted CREW systems from multiple sources. These sources provide a known industrial base. To identify other potential sources and solicit industry feed back, PMS-408 released a Request For Information (RFI) in early FY07. Information received supported the release of the JCREW 3.1 RFP for the design, fabrication and test of a prototype for the next generation JCREW system. PMS-408 hosted two industry days to present the JCREW Spiral 3.1 acquisition strategy and RFP requirements. Each industry day was attended by over one hundred industry representatives.

For production no industrial preparedness limitations are foreseen in the available commercial technology infrastructure. The nation's industrial capabilities to produce, maintain, and support the JCREW 3.1 system is considered more than adequate. All essential raw materials, special alloys, composite materials, components, tooling and production test equipment required for sustained development and future production of the JCREW 3.1 systems, uninterrupted

maintenance, and sustained operation are available through the national technology and industrial base.

3.2 Standardization

The Government is working with Contractors to standardize support and test equipment, training devices, and installation kits for mounted JCREW systems. For similar (mounted, dismount, fixed) system, designers are including similar or common piece parts in the design of some similar systems. This commonality provides a level of standardization and piece part control that will allow competition during procurement of future piece parts. During design some system developers are incorporating DLA standardized parts.

3.3 Build Test Build

The test article contract for JCREW 3.1 will include an initial design and build phase of approximately five months, followed by two joint contractor/government test cycles with two subsequent contractor build cycles, and then a final government only test cycle. Seven (7) complete systems will be used to support the three test cycles.

The Government is employing a Build-Test-Build philosophy to allow the Contractor(s) to optimize performance during the development of the system. Maturation of the Advance Development Models (ADMs) to full Engineering Development Models (EDM) will occur during the System Development and Demonstration (SDD) phase which begins at Build Cycle 2. An EDM is a production representative system acquired during the SDD Phase. EDMs will be used to demonstrate maturing performance in Developmental Testing and Operational Testing (OT) and to finalize proposed production specifications and drawings. One of these systems will remain at the contractor facility and one (1) will be used by the Government for environmental testing. Design and development will include all hardware and software design and development efforts necessary to ensure the final complete system meets requirements of the performance specification.

Once the JCREW 3.1 System enters into the Production & Deployment and Operation & Support phases, there are no plans for technology upgrades or insertions over the service life of the system. The estimated service life expectancy for JCREW 3.1 is five (5) years. Obsolescence studies will focus on the availability of the products and components and the associated solution mitigation within the system expected service life of five (5) years. If modifications are made to the service life, the obsolescence analysis and its frequency will be changed accordingly.

4.0 PROGRAM UNIQUE DMSMS MANAGEMENT FACTORS

There are many factors that determine how a program defines and structures their DMSMS Management strategy. Specific factors include:

- Contractor Responsibility
- Spares/Support Infrastructure

- Configuration Detail
- Modernization Plans
- Maintenance Philosophy

These factors and the associated impacts to JCREW 3.1 DMSMS Management are defined below.

4.1 Contractor(s) Obsolescence Management

The RFP and Performance Specification states that the contractor shall implement, to the maximum extent practicable, a modular open system architecture approach that addresses cost effective and rapid system upgrades to support parts obsolescence, changes in the threat, and mission modifications. Additionally, the open architecture approach shall permit easy integration and interoperability with other CREW systems, specifically those CREW systems under development as part of the Spiral 3.1 Development contract(s). Open architecture will reduce the impact of obsolescence on life cycle support of the system but assessing obsolescence and developing cost-effective solutions are still required. Since the contractor is not contractually required to perform these assessments, the responsibility will fall on the ISEA at NSWC Crane for this function. Mitigation strategies will be adjudicated through the JDWG.

4.2 Spares and Support Infrastructure

PMS-408 has the responsibility to develop and support operational JCREW 3.1 systems during the year of delivery (FY 09) and then to transition these systems to the appropriate military service agency for the remainder of the service life.

4.2.1 Technology Development / System Development & Demonstration

During the testing phases, the Contractor(s) will provide replacement parts and all consumables during all three test cycles in order to maintain and repair the systems. The Contractor(s) will provide a list of parts that will be procured to support the test cycles. The parts list will contain the part number, nomenclature, cost, manufacturer, and quantity. The parts list will be provided at the time of delivery of the first system. At the completion of the last test cycle, the Contractor(s) will provide a parts inventory to the government. The Contractor(s) will have parts available to repair systems within 24 hours of diagnosis.

4.2.2 Production & Deployment / Operation & Support

Based on the supply support provided for QRD, it is expected that, at a minimum, the following spares, consumables, and repair part support will be provided for JCREW 3.1:

4.2.2.1 Batteries

The Contractor(s) will provide the quantity of batteries necessary to support system operations for the first 60 days of deployment. The system will include any necessary adapters for the exclusive use of these batteries with the system, and battery chargers if applicable

4.2.2.2 Ancillary Components

The Contractor(s) will provide all other ancillary components to ensure the system can be operated. At a minimum, the system will contain; processing unit(s), cables, backpack or hardware to secure to existing military standard backpacks, antenna(s) and any other component, such as laptop computer or Portable Digital Assistant (PDA), necessary to program the system if required by the system, and shipping containers.

4.2.2.1 Consumable Spares

The Contractor(s) will provide the spares necessary to support deployed operation and maintenance of the systems for one year. Specific spares to be supplied include spare antennas; 'web' gear; and any other components necessary to sustain the equipment for the specified duration.

4.2.2.3 Depot Level Repair Services

The Contractor(s) will establish, operate, and maintain a CONUS-based depot repair facility for deployed JCREW 3.1 systems. A depot level failure is defined as a failure that cannot be corrected in the field using the applicable consumable spares for the system. The support plan for JCREW 3.1 systems will be to immediately replace the failed system with one of the spares in the theater-based rotational spares pool, then ship the failed system back to the depot facility for repair consideration. Once repaired, the unit will be shipped back to theater and placed back into the spares pool.

The Depot level facility will provide depot repair services, repair parts, troubleshooting assistance in accordance with their commercial practices. All broken Depot Level Repair Parts (DLRPs) will be shipped from the Field Service Representative (FSR) directly to the D-level facility for repair. Within 72 hours of receipt, the D-level facility will provide a written estimate to the Government including the following minimum information: unit S/N, failed part description & P/N, hour meter reading, time to repair and price to repair. Within 2 weeks of the Government's approval to proceed, the repair will be complete. The Contractor(s) will be responsible for shipping expenses from the FSR location to the D-level facilities.

Note 1: Delivery of batteries, ancillary components, and consumable spares will be concurrent with the delivery of the production units.

Note 2: Sparing quantities and purchase plans, including Sponsor Owned Material (SOM), will need to be included in all DMSMS analyses. The program can limit the detail and frequency of DMSMS Management studies if adequate spares are purchased in the early stages of the program life cycle.

