

High Power Microwave Tube

Sustainability Improvement

Technology Project Roadmap

17 March 2009

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14. ABSTRACT The objectives of this project are to identify, analyze and eventually pursue opportunities to improve warfighter support and sustainability of high-power microwave tube parts used in fielded weapon systems. Phase I of this effort will result in a roadmap of mini-projects with benefits to high power microwave tube manufacturing, quality, supply, and product design. Upon the conclusion of Phase I, this roadmap and associated mini-projects will be submitted for approval to their associated potential funding sources.					
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1.0 INTRODUCTION

High power microwave tubes are used in radar, communications, and electronic warfare systems and subsystems throughout DoD. While newer systems may employ solid state microwave emitter technology, high-power communications and electronic warfare systems will continue to be built with tubes because of required power levels. Weapon systems already developed and fielded will continue to use these tubes for decades to come.

DoD has found these tubes hard to support. There are problems with long lead-times, cost, and product quality – particularly with manufacturing yield and early failure upon installation in the field. A Joint Committee on Aging Aircraft (JCAA) study found these tubes used on over 200 weapon systems.

The industry is in decline. The microwave tube industry is relatively small with about \$400M in U.S. sales annually (half the world market); the DoD represents approximately 80 percent of the total sales. While the technology continues to evolve slightly, the manufacturing methods for these tubes remain highly manual and labor intensive. Further, the industry is small, few primary manufacturers for military applications. Many of the designs are DoD unique and have only a single source of supply.

DSCC must continue to support legacy systems, and new systems with these components. There are numerous problems associated with the industrial base's ability to support these items as production is plagued by long lead-times, low manufacturing yield, inefficient processes, material availability and product quality. Sustainability problems are further plagued by:

- There are only a handful of U.S. based electron tube manufacturers. These companies make specialized products while relying on a supplier base that is diminishing with sole and off-shore sources.
- The manufacturing base is rapidly losing capabilities and reliant on inefficient equipment and manual processes to manufacture these items. This manufacturing base is struggling to keep up with demand. A survey of a dozen selected electron tubes indicates that backorder quantities grew from under 20 in 2004 to over 1200 in 2008.
- The industrial base has a difficult time responding to sporadic and unpredictable demand. This results in slow and delinquent deliveries and ultimately a large number of backorders. The same survey of a dozen selected tubes indicates that the average late shipment for these tubes ranged from 9 days to 78 days.
- These tubes are primarily DoD and not supported by the commercial market. It is estimated that up to 80% of the U.S. demand supports military requirements.

A JCAA effort conducted in ~2002 investigated manufacturing issues, and found:

- Low yield (<50% typical, 10% for specific applications)
- Labor intensive assembly process
- Inspection and test do not detect failures until final assembly is complete
- Lack of flexible/agile manufacturing can result in lead times exceeding 24 months

A recent study (2007) by the DoD Microwave Tube Executive Agent concludes that there will be a significant amount of electron tubes in use by the various Services of the DoD for the next 20

The objectives of this project are to identify, analyze and eventually pursue opportunities to improve warfighter support and sustainability of high-power microwave tube parts used in fielded weapon systems. Phase I of this effort will result in a roadmap of mini-projects with benefits to high power microwave tube manufacturing, quality, supply, and product design. Upon the conclusion of Phase I, this roadmap and associated mini-projects will be submitted for approval to their associated potential funding sources.

2.0 Approach

This roadmap effort was performed jointly by LMI, Crane, and their industrial partners with oversight and contributions by DSCC. The result is this roadmap of proposed projects that offer the most benefit in improving the sustainment of microwave tubes used by the warfighter. Each mini-project has been formed with its own stand-alone objectives, approach, schedule, cost and rationale. However, they have been grouped in five main topic areas: process automation, supply chain visibility, equipment upgrades, strategic material sourcing and process documentation.

The following describes those activities that comprise the approach to developing this roadmap.

- ***Characterize Supply Chain Performance*** – A current characterization of DLAs microwave tube manufacturing, supply chain and quality was used to baseline current manufacturing and supply performance. Analyses of supply chain metrics as order fill time, wholesale inventory levels, price, and requisition histories were assessed using historical data on DLA microwave tubes.
- ***Identify Needs and Opportunities:*** Work with DSCC and the manufacturers to look at needs and opportunities to adjust or improve ordering based upon allowing the manufacturers to run a continuous production line, avoiding the problems that come from gaps in production. Continuous production would refine the production process, improve configuration management baselines, and reduce lead time.

In addition, we also examined the impact of limited material sourcing and conducted multiple site visits of CPI/Eimac, L-3/Electron Devices and CPI/Beverly. Discussion with these manufacturers focused on identifying potential projects to improve manufacturing and supporting processes to reduce lead time, improve yield, and reduce costs. The team also looked into areas to improved quality of product sent to the field.

- ***Identify Mini – Projects:*** Based upon those areas of opportunities identified, mini-projects were developed in coordination with the manufacturers that have the potential to improve the sustainment of microwave tubes.
- ***Conduct Business Case Analysis and Develop Roadmap:*** The intent was for each project to be assessed on their impact to overall objective and metrics using proper business case analysis techniques. However, very little data was provided by the manufacturers to conduct a proper BCA. This roadmap will document our final recommended projects. Project rationale is provided for each project where data was provided.

This project is first and foremost about improved readiness. As a result of conducting this effort, and the funding of the associated roadmap mini-project, the DoD and the microwave power tube industrial base will be better prepared to continue to produce quality products at a reasonable cost as the demand decreases due to changes in technology. While these technologies will help to improve the sustainment of these items, it will do nothing to eliminate or reduce the warfighter tube requirements. The three expected outcomes are:

1. Greater availability of assets using microwave power tubes, including radar and communications systems;
2. Improved manufacturing base;
3. Improved product quality.

3.0 BCA Rationale

During the course of this study, LMI and Crane developed a Project BCA Template for manufacturers to submit their project ideas. This Project Template can be found attached as Appendix A. The template includes a section for proposed project description along with customary BCA data such as projected start up and operational costs, and expected benefits of the project measured against baseline metrics. A schedule, key personnel and implementation strategy were also requested.

While the manufacturers provided meaningful project ideas, the project information provided (based on the Project BCA Template) did not contain enough detail to develop a complete rationale for the mini-projects using customary business case rules. A summary of the rationale for each project is provided in Section 4.2 below.

4.0 Roadmap Summary

The original intent of this project was to provide a roadmap of microwave tube projects that could be submitted only for consideration of IBIF II funding. Many valid projects were proposed that involved the purchase of capital equipment and other factors that would have made them ineligible for IBIF II funding. However, these projects were deemed as viable candidates for other funding sources. We decided to look at other, more appropriate avenues of funding for these projects so that they would be included in our roadmap. These other sources of funding include the DLA Warstopper Broad Agency Announcement (BAA), the DLA R&D Project Call (“Headroom”), and DPA Title III activities. In many cases, proposed projects merited submittal to more than one potential source of funding. The following quad charts summarize the projects that are included in the roadmap.