4.3 Configuration Information

4.3.1 Technology Development / System Development & Demonstration

During the testing phases, the Contractor(s) shall utilize a Government-approved Configuration Management (CM) process to manage configuration of the hardware and software, of the test systems. This includes the implementation of changes and upgrades, throughout the test cycles. A configuration freeze will be in effect for the duration of each test cycle prior to completing the performance assessment chamber testing. Prior to the start of each test cycle, the government will hold a Test Readiness Review (TRR) and the Contractor(s) will be required to provide and As-Built Configuration List (ABCL) of the system being tested (Data Item Description DI-CMAN-81516). The ABCL will include the part name, part number and revision, serial number, lot number, indenture level, Engineering Change Proposals (ECPs), waivers, deviations, software part number and revision as applicable for each serial-number-controlled or lot-number-controlled all-up round, section, assembly, subassembly, part or component installed in the end item at time of delivery.

4.3.2 Production & Deployment / Operation & Support

Based on the configuration information provided to support QRD, it is anticipated that similar Operation & Maintenance (O&M) source data will be submitted by the Contractor(s). This source data will include:

- Description of assemblies, subassemblies, and component parts to the Line Replaceable Unit (LRU) level with the purpose and function of each clearly defined.
- List of all components that are deemed to be cost-effective to repair at the depot level.
- All information necessary to procure repair parts and consumables. Electronic Bills of Material (eBOMs) will be provided to the LRU level.
- Estimated replacement factors for major components (e.g., replace component "X" after 200 hours) and any supporting reliability and maintainability data that would aid in calculating and verifying system MTBF and MTTR values.

As stated previously in paragraph 4.2.2.3, the support strategy is to procure DLRPs (theater-based rotational spares pool) along with production systems. These DLRPs can be used as an upgrade base for ECPs to provide a buffer of spare parts until potential obsolescence issues can be resolved.

4.4 Planned Upgrade/Spiral

Upon completion of the extensive JCREW 3.1 testing phase the Government will select a Contractor(s) to produce operational systems. These systems will undergo theater operations and tests to support Spiral 3.3 (next generation) system development. The JCREW 3.3 program life cycle encompasses all development and production from 2011 to 2029. This eighteen (18) year time frame corresponds to nine (9) technology refresh and three (3) technology insertion cycles.

DMSMS management analysis for JCREW 3.1 will be limited to its in-service life relative to development, production, fielding, and backfit plans and schedules for JCREW 3.3. If JCREW 3.1 systems are taken out of service through backfits or decommissioned platforms, residual assets will be used as spares for in-service systems.

4.5 Maintenance Philosophy

4.5.1 Technology Development / System Development & Demonstration

During the testing phases, the Contractor(s) will provide On-Site Test Cycle personnel support within four (4) hours of request which may necessitate vendor personnel being available near or at the various test locations 24 hours per day, six days per week, excluding Sundays throughout the test and evaluation period. The Contractor(s) must have parts available to repair systems within 24 hours of diagnosis or failure. In addition the Contractor(s) must provide a parts list at time of delivery for test and provide a parts inventory at completion of the last test cycle.

4.5.2 Production & Deployment / Operation & Support

The maintenance concept for the JCREW 3.1 is Organizational level (O-level), Intermediate level (I-level) and Depot level (D-level). O-level maintenance is defined as maintenance performed during operations or while the equipment is in an operational status and will consist of Preventive Maintenance Checks and remove and replace of Line Replaceable Units (LRUs). The Original Equipment Manufacturer (OEM) will perform D-level maintenance which are those items requiring skills, facilities, and support materials that are not available or economically achieved at the O-level. I-level maintenance may be required to support the Ao and will be determined via the maintenance planning process. A Level of Repair Analysis (LORA) may be used to determine and recommend a repair or discard action for each LRU and will serve as the foundation for maintenance planning.

For JCREW 3.1, obsolescence assessments will be performed at the appropriate maintenance level to insure that repair parts will be available if needed. For COTS assemblies, the analysis will be performed at the LRU level.

5.0 DMSMS METRICS

There are no unique obsolescence metrics for the JCREW 3.1 system. The DMSMS Metrics Spreadsheet provided in the main part of this plan (paragraph 6.1) will be utilized.

6.0 FUNDING

The JCREW 3.1 program is funded and executed under the direction of the Joint Improvised Explosive Device Defeat Organization (JIEDDO), a joint organization reporting directly to the Office of the Deputy Secretary of Defense. The following table identifies current JCREW 3.1

DMSMS funding requirements for the ISEA contained in the Logistics Requirements and Funding Summary:

Table D-2 JCREW 3.1 DMSMS Funding Profile

Element	FY08 (RDT&E)	FY09 (RDT&E / OM)	FY10 (OM)	FY11 (OM)	FY12 (OM)	FY13 (OM)	Total
DMSMS Planning and Management	25K	49K	50K	52K	54K	55K	285K
DMS & Obsolescence Analysis and Reporting	55K	237K	244K	251K	259K	267K	1313K

APPENDIX E: JCREW 3.2 MOUNTED SYSTEMS

1.0 SYSTEM DESCRIPTION

Based on lessons learned from previous CREW systems, JCREW 3.2 will develop first generation improvements to existing mounted Commercial-Off-The-Shelf (COTS) equipment that is fully compliant with Department of Defense (DoD) standards and requirements. This capability will fill the gap between the JCREW 2.1 system and JCREW 3.3 in light of the changing threats.

The JCREW 3.2 mounted system will be comprised of a processing unit, external power supply, software, cables, antenna(s), shipping container(s), and all the components necessary to operate and zeroize the system (including a remote control if required). The system will be used in/on the High Mobility Multipurpose Wheeled Vehicle M1114 (HMMWV) and/or Mine Resistant Ambush Protected (MRAP) Vehicles. An appropriate tactical vehicle installation kit will also be provided with each system.

The procurement of JCREW 3.2 systems will include both an eighteen month test article contract followed by a production contract for operational systems. At the time of the release of this document, the JCREW 3.2 mounted system will be entering into Milestone B, Technology Development and System Development and Demonstration.

2.0 DMSMS SCHEDULE

DMSMS events for JCREW 3.2 have been added to the overall Integrated Master Schedule as follows. The DMSMS schedule is based on the objective that obsolescence issues that are identified in each Build Cycle will be assessed to determine the overall impact to the next build cycle. This reduces the overall DMSMS assessment time (especially for ABCL1) to a timeframe that is less than the normal cycle time for a project of this size. DMSMS cycle time reduction efforts, including working additional hours, will be executed to conform to the Integrated Master Schedule.

Note: The following dates are based on a contract award date of 7 December 2007 and Build-Test-Build durations extracted from the 3.2 RFP.

JCREW 3.2 DMSMS Calendar of Events

EVENT	DATE
Test Article Award Contracts 3.2	12/7/07
Build Cycle One (BC1) (35 weeks ADC)	12/8/07 through 8/9/08
As Built Configuration List (ABCL1)	**8/10/08**
Filter Configuration Items (CI) for Obsolescence Vulnerability	8/29/08
Insert CIs into Horizon Obsolescence Database	9/9/08
Identify Initial Set of Critical Obsolescence Issues	9/19/08
Develop Technology/Item Obsolescence Assessment	10/10/08
Open Cases Identified by Obsolescence Assessment	10/3/08

EVENT	DATE
Develop Solution Mitigation Strategies/Costs	10/31/08
Test Cycle One (TC1) (6 weeks)	8/10/08 through 9/21/08
Build Cycle Two (BC2) (13 weeks)	9/22/08 through 12/22/08
As Built Configuration List (ABCL2)	**12/23/08**
Filter CIs for Obsolescence Vulnerability	1/2/09
Update CIs into Horizon Obsolescence Database	1/16/09
Identify Set of Critical Obsolescence Issues	2/4/09
Develop Technology/Item Obsolescence Assessment	2/27/09
Open Cases Identified by Obsolescence Assessment	2/20/09
Develop Solution Mitigation Strategies/Costs	3/13/09
Test Cycle Two (TC2) (8 weeks)	12/23/08 through 2/17/09
Build Cycle Three (BC3) (5 weeks)	2/18/09 through 3/25/09
As Built Configuration List (ABCL3)	**3/26/09**
Filter CIs for Obsolescence Vulnerability	4/3/09
Update CIs into Horizon Obsolescence Database	4/17/09
Identify Set of Critical Obsolescence Issues	4/24/09
Develop Technology/Item Obsolescence Assessment	5/22/09
Open Cases Identified by Obsolescence Assessment	5/8/09
Develop Solution Mitigation Strategies/Costs	6/5/09

3.0 TECHNOLOGY ROADMAPS

Technology roadmaps define how the program integrates DMSMS forecasts and solution mitigation with refresh and upgrade plans for the system. The program determines whether obsolescence impacts will steer these plans or whether a roadmap is developed and DMSMS analysis is performed on the existing configuration to determine whether components and assemblies will be are available to meet planned milestones. The following paragraphs identify the existing JCREW 3.2 roadmap and its impacts to DMSMS management implementation.

3.1 Industrial Base

The DoD has previously procured several mounted CREW systems from multiple sources. These sources provide a known industrial base. To identify other potential sources and solicit industry feed back, PMS-408 released a Request For Information (RFI) in early FY07. Information received supported the release of the JCREW 3.2 RFP for the design, fabrication and test of a prototype for the next generation JCREW system. PMS-408 hosted two industry days to present the JCREW Spiral 3.2 acquisition strategy and RFP requirements. Each industry day was attended by over one hundred industry representatives.

For production no industrial preparedness limitations are foreseen in the available commercial technology infrastructure. The nation's industrial capabilities to produce, maintain, and support the JCREW 3.2 system is considered more than adequate. All essential raw materials, special alloys, composite materials, components, tooling and production test equipment required for sustained development and future production of the JCREW 3.2 systems, uninterrupted maintenance, and sustained operation are available through the national technology and industrial base.

3.2 Standardization

The Government is working with Contractors to standardize support and test equipment, training devices, and installation kits for mounted JCREW systems. For similar (mounted, dismount, fixed) system, designers are including similar or common piece parts in the design of some similar systems. This commonality provides a level of standardization and piece part control that will allow competition during procurement of future piece parts. During design some system developers are incorporating DLA standardized parts.

3.3 Build Test Build

The test article contract for JCREW 3.2 will include an initial design and build phase of approximately thirty-five weeks, followed by two joint contractor/government test cycles with two subsequent contractor build cycles, and then a final government only test cycle. Seven (7) complete systems will be used to support the three test cycles.

The Government is employing a Build-Test-Build philosophy to allow the Contractor(s) to optimize performance during the development of the system. Maturation of the Advance Development Models (ADMs) to full Engineering Development Models (EDM) will occur during the System Development and Demonstration (SDD) phase which begins at Build Cycle 3. An EDM is a production representative system acquired during the SDD Phase. EDMs will be used to demonstrate maturing performance in Developmental Testing and Operational Testing (OT) and to finalize proposed production specifications and drawings. One of these systems will remain at the contractor facility and one (1) will be used by the Government for environmental testing. Design and development will include all hardware and software design and development efforts necessary to ensure the final complete system meets requirements of the performance specification.

Once the JCREW 3.2 System enters into the Production & Deployment and Operation & Support phases, there are no plans for technology upgrades or insertions over the service life of the system. The estimated service life expectancy for JCREW 3.2 is five (5) years. Obsolescence studies will focus on the availability of the products and components and the associated solution mitigation within the system expected service life of five (5) years. If modifications are made to the service life, the obsolescence analysis and its frequency will be changed accordingly.

4.0 PROGRAM UNIQUE DMSMS MANAGEMENT FACTORS

There are many factors that determine how a program defines and structures their DMSMS Management strategy. Specific factors include:

- Contractor Responsibility
- Spares/Support Infrastructure
- Configuration Detail
- Modernization Plans

- Maintenance Philosophy

These factors and the associated impacts to JCREW 3.2 DMSMS Management are defined below.

4.1 Contractor(s) Obsolescence Management

The RFP and Performance Specification states that the contractor shall implement, to the maximum extent practicable, a modular open system architecture approach that addresses cost effective and rapid system upgrades to support parts obsolescence, changes in the threat, and mission modifications. Additionally, the open architecture approach shall permit easy integration and interoperability with other CREW systems, specifically those CREW systems under development as part of the Spiral 3.2 Development contract(s). Open architecture will reduce the impact of obsolescence on life cycle support of the system but assessing obsolescence and developing cost-effective solutions are still required. Since the contractor is not contractually required to perform these assessments, the responsibility will fall on the In-Service Engineering Agent (ISEA) at NSWC Crane for this function. Mitigation strategies will be adjudicated through the JDWG.

4.2 Spares and Support Infrastructure

PMS-408 has the responsibility to develop and support operational JCREW 3.2 systems during the year of delivery (FY 09) and then to transition these systems to the appropriate military service agency for the remainder of the service life.

4.2.1 Technology Development / System Development & Demonstration

During the testing phases, the Contractor(s) will provide replacement parts and all consumables during all three test cycles in order to maintain and repair the systems. The Contractor(s) will provide a list of parts that will be procured to support the test cycles. The parts list will contain the part number, nomenclature, cost, manufacturer, and quantity. The parts list will be provided at the time of delivery of the first system. At the completion of the last test cycle, the Contractor(s) will provide a parts inventory to the government. The Contractor(s) will have parts available to repair systems within 24 hours of diagnosis.

4.2.2 Production & Deployment / Operation & Support

Based on the supply support provided for JCREW 2.1, it is expected that, at a minimum, the following spares, consumables, and repair part support will be provided for JCREW 3.2:

4.2.2.1 Initial Spares and Consumables List

The Contractor(s) will provide the spares and consumables necessary to support deployed operation, training, and maintenance of the systems for one year. The Contractor(s) will develop an initial spares and consumables list that includes part number, nomenclature, cost,

manufacturer and quantity for each item. Delivery of ancillary components, initial spares and consumables shall be concurrent with the delivery of the production units.

4.2.2.2 Supply Support Planning

The Contractor(s) will develop and maintain a maintenance support plan that documents how the Contractor will provide spares support during the initial fielding and post production support phases. Spares support includes O-Level initial outfitting and replenishment, and D-Level initial outfitting and replenishment. The support process used to order and deliver spares shall support O-Level and D-Level outfitting schedules and maintain approved replenishment levels at these sites. The plan shall also include a list of consumable spares and a list of Depot Level Repair Parts. Both lists shall include part number, nomenclature, cost, manufacturer and quantity. The lists shall identify long lead items and the prospective lead times.