4.1 Propose Projects

The manufacturers were very cooperative in developing 14 project proposals to improve the sustainability of high power microwave tubes. We were able to group the proposals in the five categories. The following lists the five categories and the proposed projects associated with each category:

- **Process Improvement/Automation**
 1. Spot Welding Improvement
 2. Inert Product Line Pump Stations
 3. Residual Gas Analyzers
 4. Automated Process Welder
 5. Cathode Cutting
- **Strategic Material Sourcing**
 6. Receiver Protector Glass Window Obsolescence
 7. Frequency Agile Magnetron Motors
 8. Receiver Protector Point Contact Schottky Diode
- **Supply Chain Visibility**
 9. Supply Chain Visibility Technology
- **Sustain/Replace Aging Equipment**
 10. Automated Low Power Test Set
 11. Parallel Device Modulator
 12. Low Power Age Station
- **Process Documentation Improvements**
 13. Manufacturing Process Workstation Documentation
 14. UID, RFID Process Automation

A quad chart briefly describing each project has been provided:

Spot Welding Improvement



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PROBLEM

Low welding of the gird & when installation into a critical joint of the manufacture of power grid tubes. Production waste occurs every 30 days, increased total time used to build the tubes in the field under inside operating conditions. This caused spot welding equipment in 1970- years old used also in the old technology for the use and consequently build the equipment remaining your waste.

OBJECTIVE or SOLUTION

Eliminate the failures due to the manufacturing according to the increase productivity, quality and jobs.

APPROACH

Use of technology innovation into process through purchase of production spot welder.

BUSINESS STRATEGY

- Job: DLA, Ship
- Location: DLA-NSCC
- Performing Organization: DLA-NSCC, CP-Clark, DLA-NSCC, NSWC-CDD, ILL
- Program #: Wp 2000 - September 2000
- Grant Number: - Wp 2000 & Wp 2000/00A

Project #00		FWS	FWS	FY11
DLA (MAG)		0-0	0	0

LEVERAGED EFFORTS

- Industry/Project related Research and Development.
- Workshop

BENEFITS / MANAGERIAL RELEVANCE

Long term effective and sustainable products produced through improvements in manufacturing process improvements. Additional results are 100% drop in scrap rate on the manufacturing floor, 100% yield cycle time reduction at the facility.

IMPLEMENTATION

Good 3d Service Applications, price comparison include:
 ICS-3, ICS-40, ICS-70, ICS-80, ICS-90, ICS-100, ICS-110,
 ICS-120, ICS-130, ICS-140, ICS-150, ICS-160, ICS-170, ICS-180, ICS-190, ICS-200

Business Development & Operations Department

Inert Product Line Pump Stations



W- Inert Pump Station
 Support Base, East-Central Texas
 April 11 - Power Out May 1



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BUSINESS STRATEGY

- Joint: DLA, Navy
- Executive: DLA-NSCC
- Producting Original concept: DLA-NSCC, CH-2000, DLA-SMCC, NSMCC Cruise
- Phase 1: May 2009 - November 2009
- Goal: Deliverable to the DLA
 Phase 2

Funding Q40	FY08	FY09	FY10	FY11
DLA (R-40)	Q40	Q09	Q08	Q06

PROBLEM

Low power products are pumped in inertial atmosphere which creates a block state on the tubes which requires additional processes (partial de-aerating) for removal.

SUBJECTIVE OR SOLUTION

Identify the need for de-aerating of the low power tubes by utilization of an inert atmosphere during process.

APPROACH

Build the low power pump stations within a nitrogen atmosphere.

LEVERAGED EFFORTS

- Industry Contributions to Phase 1 (FY08, FY09)
- Industry Partner Industrial Research and Development.

BENEFITS / WARRIORFIGHTER RELEVANCE

Low tube efficiency and maintenance products provided through improvements in manufacturing process improvements. It is anticipated that because of the de-aerating process being utilized, a reduction in the cycle time and chemical costs will be achieved at the manufacturing facility.

IMPLEMENTATION

KCS-1, NSCC-100JUST-01, NSCT-004, PNT-1000000, PNT-004, PPS-005

Residual Gas Analyzers



TH-119C Helicopter Support: Radar, SW & Communication Systems - Power Grid Tubes



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PROBLEM
A manufacturer currently utilizes a tested method of pumping iron powder products which shows not necessarily maximize the gross profit in the tubes after the thermal pumping process. This rate may have been the most appropriate in the conditions of the individual tubes used in historical aircraft and ultimately requires the need for additional processing to clear the "young" condition of the tubes.

OBJECTIVE or SOLUTION

Eliminate the additional processing after historical after the thermal pumping of power grid tubes. Adding the ability to utilize gas conditions inside the vacuum envelope to be measured while it's being pumped.

APPROACH

Assemble one pump station while re-amping the system. Once the station is fully operational, upgrade remaining stations one at a time making the impact on production.

BUSINESS STRATEGY

- Joint: BILA, Navy
- Executive: BILA-DECH
- Performing Organization: BILA-DECH, CH-119C, BILA-DECH, BILAC Comm, L&E
- Phase 2: May 2008 - Dec 2010

Phase 2

Funding (M)	FY08	FY09	FY10	FY11
BILA (MSP)	600	610	610	60

LEVERAGED EFFORTS

- Industry Contribution: Phase 1 (BILAC FY08)
- Industry Partner: Internal Research and Development
- Industrial Firm: Innovation Fund

BENEFITS / WORTHWHILE RELEVANCE

Long term affordable and maintainable products provided through improvements in manufacturing process improvements. Anticipated benefits are 10% increase in pump station capacity, 10% improvement in final passability, and increased product reliability.

IMPLEMENTATION

PCS-3, BILAC-100, JUST-30, M&T-200, FY07-2008, FY07-08, FY07-09, BILACOMM, BILACOMM-FY11, 2008-20

Automated Process Welding



T1 - Service (A-REF) Impact:
Radar, EW
& Communication Systems
Threats

BUSINESS STRATEGY

- Joint: DLA, Navy
- Executive: DLA-OSCR
- Performing Organization: DLA-OSCR, L3 ESB, DLA-OSCC, IBM/CiCrao
- Phase 2: May 2009 - Feb 2010
- Dual Subcontractors: IBM & Wyle Shupper (DLA P# 2)

Funding (FY)	FY09	FY10	FY11
DLA (OSF)	00	01.6	00

PROBLEM

Three metal joining technologies are utilized in Superflex assembly. The most labor intensive and costly assembly process is the spot welding of column components, and other similar sub-assemblies, where long series of joints are required. Substrate spot welding is currently performed manually, by pushing a foot pedal to activate the process.

OBJECTIVE or SOLUTION

Automates of individual unit processes and integrity in long to custom welding manufacturing consistency. Superflex quality and individual consistency from them, and can only be accomplished by means of an automated welding system.

APPROACH

Implement automated welding systems. The proposed automated system will be composed of a number/brand, power supply, comprehensive Windows based, programmable process controller and Six Sigma quality control recording software.

LEVERAGED EFFORTS

- Industry Partner: Inland Research and Development
- Inland State Innovation Fund
- DLA Wyle Shupper Fund

BENEFITS / WARFIGHTER RELEVANCE

Long term benefits and immediate practical benefits include: improvements in manufacturing process repeatability, such as automation will shorten and fine electronic entry, storage and statistical analysis of operations will replace visual inspection. The program column manufacturing cycles will be reduced by 50%. Physical / Visual inspection of units will be eliminated and the current manual quality data entry will be replaced by real-time automatic records.

IMPLEMENTATION

FY10-52,TPS-43,TPS-13,TPS-15,TPS-44,JUSTICE,OSCR, L3, OSF-3,OSF-5,OSF-5,OSF-10,TPS-44,OSF-43,OSF-42,OSF-41

Cathode Cutting



The - In the picture (upper) Army, Army, Construction by the U.S. - Power Grid. This is



AEGIS CRUISER

PROBLEM

Cathode cutting tubes does not meet the need for clean interiors requirements for cutting cathodes used in cutting tubes. Manual and fixed cutting operations are being performed to cut the cathodes to the required specifications.

OBJECTIVE OR SOLUTION

Replace current tubes with a modern procedure tubes.

APPROACH

Modify the current tubes with cutting for the replacement. Once the new tubes have been received the cutting tubes will be removed and the material will be finished.

BUSINESS STRATEGY

- Job: DLA, Army
- Executive: DLA-9-1001
- Performing Organization: DLA-9-1001, CPT-1001, DLA-9-1001, DMC-Cross
- Phase 2: May 2008 - Oct 2008
- Goal: Submitted to the DLA, Army, Phase 2

Ordering OIG	FY08	FY09	FY10	FY11
DLA (08-0)	011	00	00	00

LEVERAGED EFFORTS

- DLA-9-1001 Fund
- Included from Innovation Fund
- Industry Perform Internal Research and Development

BENEFITS / SHORT-TERM RELEVANCE

Long term affordable and maintainable products provided through improvements in manufacturing processes improvements, distribution equipment, operations with more 20% reduction in cathode weight, a 20% reduction in cathode manufacturing cycle time and a 20% increase in cathode cutting capacity.

IMPLEMENTATION

DC-3, DMC-100, CPT-1001, CPT-08, CPT-09, CPT-10

Receiver Protector Glass Window Obsolescence



70 - Various projects
 Support: Receiver for
 Project - Receiver
 Hardware



PROBLEM

Microelectronics, Type-2000 glass compatible with electronic tube
 bracket processes is no longer available.

OBJECTIVE or SOLUTION

Develop and qualify a suitable microelectronics technology
 to replace the existing Type-2000 glass.

APPROACH

Develop a commercial ready solution of providing glass with
 electronic performance equivalent to the Corning Type-2000
 glass. Develop an alternate bracket process compatible with
 current manufacturing processes of Type 2000 glass. Alternate bracket
 process must not cause the glass to degrade performance.

BUSINESS STRATEGY

- Joint: MJA, Ring
- Executive: MJA-NSCC
- Performing Organization: MJA-NSCC, CR - 2000,
 MJA-NSCC, NSMC Crm, L-3 EMS
- Phase 2: May 2009 - Aug 2011
- Phase follows CR2 Title III Studies - FY10
- CR 2000 Issues had also applicable to L-3 EMS
 programs

Funding GPO	FY08	FY10	FY11
MJA (Qualification)	\$200	\$200	\$200

LEVERAGED EFFORTS

- MJA NSD
- Title III
- Industry Partner Internal Research and Development

BENEFITS / WORTHWHILE RELEVANCE

Long term affordable and maintainable products provided through
 improvements in manufacturing process improvements, and
 improved material availability.

IMPLEMENTATION

Flight, Program, Logistics, Installation, SPO-NSC, Profile

Receiver Protector Glass Window Obsolescence

Feb 8 2009

Frequency Agile Magnetron Motors

TH - Radar (Next) Impact Radar, EW & Communication Systems - Magnetrons



PROBLEM

High speed DC motors on frequency agile magnetrons allow for the right change of RF output frequency for the radar. The manufacturer does not stock for advance purchase of motors in anticipation of war demand. There are only two U.S. manufacturers that make HPC and T-motors. Lead times suffer as a result.

OBJECTIVE or SOLUTION

Have motor inventory on hand and be able to fulfill quantities in a timely manner to demand.

ATT BOMCH

Identify consumption and inventory requirements demand for these motors over a 5-year period and to request funding for buy-in materials to decrease delivery lead times and improve capability.

BUSINESS STRATEGY

- Joint: DLA, Navy
- Executive: DLA-0502
- Performing Organization: DLA-0502, ON - 0502, DLA-0502, INSEC Cyber
- Phase 2: May 2010 - Sept 2012

Phase 2

Funding (M)	FY08	FY09	FY11
DLA (War Support)	0M	0M	0M

LEVERAGED EFFORTS

- Industry Partner: Infrared Research and Development
- War Support Fund

BENEFITS / WARRIOR RELEVANCE

Long term affordable and maintainable products provided through direct jobs or pre-placement of materials to increase maintainability, reduce lead times, and support the surge capability.

IMPLEMENTATION

- ANM00100: Stocking and Magnetron motor on the B-52 aircraft.
- ANM00100: Contract Task II Torpedo Following Radar on C-130's
- ANM00100: Torpedo Following Radar on subject C-130's

Business Model: Joint Cost/Program Proprietary

Supply Chain Visibility Technology



TN - Service (A/NNAF) Impact: Radar, EW & Communication Systems • Power Grid Tubes, Magnetrans, Receiver Protectors, Thyratrons

PROBLEM
Ability to support both microwave tubes and semiconductor components with a single data backbone from its key suppliers allowing long lead times, manufacturing delays, production forecasts, accurate pricing, lower production pricing information and immediate management feedback B2A and Industry.

OBJECTIVE or SOLUTION

Design and implement an automated solution to provide visibility of critical supply chain information to manufacturer's production sites, sites of origin, pending shipments, forecast history, on hand inventory, on order quantity, repair scheduling, etc. that is captured in real time from B2A and manufacturer's information systems.

APPROACH

Identify or leverage off products offered for B2A products such as B2A-visibility kit; options to obtain existing capabilities. Deploy Industry value added product.

BUSINESS STRATEGY

- Jobs: B2A, Navy, Air Force
- Executive: B2A/B2C
- Performing Organization: B2A/B2C, B2C/Cross, L&L, C&S, L&J B2B, C&I - B2B,
- Phase 2: May 2008 - June 2010
- Small Subcontract to B2A/B2C

Phase 2

Feeding C&I	FY08	FY09	FY10	FY11
B2A (M&O)	000	000	000	00

LEVERAGED EFFORTS

- Industry Partner: Industrial Research and Development
- Industrial B2B Information Fund
- B2A/B2B Funding

BENEFITS / VENDOR/ENTER RELEVANCE

Long term efforts to reallocate production production through improvements in cutting, manufacturing production planning, reduction of production line breaks, increased quality and reduction in lead times.

IMPLEMENTATION

Based T4-Service Applications, prime contractors include:
 AF: AMERICA, AMCC, FPA-18
 NAVY: JCSIS, L&J-C&I, L&J-SE, STANBROOK MARINE
 AIRNT: P&S&I, P&S&I, S&I/COM

Business Operations & Supply Proprietary

Automated Low Power Test Set



T4 - Service (Watch) Inspection: Radar, SW & Communication Systems - Power Grid Tubes.



BUSINESS STRATEGY

- Joint: MJA, Navy
- Customers: MJA-BSCC
- Performing Organizations: MJA-BSCC, CP-ELIANG, MJA-BSCC, NNSC Class
- Phase 2: May 2010 - Jan 2011

Phase 2

Funding (EO)	FY08	FY09	FY10	FY11
OLA (Year Support)	00	00	00	0000

PROBLEM

Current loading procedures utilize 50+ year old equipment requiring the tubes to be moved between tubes (T) that introduce manufacturing tolerances to change. Current test and fix times for maintenance 20% of test time.

OBJECTIVE OF SOLUTION

Establish a new test and fix rate procedure that is required to be efficient (reducing the time) and provide a complete picture of the tube manufacturing.

APPROACH

Utilizing the War Shopper Program as the primary resource approach. To increase through put and improve process yields in individual test and fix can be used in lieu of 3 separate, 50+ year technology, by necessity.