4.2.2.3 Depot Level Repair Parts

If ordered by the Government, the Contractor(s) will deliver depot level repair parts (DLRP). The Government will issue a request for quotes (RFQ) for the required parts. The DLRPs will be produced and ready for issue to ensure maintaining wartime operational readiness of 90% availability of the JCREW 3.2 system.

Note: Sparing quantities and purchase plans, including Sponsor Owned Material (SOM), will need to be included in all DMSMS analyses. The program can limit the detail and frequency of DMSMS Management studies if adequate spares are purchased in the early stages of the program life cycle.

4.3 Configuration Information

4.3.1 Technology Development / System Development & Demonstration

During the testing phases, the Contractor(s) shall utilize a Government-approved Configuration Management (CM) process to manage configuration of the hardware and software, of the test systems. This includes the implementation of changes and upgrades, throughout the test cycles. A configuration freeze will be in effect for the duration of each test cycle prior to completing the performance assessment chamber testing. Prior to the start of each test cycle, the government will hold a Test Readiness Review (TRR) and the Contractor(s) will be required to provide and As-Built Configuration List (ABCL) of the system being tested (Data Item Description DI-CMAN-81516). The ABCL will include the part name, part number and revision, serial number, lot number, indenture level, Engineering Change Proposals (ECPs), waivers, deviations, software part number and revision as applicable for each serial-number-controlled or lot-number-controlled all-up round, section, assembly, subassembly, part or component installed in the end item at time of delivery.

4.3.2 Production & Deployment / Operation & Support

Based on the configuration information provided to support JCREW 2.1, it is anticipated that the same type of Operation & Maintenance (O&M) source data will be submitted by the Contractor(s). This source data will include description of assemblies, subassemblies, and component parts to the LRU level with the purpose and function of each clearly defined. The LRU list will include as a minimum the following data elements and fields:

- System/end item operations and maintenance requirements
- End Item reference designator
- End item indenture code
- End item name
- End item part number
- Required mean time to repair (MTTR)
- Required mean time between failures (MTBF)
- Item configuration, reliability and maintainability data (LRUs)
- Reference designator
- Indenture code
- Part number
- Item drawing number
- Item drawing number revision
- Item name
- Item function
- Repair cycle time (RCT)
- Supply support – Mandatory (LRUs)
- Reference number (part number)
- Manufacturer Contractor and government entity (CAGE) code
- Item name (part name)
- Quantity per assembly
- Quantity per end item
- Unit of Issue (U/I) Price
- Production Lead Time (PLT)
- Manufacturer Name
- Shelf Life
- Shelf Life Action

There is sufficient configuration detail to perform DMSMS analysis at the component and LRU level. COTS equipment will be managed for obsolescence at the LRU level as indicated in paragraph 2.1.4 of the main part of the JCREW DMSMS management plan.

4.4 Planned Upgrade/Spiral

Upon completion of the extensive JCREW 3.2 testing phase the Government will select a Contractor(s) to produce operational systems. These systems will undergo theater operations and tests to support Spiral 3.3 (next generation) system development. The JCREW 3.3 program life cycle encompasses all development and production from 2011 to 2029. This eighteen (18) year time frame corresponds to nine (9) technology refresh and three (3) technology insertion cycles. DMSMS management analysis for JCREW 3.2 will be limited to its in-service life relative to development, production, fielding, and backfit plans and schedules for JCREW 3.3. If JCREW 3.2 systems are taken out of service through backfits or decommissioned platforms, residual assets will be used as spares for in-service systems.

4.5 Maintenance Philosophy

4.5.1 Technology Development / System Development & Demonstration

During the testing phases, the Contractor(s) will provide On-Site Test Cycle personnel support within four (4) hours of request which may necessitate vendor personnel being available near or at the various test locations 24 hours per day, six days per week, excluding Sundays throughout the test and evaluation period. The Contractor(s) must have parts available to repair systems within 24 hours of diagnosis or failure. In addition the Contractor(s) must provide a parts list at time of delivery for test and provide a parts inventory at completion of the last test cycle.

4.5.2 Production & Deployment / Operation & Support

The maintenance concept for the JCREW 3.2 is Organizational level (O-level), Intermediate level (I-level) and Depot level (D-level). O-level maintenance is defined as maintenance performed during operations or while the equipment is in an operational status and will consist of Preventive Maintenance Checks and remove and replace of Line Replaceable Units (LRUs). The Original Equipment Manufacturer (OEM) will perform D-level maintenance which are those items requiring skills, facilities, and support materials that are not available or economically achieved at the O-level. I-level maintenance may be required to support the Ao and will be determined via the maintenance planning process. A Level of Repair Analysis (LORA) may be used to determine and recommend a repair or discard action for each LRU and will serve as the foundation for maintenance planning.

For JCREW 3.2, obsolescence assessments will be performed at the appropriate maintenance level to insure that repair parts will be available if needed. For COTS assemblies, the analysis will be performed at the LRU level.

5.0 DMSMS METRICS

There are no unique obsolescence metrics for the JCREW 3.2 system. The DMSMS Metrics Spreadsheet provided in the main part of this plan (paragraph 6.1) will be utilized.

6.0 FUNDING

The JCREW 3.2 program is funded and executed under the direction of the Joint Improvised Explosive Device Defeat Organization (JIEDDO), a joint organization reporting directly to the Office of the Deputy Secretary of Defense. Table E-1 identifies current JCREW 3.2 DMSMS funding requirements for the ISEA contained in the Logistics Requirements and Funding Summary:

Table E-2 JCREW 3.2 DMSMS Funding Profile

Element	FY08 (RDT&E)	FY09 (RDT&E / OM)	FY10 (OM)	FY11 (OM)	FY12 (OM)	FY13 (OM)	Total
DMSMS Planning and Management	25K	49K	50K	52K	54K	55K	285K
DMS & Obsolescence Analysis and Reporting	55K	237K	244K	251K	259K	267K	1313K

APPENDIX F: JCREW 3.3 SYSTEMS

1.0 SYSTEM DESCRIPTION

Military personnel operating within the Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF) theaters of operation encounter very adaptive and innovative insurgents that leverage commercial radio frequency (RF) technology for strategic effect. The JCREW 3.3 System of Systems (SoS) counters this threat by processing these RF signals, modulating the required waveforms, and transmitting the required jamming signals to prevent remote detonation of explosive devices.

JCREW 3.3 SoS will provide commanders of the Joint Forces, U.S. Army, U.S. Marine Corps, U.S. Navy, U.S. Air Force, Special Operations Command, other Department of Defense (DoD) components, and non-DoD agencies as part of a Family of Systems (e.g., airborne CREW devices or legacy ground-based CREW devices) with a capability to counter Radio-controlled Improvised Explosive Device (RCIED). In order to meet the current need, Joint CREW (JCREW) will be technologically superior to earlier systems (greater spectrum coverage, more power, limited networking capability, etc.).