LEVERAGED EFFORTS

- Industry Customers: MJA-BSCC, NNSC Class
- FPOB Contributions: Phase 1 (2008-2010)
- Industry Partner: Infrared Thermal Tech and Development
- War Shopper

BENEFITS / WIN-WIN / OTHER RELEVANCE

Long term efficiencies and sustainable practices provided through improvements in manufacturing process improvements, and materials. Anticipated results are increased production capacity for the life of existing systems, elimination of change from existing product from one test and fix method, elimination of operator variations improving product quality, increased product reliability life, generation of test time 20% with.

IMPLEMENTATION

Systems affected: ECA-1, NNSC-100, NNSC-20, NNSC-20A, NNSC-20A-FIT-10000, FIT-30, FIT-30

Parallel Device Modulator



70 - Various parallel inputs: Radar, Gun
 & Gun interface by ship 1 - Type 9000

BUSINESS STRATEGY

- Joint: DLA, Navy
- Executive: DLA-DSCA
- Performing Organization: DLA-DSCA, L-3 ESD, DLA-DSCC, BDMC Corp
- Phase 2: May 2008 - TBD upon completion of Phase 1
- Deal Submitted to War Stopper Bill

Phase 2

Funding (M)	FY06	FY07	FY08	FY09	FY10	FY11
DLA (M)	0	0	0	0	0	0

PROBLEM

Threats are constant for 6-24 hours of potential savings per hour that extend into conditions to generate reliability. This feedback leads the manufacturer's ability to meet surge requirements.

OBJECTIVE OR SOLUTION

Objective is to reduce manufacturing cycle time by 10 to 14 days in and increase surge capacity. The deployment of this equipment in theaters will increase surge capacity and potentially reduce manufacturing cycle time by 30%.

APPROACH

Reduce the aging capacity by converting it currently located cabinet into a modular capable of containing 2 or 3 DLA Systems simultaneously.

LEVERAGED EFFORTS

- DLA R&D fund
- DLA War Stopper Fund
- Industry Partner National Research and Development

BENEFITS / WARFIGHTER RELEVANCE

Long term efforts and maintainable products provided through improvements in manufacturing process improvements, infrastructure, equipment, upgrades. The deployment of this equipment in theaters will increase surge capacity and reduce manufacturing cycle time by 30% and enhance process documentation.

IMPLEMENTATION

TPS-CLAPS-138145, TPS-44, JMWAVE, TPS-3852, TPS-258, TPS-44, TPS-2-ARC, JWC-82

Manufacturing Process Workstation Documentation



Tr - Service (M1A2)
 Lynch State, 8th Communications
 Squadron - Power Grid Tubes



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PROBLEM

In process documentation, drawings, assembly routines and procedures, are generated manually by each individual employee when times to allow to the re-use of documentation without verification of the current revision level leading to reduced throughput and increased scrap.

OBJECTIVE or SOLUTION

Install touch screen systems in the power grid manufacturing area to eliminate the possibility of an employee making "down row" documentation during the manufacturing and testing process.

APPROACH

Highly leverage off CPT Traveling Wave Tube process documentation effort. Work stations to have access to real-time testing results.

BUSINESS STRATEGY

- Jeter: DLA, Navy
- Executive: DLA DSCR
- Performing Organization: DLA-DSCR, CPT-Hvac, DLA-DSCC, NSWC Crane
- Phase 2: May 2009 - September 2010
- Deal submitted to ODF DAA Phase 2

Phase 2	Phase 1	Phase 2	Phase 1
DLA (2009)	DLA (2008)	DLA (2008)	DLA (2008)
		\$25	\$0

Business Structure & Company Registration

IMPLEMENTATION

Based Tri-Services Applications, prime examples include:
 AF: ABRAM, AMRACS, FPS-95
 NAVY: AEGIS, HARPOON, BRN-25, STANDARD MISSILE
 ARMY: PATRIOT, PAC-3, SATCOM

LEVERAGED EFFORTS

- CPT Traveling Wave Tube process documentation
- Jetway Patriot Internal Research and Development

BENEFITS /WAREIGHTER RELEVANCE

Long term affordable and sustainable products provided through improvements to manufacturing process documentation and testing improvements. It is anticipated that scrap related to improper documentation will be minimized.

4.2 Project Rationale

The following provides the cost and expected benefits of the proposed projects:

Process Improvement/Automation

<u>Project</u>	<u>Estimated Cost</u>	<u>Benefits</u>
1) Spot Welding Improvement	\$40,000	<ul style="list-style-type: none"> • Sustained capability for life of existing systems • 90% reduction in scrap • 10% increase in capacity • 10% reduction in welding time
2) Inert Atmosphere Product Line Pump Stations	\$155,000	<ul style="list-style-type: none"> • Annual savings in materials and labor of ~\$10,000 per year • 5% reduction in lead time • 3% reduction in process scrap
3) Residual Gas Analyzers	\$185,000	<ul style="list-style-type: none"> • 10% increase in equipment capacity • 5% improvement in yield • Improved product quality
4) Automated Process Welders	\$ 115,000	<ul style="list-style-type: none"> • >99% welding process yield • Seam welding of Thyatron cathode cycle time reduced 50% • Reduced labor/visual inspection • Reduced data entry errors
5) Cathode Cutting	\$11,000	<ul style="list-style-type: none"> • Reduce processing time • Increased quality

Strategic Material Sourcing

<u>Project</u>	<u>Estimated Cost</u>	<u>Benefits</u>
6) Receiver Protector Glass Window Obsolescence	\$500,000	•Material no longer available – creates an alternate source
7) Frequency Agile Magnetron Motors	\$1,000,000	• Increase availability of motors – currently diminishing capability
8) Receiver Protector Point Contact Schottky Diode	\$250,000	•Increase availability of diodes – currently 1 supplier with diminishing capability

Supply Chain Visibility

<u>Project</u>	<u>Estimated Cost</u>	<u>Benefits</u>
9) Supply Chain Visibility Technology	\$200,000	<ul style="list-style-type: none">• Reduce lead time by 15%• Reduce the occurrence of line shut down• Increase Quality• Decrease late shipments

Sustain/Replace Aging Equipment

<u>Project</u>	<u>Estimated Cost</u>	<u>Benefits</u>
10) Automated Low Power Test Set	\$315,000	<ul style="list-style-type: none">• Increase repeatability• Retained production capacity – currently at risk• Elimination of in process damage• Improved product quality
11) Parallel Device Modulator	\$115,000	<ul style="list-style-type: none">• Reduce manufacturing cycle time from 14 to 10 days• In tandem with automated welding can reduce cycle time 33%
12) Low Power Age Station	\$351,000	<ul style="list-style-type: none">• Retained production capability• 15% reduction in lead time• Reduce equipment down time – now at 30%• 40% increase in aging capacity• Increased product repeatability

Process Documentation Improvements

<u>Project</u>	<u>Estimated Cost</u>	<u>Benefits</u>
13) Manufacturing Process Workstation Documentation	\$40,000	<ul style="list-style-type: none">• Reduced scrap• Reduced lead time• Increased throughput• Increased quality
14) UID, RFID Process Automation	\$75,000	<ul style="list-style-type: none">• Reduce lead time by 4-6 days• Reduce data errors• Automate and reduce processing steps

4.2 Project Submittal Strategy

We have identified 4 potential funding sources for the various proposed projects: Industrial Base Innovation Fund (IBIF) II BAA, DLA Warstopper BAA, DLA R&D 2009 Project Call (“Headroom”), and the DPA Title III Program. The details for the IBIF II BAA and DLA Warstopper BAA project submittals are provided as appendices. The following provides a strategy for each proposed project in terms of these 4 potential funding sources. Each project has funding sources identified in a time phased manner.