The JCREW 3.3 SoS approach includes three distinct capabilities that shall be developed to utilize common component, software and hardware solutions for an open, flexible, and compatible system design approach that is modular, interoperable and affordable to upgrade. The three capabilities are:

- Mobile dismounted operations (e.g. manpack),
- Mobile ground and waterborne transport and combat systems (e.g. mounted), and
- Semi-permanent geographical area (e.g. fixed) devices.

All capabilities will have coalition sharing capabilities. The systems will be comprised of a processing unit, power supply, software, cables, antenna(s), and all the components necessary to operate and zeroize the system (including a remote control if required). The Mobile ground combat systems (e.g. mounted system… will be used in/on the High Mobility Multipurpose Wheeled Vehicle M1151 (HMMWV) and/or Joint Light Tactical Vehicle (JLTV) Vehicles, and other service vehicles as identified by each service. An appropriate tactical vehicle installation kit will also be provided with each system which will be adaptable to each class of vehicles.

The JCREW 3.3 SoS will be employed throughout the future operating environment, supporting US forces dominance over the electromagnetic spectrum, and will not require new or unique communications systems, but will operate within the bandwidth and quality of service of current and future systems. JCREW 3.3 SoS will be capable of functioning in a stand-alone mode (as do legacy systems) or in a networked mode. The JCREW 3.3 SoS networking in an operational environment will facilitate:

- Configuration Management (CM) and remote loading,
- Mission representative Command and Control (C2) to achieve mutually supportive or cooperative JCREW operations,

- Dissemination and use of JCREW 3.3 SoS controlled signal data; and
- Interoperability and compatibility with friendly force systems that use the same or nearly the same portions of the electromagnetic spectrum.
- The system will be comprised of a processing unit, external power supply, software, cables, antenna(s), shipping container(s), and all the components necessary to operate and zeroize the system (including a remote control if required). Additional features, capabilities and characteristics of the proposed JCREW 3.3 SoS architectural design is classified and may be reviewed in the System Performance Specification.

Figure 6, next page, illustrates the system architecture envisioned for the JCREW 3.3 SoS.

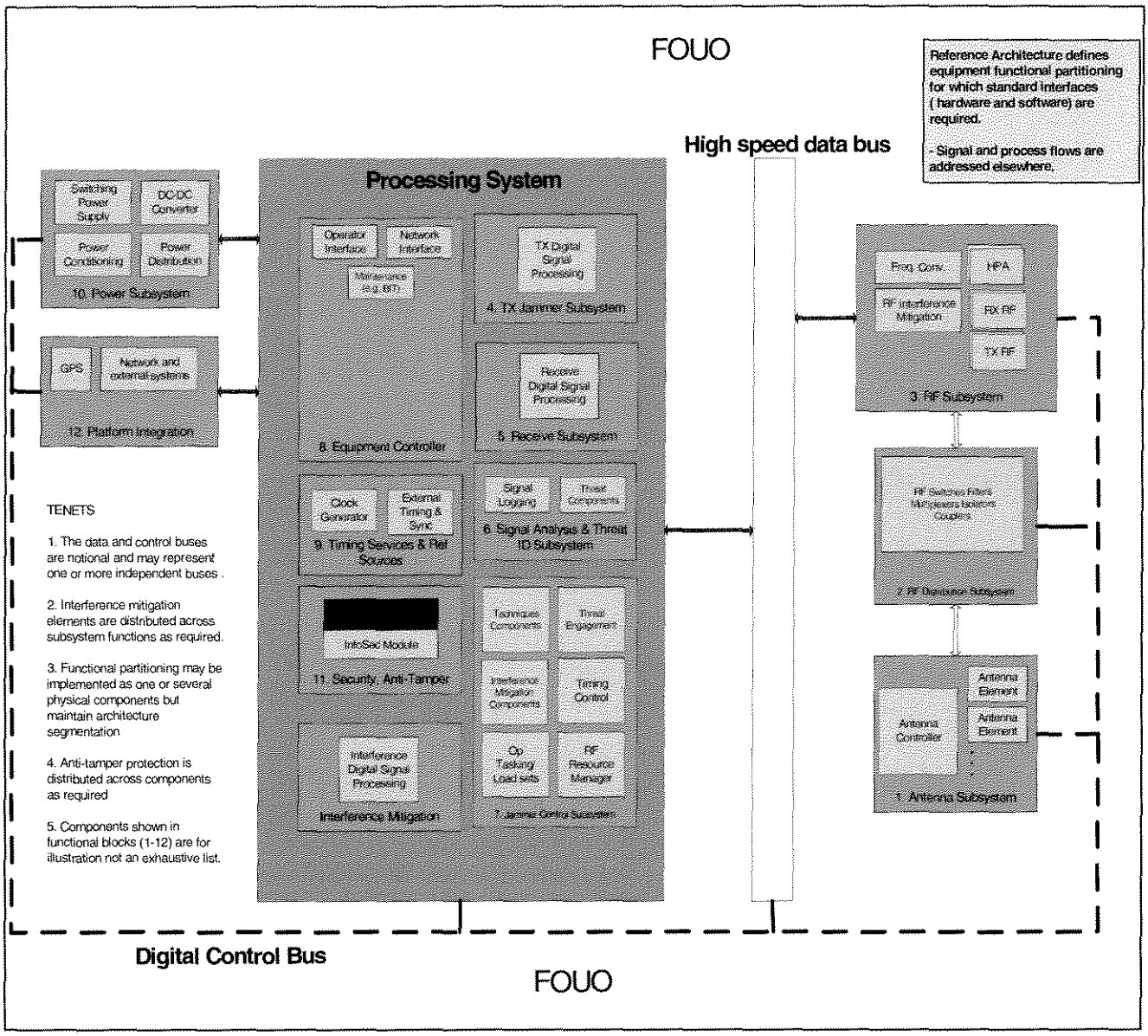

Figure 6. JCREW 3.3 System of Systems Architecture

2.0 DMSMS SCHEDULE

DMSMS events for JCREW 3.3 SoS have been added to the overall Integrated Master Schedule. The DMSMS schedule is based on the objective that obsolescence issues that are identified in each EDM Build Cycle will be assessed to determine the overall impact to the next build cycle. This reduces the overall DMSMS assessment time (especially for ABCL1) to a timeframe that is less than the normal cycle time for a project of this size. DMSMS cycle time reduction efforts, including working additional hours, will be executed to conform to the Integrated Master Schedule.

Note: The following dates are based on a contract award date of 1 November 2008 and built and test durations extracted from the JCREW 3.3 SoS RFP.

Table F-1 DMSMS Calendar of Events

EVENT	DATE
Test Article Award Contracts 3.3	11/1/08
Build Cycle One (BC1) (35 weeks ADC)	11/1/08 through 7/9/09
As Built Configuration List (ABCL1)	**7/10/09**
Filter Configuration Items (CI) for Obsolescence Vulnerability	8/29/09
Insert CIs into Horizon Obsolescence Database	9/9/09
Identify Initial Set of Critical Obsolescence Issues	9/19/09
Develop Technology/Item Obsolescence Assessment	10/10/09
Open Cases Identified by Obsolescence Assessment	10/3/09
Develop Solution Mitigation Strategies/Costs	10/31/09
Test Cycle One (TC1) (6 weeks)	8/10/09 through 9/21/09
Build Cycle Two (BC2) (13 weeks)	9/22/09 through 12/22/09
As Built Configuration List (ABCL2)	**12/23/09**
Filter CIs for Obsolescence Vulnerability	1/2/2010
Update CIs into Horizon Obsolescence Database	1/16/2010
Identify Set of Critical Obsolescence Issues	2/4/2010
Develop Technology/Item Obsolescence Assessment	2/27/2010
Open Cases Identified by Obsolescence Assessment	2/20/2010
Develop Solution Mitigation Strategies/Costs	3/13/2010
Test Cycle Two (TC2) (8 weeks)	12/23/09 through 2/17/10

3.0 TECHNOLOGY ROADMAPS

The Technology Roadmap process is to identify the "product" (JCREW 3.3 SoS) that will be the focus of the roadmap, identify the critical system requirements and their targets, specify the major technology areas, specify the technology drivers and their targets, identify technology alternatives and their timelines, recommend the technology alternatives that should be pursued and create the technology roadmap report or plan. For DMSMS applications, the Technology Roadmaps define how the program integrates DMSMS forecasts and solution mitigation with refresh and upgrade plans for the system. The program determines whether obsolescence impacts will steer these plans or whether a roadmap is developed and DMSMS analysis is performed on the existing configuration to determine whether components and assemblies will be are available to meet planned milestones. The following paragraphs identify the existing JCREW 3.3 roadmap and its impacts to DMSMS management implementation.

3.1 Industrial Base

The DoD has previously procured several mounted CREW systems from multiple sources. These sources provide a known industrial base. To identify other potential sources and solicit industry feed back, PMS-408 released a Request For Information (RFI) in February 2008. Information

received supported the release of the JCREW 3.3 RFP for the design, fabrication and test of a prototype for the next generation JCREW 3.3 SoS. PMS-408 also hosted two industry days to present the JCREW Spiral 3.3 acquisition strategy and RFP requirements. Each industry day was attended by over one hundred industry representatives.

For production no industrial preparedness limitations are foreseen in the available commercial technology infrastructure. The nation's industrial capabilities to produce, maintain, and support the JCREW 3.3 SoS is considered more than adequate. All essential raw materials, special alloys, composite materials, components, tooling and production test equipment required for sustained development and future production of the JCREW 3.3 SoS, uninterrupted maintenance, and sustained operation are available through the national technology and industrial base.

3.2 Standardization

The Government will work with Contractors to standardize parts, support and test equipment, training devices, and installation kits for the JCREW 3.3 SoSs. For similar (mounted, dismount, fixed) system, designers will be encouraged to include similar or common piece parts in the design of some similar systems by embracing and implementing Modular Open Systems Architecture (MOSA) which will improve maintainability, reduce TOC and the Logistics footprint. This commonality provides a level of standardization and piece part control that will allow competition during procurement of future assemblies, sub-assemblies, components and piece parts. During design system developers will be encouraged to incorporate DLA standardized parts.

Forces in Iraq and Afghanistan have requested a test set that will allow rapid and reliable verification of CREW system performance prior to starting an operation. PMS-408 as Single Service Manager is coordinating development of the required test set. In parallel PMS-408 released a RFI in July 2006 to solicit alternative ideas for the test set from industry and two contracts were awarded to two industry partners to design, develop and produce the Universal Test Set (UTS). The environmental and physical constraints, such as size, weight, power, temperatures and interfaces have been identified and incorporated into the UTS design specification. It is anticipated that analyses to identify the optimum mix of automatic and manual fault detection and isolation equipment at each applicable maintenance level will be conducted by the Contractor(s).

The UTS will provide a rapid go/no-go evaluation for all U.S. fixed, dismounted and mounted CREW systems, including JCREW 3.3 SoS. This test set will allow the warfighter a simple and easy method to verify proper operation of a CREW SoS prior to deploying. First deliveries from the above noted contracts were made in April 2008 and it is anticipated that production UTS will be available for all Contractor and Government test cycles/events and for use by operating forces upon production and deployment of the JCREW 3.3 SoS.

3.3 Developmental and Demonstration Phase

During the SDD phase, the program office intends to award two, cost plus award fee SDD contracts to two prime contractors under full and open competition. The contractors will develop an Engineering Brassboard through the Critical Design Review (CDR) to support Developmental Testing (DT). An Engineering Brassboard is a research configuration of a system, suitable for field testing, that replicates both the function and configuration of the operational systems with the exception of non-essential aspects such as packaging.

At CDR, the program office may exercise a contract option to one contractor to continue to Milestone C by developing and delivering ten (10) Engineering Development Models (EDM) each for manpack and mounted capabilities and five (5) EDMs for fixed site to support the Government DT cycles and initial Operational Testing.

3.4. Technology Refreshment/Insertion

The PMS-408 program office preference is to limit the amount of product and technology changes to the JCREW 3.3 SoS product baselines by carefully planning technology refresh and insertion cycles throughout the expected 18 year life cycle for the JCREW 3.3 SoSs. Optimal refresh cycles will be ascertained by forecasting product life cycles, mapping those cycles to program schedules, and by determining quantities of bridge buy or life-of-type spares that need to be procured. Technology insertion cycles will be driven by the life cycles of technology that is being used in various assemblies and sub-assemblies in the JCREW 3.3 SoS Program. Bridge buy spares can again be used to extend the support window for each technology product line.

Once the JCREW 3.3 System enters into the Production & Deployment and Operation & Support phase, it will use an evolutionary acquisition, incremental approach that is easily upgradeable, flexible and expandable through the use of open architecture and well defined, common standards. The acquisition approach will be accomplished through a series of incremental developments. Current plans envision: 1) two year technology refresh updates, 2) a second incremental update four years after Initial Operational Capability (IOC), and 3) periodic technology insertions in order to maintain common baselines, to account for obsolescence, and to counter the rapidly evolving threat..

4.0 PROGRAM UNIQUE DMSMS MANAGEMENT FACTORS

There are many factors that determine how the JCREW program defines and structures the DMSMS Management strategy for the final solution, JCREW 3.3 SoS. Specific factors include:

- Contractor Responsibility
- Parts Standardization & Open Systems Architecture
- Spares/Support Infrastructure
- Configuration Detail

- Modernization Plans
- Maintenance Philosophy
- Performance Based Logistics Strategies

These factors and the associated impacts to JCREW 3.3 SoS DMSMS Management are defined below.

4.1 Contractor(s) Obsolescence Management

The Contractor has three requirements for an effective Obsolescence/DMSMS program as outlined in the program System Performance Specification and the RFP Statement of Work . They are 1)for obsolescence mitigation, 2) Performance Based Logistics and 3) development and delivery of a Technical Data Package. These requirements are addressed in this section.