4.2.1 IBIF II Submittal Strategy

The following summarizes those projects that are to be submitted for IBIF funding consideration. The projects selected for IBIF submittal are in bold. Due to IBIF restrictions, the project team requested that the manufacturers submit their project ideas in response to the BAA. LMI will submit the Supply Chain Visibility Technology project proposal. Due to IBIF restrictions, projects are limited to a no more than a year in duration and funding limit of \$1M.

Industrial Base Innovation Fund II

<i>Project</i>	<i>Duration</i>	<i>Funding Request</i>
<u>Process Improvement/Automation</u>		
1) Spot Welding Improvement	3 Mos	<u>FY09</u> \$40 K
2) Inert Atmosphere Product Line Pump Stations	4 Mos	\$155K
3) Residual Gas Analyzers	5 Mos	\$165K
4) Automated Welding Process	9 Mos	\$115K
5) Cathode Cutting	3 Mos	\$11K
<u>Strategic Material Sourcing</u>		
6) Receiver Protector Glass Window Obsolescence	24 Mos	-
7) Frequency Agile Magnetron Motors	60 Mos	-
8) Receiver Protector Point Contact Schottky Diode	12 Mos	-
<u>Supply Chain Visibility</u>		
9) Supply Chain Visibility Technology	11 Mos	\$200K
<u>Sustain/Replace Aging Equipment</u>		
10) Automated Low Power Test Set	8 Mos	-
11) Parallel Device Modulator	9 Mos	-
12) Low Power Age Station	18 Mos	-
<u>Process Documentation Improvements</u>		
13) Manufacturing Process Workstation Documentator	4 Mos	\$40K
14) UID, RFID Process Automation	9 Mos	\$75K
Total		\$751K

4.2.2 DLA Warstopper Program Submittal Strategy

The following summarizes those projects that are to be submitted for DLA Warstopper Program funding consideration. The projects selected for Warstopper submittal are in bold. NSWC – Crane will provide support to the manufacturers for project submittal. The DLA Warstopper Program allows for multi-year funding requests.

DLA Warstopper Program

<i>Project</i>	<i>Duration</i>	<i>Funding Request</i>		
		<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
<u>Process Improvement/Automation</u>				
1) Spot Welding Improvement	3 Mos	\$40 K	-	-
2) Inert Atmosphere Product Line Pump Stations	4 Mos	-	-	-
3) Residual Gas Analyzers	5 Mos	-	-	-
4) Automated Welding Process	9 Mos	\$90K	\$25K	-
5) Cathode Cutting	3 Mos	-	-	-
<u>Strategic Material Sourcing</u>				
6) Receiver Protector Glass Window Obsolescence	24 Mos	-	-	-
7) Frequency Agile Magnetron Motors	60 Mos	\$200K	\$500K	\$300K
8) Receiver Protector Point Contact Schottky Diode	12 Mos	\$75K	\$175K	-
<u>Supply Chain Visibility</u>				
9) Supply Chain Visibility Technology	11 Mos	-	-	-
<u>Sustain/Replace Aging Equipment</u>				
10) Automated Low Power Test Set	8 Mos	-	\$50K	\$265K
11) Parallel Device Modulator	9 Mos	-	\$115K	-
12) Low Power Age Station	18 Mos	\$200K	\$451K	-
<u>Process Documentation Improvements</u>				
13) Manufacturing Process Workstation Documentation	4 Mos	-	-	-
14) UID, RFID Process Automation	9 Mos	-	-	-
Total		\$605K	\$1,316K	\$565K

4.2.3 DPA Title III Program Submittal Strategy

Only one project was deemed as a potential DPA Title III Program candidates The submittal process will need to be researched further for proper consideration by the DPA Title III program.

DPA Title III

<i>Project</i>	<i>Duration</i>	<i>Funding Request</i>			
		<i>FY10</i>	<i>FY11</i>	<i>FY12</i>	<i>FY13</i>
<u>Process Improvement/Automation</u>					
1) Spot Welding Improvement	3 Mos	-	-	-	-
2) Inert Atmosphere Product Line Pump Stations	4 Mos	-	-	-	-
3) Residual Gas Analyzers	5 Mos	-	-	-	-
4) Automated Welding Process	9 Mos	-	-	-	-
5) Cathode Cutting	3 Mos	-	-	-	-
<u>Strategic Material Sourcing</u>					
6) Receiver Protector Glass Window Obsolescence	24 Mos	\$200K	\$700K	\$400K	\$200K
7) Frequency Agile Magnetron Motors	60 Mos	-	-	-	-
8) Receiver Protector Point Contact Schottky Diode	12 Mos	-	-	-	-
<u>Supply Chain Visibility</u>					
9) Supply Chain Visibility Technology	11 Mos	-	-	-	-
<u>Sustain/Replace Aging Equipment</u>					
10) Automated Low Power Test Set	8 Mos	-	-	-	-
11) Parallel Device Modulator	9 Mos	-	-	-	-
12) Low Power Age Station	18 Mos	-	-	-	-
<u>Process Documentation Improvements</u>					
13) Manufacturing Process Workstation Documentation	4 Mos	-	-	-	-
14) UID, RFID Process Automation	9 Mos	-	-	-	-
Total		\$200K	\$700K	\$400K	\$200K

4.2.4 DLA R&D Project Call Submittal Strategy

During the course of our study, another potential funding source emerged as the DLA R&D Project Call (“Headroom”) activity. Work was started on proposing an Electron Tube project from DSCC. The candidate projects to be included in this effort, along with the phased funding, are in bold below.

DLA R&D Project Call

<i>Project</i>	<i>Duration</i>	<i>Funding Request</i>		
		<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
<u>Process Improvement/Automation</u>				
1) Spot Welding Improvement	3 Mos	\$40 K	-	-
2) Inert Atmosphere Product Line Pump Stations	4 Mos	\$145K	\$10K	-
3) Residual Gas Analyzers	5 Mos	-	-	-
4) Automated Welding Process	9 Mos	\$90K	\$25K	-
5) Cathode Cutting	3 Mos	\$11K	-	-
<u>Strategic Material Sourcing</u>				
6) Receiver Protector Glass Window Obsolescence	24 Mos	\$270K	\$450K	\$200K
7) Frequency Agile Magnetron Motors	60 Mos	-	-	-
8) Receiver Protector Point Contact Schottky Diode	12 Mos	-	\$75K	\$175K
<u>Supply Chain Visibility</u>				
9) Supply Chain Visibility Technology	11 Mos	\$50K	\$100K	-
<u>Sustain/Replace Aging Equipment</u>				
10) Automated Low Power Test Set	8 Mos	-	-	-
11) Parallel Device Modulator	9 Mos	-	\$115K	-
12) Low Power Age Station	18 Mos	\$200K	\$451K	-
<u>Process Documentation Improvements</u>				
13) Manufacturing Process Workstation Documentator	4 Mos	\$40K	\$10K	-
14) UID, RFID Process Automation	9 Mos	\$75K	-	-
	Crane/LMI Project Management	\$250K	\$300K	\$150K
Total		\$1,125K	\$1,100K	\$900K

Appendix 1: BCA Template

1.0 Project Title:

2.0 Project Functional Area: (Manufacturing, Supply Chain, Quality, or Design)

3.0 Background /Problem Statement:

This section introduces the problem(s) being addressed by the proposed project and answers (at a high level) the questions for “Why?” the project should be conducted. Describe the current business environment and the specific sustainability challenges that this project will address.

4.0 Proposed Project

4.1 Goals and Objectives

Explain the goals and objectives of the proposed project and how it supports the DLA’s mission of sustaining high powered microwave tubes.

4.2 Project Description

Describe the details of project and associated activities that need to be accomplished to meet the goals and objectives of the project.