4.1.1 Contractor Obsolescence/DMSMS Program.

The JCREW 3.3 SoS Contractor(s) are being tasked in the RFP Statement of Work to implement an effective DMSMS program to manage obsolescence issues. The summary of Contractor requirements are as follows:

- The Contractor(s) shall be responsible for minimizing obsolescence by selecting products that will avoid or resolve hardware, software, and firmware obsolescence issues.
- The Contractor(s) shall establish and implement a process to identify and immediately notify the Government of pending and emergent obsolescence issues and emergent vendor implemented changes associated with the approved JCREW baseline.
- The Contractor shall develop a DMSMS Plan and shall implement forecasting methodologies to predict when products or components will go obsolete

The RFP and Performance Specification state that the contractor shall implement, to the maximum extent practicable, a modular open system architecture approach that addresses cost effective and rapid system upgrades to support parts obsolescence, changes in the threat, and mission modifications. Additionally, the open architecture approach shall permit easy integration and interoperability with other CREW systems, specifically those CREW systems under development as part of the JCREW 3.3 SoS Development contract(s). Open architecture will reduce the impact of obsolescence on life cycle support of the system but assessing obsolescence and developing cost-effective solutions are still required. Since the contractor is not contractually required to perform these assessments, the responsibility will fall on the In-Service Engineering Agent (ISEA) at NSWC Crane for this function. Mitigation strategies will be adjudicated through the JDWG.

4.1.2 Performance Based Logistics (PBL)

The JCREW 3.3 SoS system performance specification explicitly defines JCREW 3.3 SoS and equipment reliability and availability requirements. During the design process, close liaison will be established between the designers, the Systems Engineering Integrated Product Team (SEIPT)

and the Supportability IPT (SIPT) to identify and mitigate obsolescence issues. A PBA with supportability requirements will be established with the Warfighter. Also during the System Development and Demonstration phase, a Business Case Analysis (BCA) will be conducted with input from the Contractor. The Contractor will be required to submit a PBL plan for contractor logistics support of various logistics functions and tasks. Also, a Product Support Integrator (PSI) (single belly button) will be selected to implement PBL strategies for supporting fielded systems after Milestone C.

4.1.3 Technical Data Package (TDP)

Additionally, The Contractor shall develop a TDP which will also support the JCREW 3.3 SoS obsolescence/DMSMS mitigation strategy. The TDP will include the development and delivery of specifications, technical manuals, engineering drawings/product data models that provide appropriate level of detail for reprocurement, maintenance and manufacture of the system product. as follows:

- The Contractor shall develop and maintain the TDP for each JCREW 3.3 SoS Capability, including each assembly and sub-assemblies (e.g. transmitter, remote, antenna…) under this contract IAW MIL-DTL-31000.
- The TDP shall contain but not be limited to product drawings, parts lists, data lists, wiring lists, schematics, interconnect diagrams, special tooling drawings, specifications, software version description documents, firmware version description documents, software, firmware, special packaging instructions (including storage, shipping containers…), source control drawings, specification control drawings.
- The Contractor drawings and associated lists shall be developed and structured IAW ASME Y14.24M. The TDP shall be delivered to the Government by the Contractor at least 30 days prior to any required Physical Configuration Audit (PCA).
- Additionally, the TDP shall contain digital photographic images of assembly procedures and cable dressing techniques provided coincident with the development of configurations supported, interface control information for both hardware and software.
- All information provided in the TDP becomes the property of the Government.
- Classified portions of the TDP shall be handled in accordance with approved security procedures and will only be delivered to the Government specified classified website.

The Government shall take configuration control of the TDP after a successful Physical Configuration Audit.

4.2 Spares and Support Infrastructure

PMS-408 has the responsibility to develop and support operational JCREW 3.3 SoS systems during the year of delivery (FY 11) and then to transition these systems to the appropriate military service agency for the remainder of the service life.

4.2.1 Technology Development / System Development & Demonstration

During the testing phases, the Contractor(s) will provide replacement parts and all consumables during all test cycles in order to maintain and repair the systems. The Contractor(s) will provide a list of parts that will be procured to support the test cycles. The parts list will contain the part number, nomenclature, cost, manufacturer, and quantity. The parts list will be provided at the time of delivery of the first system. At the completion of the last test cycle, the Contractor(s) will provide a parts inventory to the government. The Contractor(s) will have parts available to repair systems within 24 hours of diagnosis.

4.2.2 Production & Deployment / Operation & Support

Based on the supply support provided for JCREW 2.1, 3.1 and 3.2, it is expected that, at a minimum, the following spares, consumables, and repair part support will be provided for JCREW 3.3:

4.2.2.1 Initial Spares and Consumables List

The Contractor(s) will provide the spares and consumables necessary to support deployed operation, training, and maintenance of the systems for one year. The Contractor(s) will develop an initial spares and consumables list that includes part number, nomenclature, cost, manufacturer and quantity for each item. Delivery of ancillary components, initial spares and consumables shall be concurrent with the delivery of the production units.

4.2.2.2 Supply Support Planning

The Contractor(s) will develop and maintain a maintenance support plan that documents how the Contractor will provide spares support during the initial fielding and post production support phases. Spares support includes O-Level initial outfitting and replenishment, and D-Level initial outfitting and replenishment. The support process used to order and deliver spares shall support O-Level and D-Level outfitting schedules and maintain approved replenishment levels at these sites. The plan shall also include a list of consumable spares and a list of Depot Level Repair Parts. Both lists shall include part number, nomenclature, cost, manufacturer and quantity. The lists shall identify long lead items and the prospective lead times.

4.2.2.3 Depot Level Repair Parts

If ordered by the Government, the Contractor(s) will deliver depot level repair parts (DLRP). The Government will issue a request for quotes for the required parts. The DLRPs will be produced and ready for issue to ensure maintaining wartime operational readiness of 90% availability of the JCREW 3.3 SoS.

Note: Sparing quantities and purchase plans, including Sponsor Owned Material (SOM), will need to be included in all DMSMS analyses. The program can limit the detail and frequency of

DMSMS Management studies if adequate spares are purchased in the early stages of the program life cycle.

4.3 Configuration Information

4.3.1 Technology Development / System Development & Demonstration

During the testing phases, the Contractor(s) shall utilize a Government-approved Configuration Management (CM) process to manage configuration of the hardware and software, of the test systems. This includes the implementation of changes and upgrades, throughout the test cycles. A configuration freeze will be in effect for the duration of each test cycle prior to completing the performance assessment chamber testing. Prior to the start of each test cycle, the government will hold a Test Readiness Review (TRR) and the Contractor(s) will be required to provide an As-Built Configuration List (ABCL) of the system being tested (Data Item Description DI-CMAN-81516). The ABCL will include the part name, part number and revision, serial number, lot number, indenture level, Engineering Change Proposals (ECPs), waivers, deviations, software part number and revision as applicable for each serial-number-controlled or lot-number-controlled all-up round, section, assembly, subassembly, part or component installed in the end item at time of delivery.