4.3 Project Scope

Describe what is and is not being considered in the scope of the project. Identify key stakeholders, including what organizations and functions will be affected, and what activities are key to its failure or success.

4.4 Assumptions

Assumptions are necessary in project evaluation as they are explicit statements used to describe present and expected future behavior upon which the benefits of the project are based and any assumptions associated with financial analysis. Examples include future demands, impact of other known initiatives or weapons program, future availability of sub-components and raw materials, etc.

4.5 Costs

- 4.5.1 **Project Costs** – Costs for conducting the proposed project.
- 4.5.2 **Investments** - Costs required beyond the project phase to introduce into operational use the new capability; to procure initial, additional, or replacement equipment; to initially train/re-train workers; or to provide for major modifications of an existing capability. They exclude research, development, test and evaluation, and recurring costs such as operation and maintenance costs
- 4.5.3 **Operational/Maintenance** – Recurring costs for operations and maintenance of the new capability.

4.6 Anticipated Benefits/Metrics

Provide relative performance metrics of effectiveness and efficiency of activities, operations, and processes in support of achieving DLA’s goal of improved sustainability of high-powered microwave tubes. Of key importance are which performance metrics will be impacted by successful completion of the project compared against the status quo.

Examples of performance metric include lead time, manufacturing throughput, cost, yield, etc.

Provide a baseline that quantifies/characterizes the current business environment using the stated performance metrics. Estimate the impact on potential benefits derived from the envisioned end-state system after project implementation relative to certain specified performance metrics.

4.7 Project Schedule/Milestones

Identify key project activities and milestones with associated expected duration or due dates.

4.8 Project Time Phased Budget

Source/FY (\$ in Millions)	FY 0	FY +1	Add columns as needed
R&D			
(show other funding if appropriate)			

4.9 Project Participants/Key Personnel

Identify all major organizations included on the project team along with the key members of each organization and their roles.

5.0 Implementation Strategy:

Describe how the results of the project will be implemented and by whom.
Describe any implementation risk and external dependencies that may affect the success of achieving full benefit of the project results.

Appendix 2: IBIF II BAA Proposal Instructions

The following is the IBIF II BAA Proposal Instructions as posted at
<https://www.dodmantech.com/ibif/IBIF2.pdf>

Notice Type: Combined Synopsis/Solicitation

Posted Date: January 13, 2009

Response Date: Mar 16, 2009 3:00 pm Eastern

Archiving Policy: Automatic, 15 days after response date

Archive Date: March 31, 2009

Original Set Aside: N/A

Set Aside: N/A

Classification Code:A -- Research & Development

NAICS Code:541 -- Professional, Scientific, and Technical Services/541712 -- Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology)

Synopsis:BAA 0003-09 BROAD AGENCY ANNOUNCEMENT (BAA) RESEARCH AND DEVELOPMENT FOR DEFENSE LOGISTICS AGENCY (DLA) INDUSTRIAL BASE INNOVATION FUND

POINT OF CONTACT: Mr. John Dormer, Contracting Officer Defense Supply Center Philadelphia

Industrial Base Innovation Fund II

Solicitation Number: BAA000309

Agency: Defense Logistics Agency

Office: DLA Acquisition Locations

Location: DES Contracting Services Office Philadelphia

DLA Contracting Support Office DCSO-P

700 Robbins Avenue, Building 26-1 Philadelphia, PA 19111 john.dormer@dla.mil

1. BACKGROUND

The Defense Logistics Agency (DLA) seeks interested parties to propose innovative manufacturing technology and industrial base projects under the Industrial Base Innovation Fund Program (IBIF). The Congressional Report 110-335 "directs that the highest priority on investments be made in areas that support accelerating the surge production of items likely to be required in near-term military operations and in areas to preserve or expand diminishing critical defense industrial base. The Defense Logistics Agency is acting on behalf of the Department of Defense in executing the IBIF. Accordingly, all proposers are encouraged to submit proposals that will meet Congressional Direction. The scope of the IBIF program includes all of the manufacturing technologies supporting the Aviation, Maritime, Land and Troop Support Supply Chains. The goal of the IBIF program is to implement significant manufacturing technology improvements into these supply chains. Subject to availability of funds, a total Government investment of about \$10 million during Fiscal Year 2009 is planned to fund IBIF projects under this BAA. The expected cost range for proposals submitted under this BAA is up to \$1,000,000 with a period of performance of up to 12 months. The desirable outcome of a completed project is an advanced manufacturing capability that is implemented in the industrial base and supporting one or more current systems or troop support items. Contracts awarded under this proposal will be cost type contracts. FAR 16.301-3 states that a cost-reimbursement contract may be used only when the contractor's accounting system is adequate for determining costs applicable to the contract. Offerors must submit documentation showing that they do have adequate accounting systems. Proposals without this documentation will not be evaluated. The vision for the MANTECH Program is to enable a responsive, world-class manufacturing capability to affordably meet the warfighters' needs throughout the defense system life-cycle. The MANTECH Program matures and validates emerging manufacturing technologies to support low-risk implementation in industry and DoD facilities, e.g., depots and shipyards. The Program addresses production issues from system development through transition to production and sustainment. Investments are driven by defense-essential needs. The Program focuses on manufacturing-related needs that exist across industry sectors and throughout the product life-cycle. The primary benefit to the industrial base comes from the emphasis on transfer of the technologies from the initial demonstration application to the rest of industry. The IBIF program is focusing on the Production and Sustainment phases of the Development life cycle. The emphasis is on rapid, low-cost, high-quality manufacturing; efficient factory operations and supplier interactions; the decoupling of unit cost from production volume; improving surge capability for near-term military operations and in areas to preserve or expand diminishing critical defense industrial base; and reduction of foreign source dependence for critical defense Materiel. In the support and sustainment phase, the

concentration is on efficient manufacturing and maintenance processes, rapid, low-cost spares, and replacement parts acquisition.

2. GENERAL PROPOSAL SUBMISSION INFORMATION

Proposers must submit an original and eight (8) copies of full proposals and an electronic copy on a CD-ROM referring to BAA 0003-09 by 3:00 PM, local Philadelphia time on or before 16 March 2009 to the Point of Contact listed above in order to be considered. No additional information is available, nor shall a formal RFP or other solicitation regarding this announcement be issued. Requests for same shall be disregarded. The Government reserves the right to select for award all, some or none of the proposals received. This is an unrestricted acquisition. All responsible sources capable of satisfying the Government's needs may submit a proposal which shall be considered by DLA. Historically Black Colleges and Universities (HBCU) and Minority Institutions (MI) are encouraged to submit proposals and join others in submitting proposals; however, no portion of this BAA shall be set aside for HBCU and MI participation due to the impracticality of reserving discrete or severable areas of research in this technology. Large Business concerns are required to submit a Small Business/Small Disadvantaged Business Subcontracting Plan. For purposes of this acquisition, the size standard is 500 employees Standard Industrial Classification (SIC) 3462. All correspondence and questions on this solicitation, including request for information on how to submit a proposal to this BAA, should be directed to the POC at the top of the BAA; e-mail is preferred. Proposals may NOT be submitted by fax or e-mail; any so sent shall be disregarded.

3. TECHNICAL AREAS OF INTEREST

The primary focus of IBIF is the industrial base. The areas of interest align with the DOD supply chains: Aviation, Land, Maritime, and Troop Support. Supply chains are not directly correlated to a Military Service (Army, Navy and Air Force). For example, all missiles are included in the Aviation supply chain. If there is a missile related proposal, it should identify the specific missile/weapon system and the proposal's position in the supply chain (prime, subcontractor, etc) to implement the IBIF proposal results. The Troop Support Supply Chain includes Clothing and Textile Products (e.g. Uniforms, Body Armor etc.), Combat Rations (e.g. Meals-Ready-to-Eat, Unitized Group Ration, etc.), Construction and Equipment (e.g. Barrier material), and Medical. The technology thrusts of interest are Metals, Composites, and Electronics. The highest priority will be placed on investments made in areas that support accelerating the surge production of items likely to be required in nearterm military operations and in areas to preserve or expand diminishing critical defense industrial base. At lower tiers of the industrial base, it is understood that manufacturing technologies may cut across these Supply Chains or technologies, however, each offeror should clearly have identified a target application that will implement the proposed technology. Proposals without a clearly identified target application will not be considered for award. All manufacturing processes and systems are eligible for consideration, including but not limited to, new/alternative materials; faster, higher quality unit processes; reduction in process variation through advanced process control systems; tighter coupling of the supply chain through advanced information technology; establishing a reliable domestic capability to alleviate dependence on an unreliable foreign source; and implementing dual use (equally capable for civil and military applications) manufacturing capability to be available to DOD during time when a surge in production is needed; support accelerating the surge capabilities of items likely to be required in near term military operations and in areas to preserve or expand diminishing critical defense industrial base or eliminate foreign source dependence. . Equal consideration will be given to all approaches that support accelerating the surge production of items likely to be required in near-term military operations and in areas to preserve or expand diminishing critical defense industrial base.

4. EVALUATION CRITERIA

To be eligible for award of a cost contract, all prospective offerors must meet certain minimum standards pertaining to financial resources, have an accounting system approved for performing a cost type contract, demonstrate proof of an approved accounting system, ability to comply with performance schedules, and a prior record of past performance, integrity, organization structure, experience, operational controls, technical skills, facilities and equipment. For additional information and guidance concerning qualifications and standards for responsibility of prospective contractors, please refer to Part 9 of the Federal Acquisition Regulation (FAR). As soon as the proposal evaluation is completed, the proposer will be notified of selection or non-selection. Selectable proposals will be considered for funding; non-selectable proposals will be destroyed. (One copy of nonselectable proposals may be retained for file purposes). Not all proposals deemed selectable will be funded. Decisions to fund selectable proposals will be based on funds availability and merits of the proposal. Proposals may be considered for funding for a period of up to one year. The Government reserves the right to select for award all, some or none of the proposals received. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. Evaluation of proposals shall be accomplished through a detailed review of each proposal, using the following criteria listed in descending order of relative importance:

- (1) Scope, metrics for measuring success, time frame for implementation and expected benefits of project implementation
 - Address the target applications of the technology
 - Address how the proposal will meet short term needs of the Department of Defense
 - Define and describe the metrics for measuring project success
 - Detail the expected benefits of implementation to the target application and applications beyond the initial target
 - Address how the project implements a dual use capability; mitigates a surge requirement, support accelerating the surge capabilities of items likely to be required in near-term military operations and in areas to preserve or expand diminishing critical defense industrial base or eliminate foreign source dependence.
- (2) Overall scientific and technical merit:
 - Soundness of the technical concept
 - Understanding the scope of technical effort needed
- (3) Past performance and scientific/ manufacturing/ technical experience:
 - The technical proposal must provide evidence of technical expertise, experience with the technologies included in the proposed approach
- (4) Organizational and Project Management
 - how the contract shall be managed
 - show that its organizational structure shall ensure performance stability, reliable customer service and commitment to DLA and IBIF

Cost Realism

- Realism of total costs proposed

It is the Government's intention to award contracts based upon proposals that demonstrate knowledge, experience, and expertise in the technical areas of interest identified in Section 3. The proposal must demonstrate scientific and technical expertise in the proposed area. Proposals must provide information on past performance, which reflects related efforts and/or achievements, technological aptitude, management support, and potential contribution and relevance to the DOD mission.

5. PROPOSAL FORMAT

This BAA shall result in the award of multiple contracts. Selectable proposals will be considered for funding; nonselectable proposals will be destroyed. (One copy of non-selectable proposals may be retained for file purposes). Not all proposals deemed selectable will be funded. Decisions to fund selectable proposals will be based on funds availability and merits of the proposal. Proposals may be considered for funding for a period of up to one year. The Government reserves the right to select for award all, some or none of the proposals received. The Government contemplates award of cost type contracts as a result of this BAA. Proposals based on a type of contract other than that contemplated shall NOT be considered. Proposers who do not have an accounting system approved for doing DOD Cost type contracts will not be considered for award. The proposer should include evidence of approval of their cost accounting system in the Cost Proposal.

A TECHNICAL PROPOSAL and a COST PROPOSAL shall be submitted in response to this BAA. Technical proposals shall be submitted in the following format: 8 hard copies, 1 electronic copy in .pdf or MS Word compatible format. Technical proposals in response to this BAA shall be limited to fifteen (15) single sided, 8 and one-half inch by 11 inch pages, including Appendices and Attachments. If less than fifteen pages is required there is no penalty for submitting shorter proposals, as long as the offeror covers all the required material. Proposals longer than 15 pages will be rejected and will not be evaluated or considered for award. Type font shall be 12 point Times New Roman with 1 inch margins around the page.

TECHNICAL PROPOSAL

The Technical Proposal shall contain the following sections:

1. Section I: A. Cover Page: (1) BAA number; (2) Supply Chain (Aviation, Land Maritime or Troop Support) (3) Technical Thrusts (Metals, Composites or Electronics); (4) Proposal Title; (5) Technical Point of Contact, including name, telephone number, FAX number, e-mail address, and mailing address; (6) Administrative/ Contracting Point of Contact, including name, telephone number, FAX number, e-mail address, and mailing address; and (7) Contractor's business type selected among the following categories: Large Business, Small Disadvantaged Business (SDB), Other Small Business, HBCU, MI, Other Educational, or Other Nonprofit. B. Summary of the Costs. The information contained in this section should be limited to one page.
2. Section II: Executive Summary: An Executive Summary of the offeror's proposed project is required. This

summary shall not be evaluated but shall be used to gain an understanding of the overall proposal contents. It should identify and highlight significant features, summarize innovative claims and unique contribution(s) of the proposal, and include the salient points of the proposed project, including target system applications and the expected outcome improvement associated with the project. The information contained in this section should be limited to two pages.

(3) Section III : Detailed Proposal Information: The following evaluation factors must be addressed in the proposal: 1. Scope, Metrics to Measure Success, Time Frame for Implementation and Expected Benefits of Project Implementation; 2. Overall Scientific Merit; 3. Past Performance and Scientific/ Manufacturing/Technical Experience; 4. Organizational and Project Management; 5. Cost Realism.

(1) SCOPE, METRICS TO MEASURE SUCCESS, TIME FRAME FOR IMPLEMENTATION AND EXPECTED BENEFITS OF PROJECT IMPLEMENTATION: Offerors will address the applications (specific systems or components) of the technology. (Investments that would benefit a single system are the responsibility of system program managers and are not candidates for IBIF funding.) Identify the metrics of success for the proposal and the timeframe for implementing the technology in the target application. Metrics should be quantifiable and include baseline, threshold, and objective value estimates. The proposal should address how the manufacturing technology will address short term needs of the Department of Defense and the expected benefits. Address any impediments to implementing the technology and how those impediments will be overcome by the proposed effort. Offerors are cautioned that statements regarding the ability to implement manufacturing technology projects may be validated with Government engineering activities. For example, if an advanced material substitution is proposed the Offeror must demonstrate an understanding of the issues associated with and a schedule for getting the proposed substitution approved by the Cognizant Engineering Authority.