4.3.2 Production & Deployment / Operation & Support

The RFP Statement of Work and Contract Data Requirements List (CDRLs) task the Contractor(s) to develop and deliver Operation & Maintenance (O&M) source data. This source data will include description of assemblies, subassemblies, and component parts to the LRU level with the purpose and function of each clearly defined. The LRU list will include as a minimum the following data elements and fields:

- System/end item operations and maintenance requirements
- End Item reference designator
- End item indenture code
- End item name
- End item part number
- Required mean time to repair (MTTR)
- Required mean time between failures (MTBF)
- Item configuration, reliability and maintainability data (LRUs)
- Reference designator
- Indenture code
- Part number
- Item drawing number
- Item drawing number revision
- Item name
- Item function
- Repair cycle time (RCT)

- Supply support – Mandatory (LRUs)
- Reference number (part number)
- Manufacturer Contractor and Government Entity (CAGE) code
- Item name (part name)
- Quantity per assembly
- Quantity per end item
- Unit of Issue (U/I) Price
- Production Lead Time (PLT)
- Manufacturer Name
- Shelf Life
- Shelf Life Action

There is sufficient configuration detail to perform DMSMS analysis at the component and LRU level. COTS equipment will be managed for obsolescence at the LRU level as indicated in paragraph 2.1.4 of the overall JCREW DMSMS management plan.

4.4 Planned Upgrade/Incremental

Upon completion of the JCREW 3.3 testing phase the Government will select a Contractor(s) to produce a Low Rate Initial Production (LRIP) complement of operational systems. These systems will undergo operational tests required to achieve a Full Rate Production decision. The JCREW 3.3 program life cycle encompasses all development and production from 2011 to 2029. This eighteen (18) year time frame corresponds to nine (9) technology refresh and three (3) technology insertion cycles. DMSMS management analysis for JCREW 3.3 will be limited to its in-service life relative to development, production, fielding, and backfit plans and schedules. If JCREW 3.3 systems are taken out of service through backfits or decommissioned platforms, residual assets will be used as spares for in-service systems.

4.5 Maintenance Philosophy

4.5.1 Technology Development / System Development & Demonstration

During the testing phases, the Contractor(s) will provide On-Site Test Cycle personnel support within four (4) hours of request which may necessitate vendor personnel being available near or at the various test locations 24 hours per day, six days per week, excluding Sundays throughout the test and evaluation period. The Contractor(s) must have parts available to repair systems within 24 hours of diagnosis or failure. In addition the Contractor(s) must provide a parts list at time of delivery for test and provide a parts inventory at completion of the last test cycle.

4.5.2 Production & Deployment / Operation & Support

The planned maintenance concept for the JCREW 3.3 is Organizational level (O-level) and Depot level (D-level). O-level maintenance is defined as maintenance performed during operations or while the equipment is in an operational status and will consist of Preventive

Maintenance Checks and remove and replace of Line Replaceable Units (LRUs). The Original Equipment Manufacturer (OEM) will perform D-level maintenance which are those items requiring skills, facilities, and support materials that are not available or economically achieved at the O-level. A Level of Repair Analysis (LORA) may be used to determine and recommend a repair or discard action for each LRU and will serve as the foundation for maintenance planning.

For JCREW 3.3, obsolescence assessments will be performed at the appropriate maintenance level to insure that repair parts will be available if needed. For COTS assemblies, the analysis will be performed at the LRU level.

5.0 DMSMS METRICS

There are no unique obsolescence metrics for the JCREW 3.3 SoS. The DMSMS Metrics Spreadsheet provided in the main part of this plan (paragraph 6.1) will be utilized.

6.0 FUNDING

The JCREW 3.3 SoS program will be fully funded and executed under the direction of the Joint Improvised Explosive Device Defeat Organization (JIEDDO), a joint organization reporting directly to the Office of the Deputy Secretary of Defense. The following table identifies current JCREW 3.3 SoS DMSMS funding requirements for the ISEA contained in the Logistics Requirements and Funding Summary:

Table F-1 JCREW 3.3 SoS DMSMS Funding Profile

Element	FY08 (RDT&E)	FY09 (RDT&E	FY10 (RDT&E)	FY11 (O&M)	FY12 (O&M)	FY13 (O&M)	Total
DMSMS Planning and Management	00K	16K	16K	00K	00K	00K	32K
DMS & Obsolescence Analysis and Reporting	00K	00K	40K	41K	42K	44K	167K

APPENDIX G: ACRONYM LIST

AAP	Availability Assurance Program
ABCL	As-Built Configuration List
ABL	As Built List
ADM	Advanced Development Model
APM	Assistant Program Manager
BCA	Business Case Analysis
BOM	Bill of Material
C2	Command and Control
CAGE	Commercial and Government Entity
CDR	Critical Design Review
CDRL	Contract Data Requirement List
CM	Configuration Management
CM	Continuous Modernization
CONUS	Continental United States
COTS	Commercial off the Shelf
D-Level	Depot Level
DASN (L)	Deputy Assistant Secretary of the Navy (Logistics)
DLA	Defense Logistics Agency
DLRP	Depot Level Repair Parts
DMEA	Defense Microelectronics Agency
DMSMS	Diminishing Manufacturing Source and Material Shortages
DOD	Department of Defense
DON	Department of Navy
ECP	Engineering Change Proposal
EDM	Engineering Development Model
EPL	Engineering Parts List
FMS	Foreign Military Sales
FYDP	Future Years Defense Plan
GIDEP	Government-Industry Data Exchange Program
HMMWV	High Mobility Multipurpose Wheeled Vehicle M1114
IED	Improvised Explosive Device
ILS	Integrated Logistics Support
ILSMT	ILS Management Team
IOC	Initial Operating Capability
IPT	Integrated Product Team
ISEA	In-Service Engineering Agent
JCREW	Joint Counter Radio-Controlled IED Electronic Warfare
JDWG	JCREW DMSMS Working Group
JIEDDO	Joint Improvised Explosive Device Defeat Organization
LORA	Level of Repair Analysis
LRU	Line Replaceable Unit
MOSA	Modular Open Systems Architecture
MRAP	Mine Resistant Ambush Protected (Vehicle)

MTBF	Mean Time Between Failure

APPENDIX G: ACRONYM LIST (Continued)

MTTR	Mean Time To Repair
NAVICP	Naval Inventory Control Point
NAVSUP	Naval Supply
NIIN	National Item Identification Number
NSWC	Naval Surface Warfare Center
O-Level	Organizational Level
OEF	Operation Enduring Freedom
OEM	Original Equipment Manufacturer
OIF	Operation Iraqi Freedom
O&M	Operations and Maintenance
PBA	Performance Based Agreements
PBL	Performance Based Logistics
PLT	Production Lead Time
POM	Program Objective Memorandum
QRD	Quick Reaction Dismounted
RCIED	Radio-Controlled Improvised Explosive Device
RCT	Repair Cycle Time
RDT&E	Research, Development, Test and Evaluation
RFI	Request For Information
RFP	Request For Proposal
SCD	Source Control Drawing
SDD	System Development and Demonstration
SDW	Shared Data Warehouse
SEIPT	Systems Engineering Integrated Product Team
SOM	Sponsor Owned Material
SoS	System of Systems
SSB	Sunset Supply Base
TAC	Transportation Accountability Code
TDP	Technical Data Package
TLCSM	Total Life Cycle System Management
TOC	Total Ownership Cost
TRR	Test Readiness Review
TYAD	Tobyhanna Army Depot
U/I	Unit of Issue
USG	United States Government
UTS	Universal Test Set