(2) OVERALL SCIENTIFIC AND TECHNICAL MERIT: Offerors will propose a Manufacturing Technology project that includes: (a) The improved Defense manufacturing capability to be established, expressed in terms of outcomes that are important to the Warfighter, Systems Program Office and/or Logistics Support Organization; (b) Statement of Work (SOW) written in plain English detailing the scope of the effort and citing specific tasks to be performed and specific contractor performance requirements; (c) Detailed technical approach, rationale, and strategy for accomplishing technical goals in support of innovative claims and deliverables; (d) Deliverables associated with the proposed research including a clear description of the results, products, and transferable technology should be provided. (e) Realism of the schedule and milestones for each task in the proposed efforts. Include all proprietary claims to results, prototypes, or systems supporting and/or necessary for the use of the research, results, and/or prototypes. If there are no proprietary claims, this should be stated.

(3) PAST PERFORMANCE AND SCIENTIFIC/ MANUFACTURING/ TECHNICAL EXPERIENCE: Offerors shall provide information pertaining to prior significant and related work experience or expertise in any of the listed areas of interest, and how that expertise shall be beneficial to this program and their track record in dealing with system manufacturing. Offerors shall provide the five largest accounts/contracts/projects within the last three years for which they have provided services and/or supplies of a nature consistent with this program. Offerors shall include at least (2) points of contact and a telephone number for each account/contract, a description of the service or supply which was provided, as well as a brief performance history on each of those accounts/contracts. Where related work was performed with teaming partners, provide points of contact of teaming members to include company name, individuals and phone numbers. If no past performance related to systems manufacturing is available, offerors shall describe their track record in dealing with their comparable major customers and shall include supplemental information similar to that requested above.

(4) ORGANIZATIONAL AND PROJECT MANAGEMENT: Offerors shall provide evidence of how the contract shall be managed and show that its organizational structure shall ensure performance stability, reliable customer service and commitment to DLA and IBIF for the duration of the contract performance period. Specifically, offerors shall identify key personnel including the Project Coordinator permanently assigned to the contract; and other personnel with relevant qualifications and experience.

COST PROPOSAL REALISM

The cost of each major cost element and the make-up of those costs should be presented in the offeror's proposal. Sufficient information should be provided in supporting documents to evaluate the reasonableness and realism of these proposed costs, including salaries, overhead, material purchases, fair market rental value of lease items and the method used for making such evaluations. A statement related to the latest DCAA audit and whether the offeror's accounting system has been approved by the DCAA. State if there are

currently negotiated DCAA rates and factors being used in the proposal. There is no page limit on the cost proposal volume. The cost proposal will include all of the cost information related to the Project Task, including:

Direct Labor : Individual labor categories or assigned persons with associated labor hours and unburdened direct labor rates

Indirect Costs : Fringe benefit, Overhead, G&A, Cost of Money, etc. (must show base amount and rate)

Travel : Number of trips, destinations, durations, etc.

Other Direct Costs: All other costs associated with the project should be itemized.

Contracts awarded under this proposal will be cost type contracts. FAR 16.301-3 states that a cost-reimbursement contract may be used only when the contractor's accounting system is adequate for determining costs applicable to the contract. Offerors must submit documentation showing that they do have adequate accounting systems. Proposals without this documentation will not be evaluated. Any proposal exceeding \$1 million will NOT be evaluated and proposals submitted that include capital equipment investments will NOT be evaluated; only incidental equipment costs will be considered.

6. PRE-PROPOSAL CONFERENCE

A pre-proposal conference is scheduled on 12 February 2009 at the Hyatt Dulles, 2300 Dulles Corner Blvd, Herndon, VA 20171, and Telephone: (703) 793-6880 starting at 10:00 AM EST. The conference will explain and clarify the objectives of this program and the solicitation requirements, and respond to general questions raised by prospective offerors. Interested firms are encouraged to attend. If you plan to attend the pre-proposal conference, please send email to John Dormer at john.dormer@dla.mil with the following information for all who plan to attend:

- (1) Name of Firm
- (2) Name(s) and Title of Representative(s) who will attend
- (3) Address of Firm
- (4) Phone number(s), Fax number(s) and E-mail address(es)

Prospective offerors are requested to submit questions in writing prior to January 31, 2009 to allow for inclusion and discussion during the pre-proposal conference. Questions will be considered at any time prior to or during the conference. Responses to some questions may be incorporated in an amendment to the solicitation. The Government will not be liable for expenses incurred by an offeror prior to contract award. Offerors are cautioned that remarks and explanations provided at the conference shall not change the terms of this BAA unless amended in writing.

Contracting Office Address:

700 Robbins Avenue
Philadelphia, Pennsylvania 19111-5096

Place of Performance:

Ft. Belvoir, Virginia 22060
United States

Primary Point of Contact.:

John J Dormer,
Contracting Officer
John.Dormer@dla.mil
Phone: 215-737-2284
Fax: 215.737.7942

Appendix 3: DLA Warstopper BAA Proposal Instructions

The following is the Broad Agency Announcement for the Warstopper Program Project Proposals:

BROAD AGENCY ANNOUNCEMENT (BAA) FOR
DEFENSE LOGISTICS AGENCY (DLA)
WARSTOPPER PROGRAM PROJECTS
DECEMBER 22, 2009

POINT OF CONTACT (POC): Nick Strasser, Contracting Officer
DLA Contracting Support Office DSCO-P
700 Robbins Avenue, Building 26-2
Philadelphia, PA 19111
215-737-2684
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1. **BACKGROUND:**

The Defense Logistics Agency (DLA) seeks interested parties to propose industrial base projects under the Warstopper Program. Interested parties should be those suppliers (both end item and raw material suppliers) that can offer a solution to production constraints that have limited your ability to meet demand spikes associated with wartime or contingency operations. The purpose of the Warstopper Program, as stated in O&M Program Element Code (PEC) 07080110 (A, D, F, N, S) Industrial Preparedness, is to ensure maintenance of “Those resources required for all plans, actions, or measures necessary to establish and maintain an industrial base, both government-owned and privately-owned, that is required to support current, wartime, or other contingency military requirements.”

Fielding and sustaining superior weapons technology, troop support items, and energy resources are cornerstones of United States military strategy. The ability of the Department of Defense to obtain superior, affordable weapons in a timely manner relies on a strong domestic industrial base and access to reliable foreign manufacturing sources. The Warstopper Program is a program directed toward maintaining domestic manufacturing capability and eliminating dependence on unreliable foreign sources. The Defense Logistics Agency is acting on behalf of the Department of Defense in executing the Warstopper Program. Accordingly, proposers are encouraged to submit proposals that support DOD sustainment of fielded weapon systems, special equipment, clothing and textile items (to include nuclear, biological and chemical warfare defense gear), subsistence items and Medical materiel that are employed at higher usage rates during wartime.

The scope of the Warstopper Program includes all sectors of the industrial base necessary to support the Department of Defense with manufacturing capabilities sufficient to meet increased requirements during wartime and contingency operations. **Specific classes of supply and examples of Warstopper areas of interest can be found in Attachment A** The goal of the program is to maintain adequate manufacturing capability to support the seven (7) primary supply chains in Defense Logistics Agency that are responsible for wholesale supply support of the Military Services and other DoD agencies that respond to national emergencies. Subject to availability of funds, a total Government investment of about \$10 million during Fiscal Year

2009 is planned to fund Warstopper Program projects under this BAA. The expected cost range for proposals submitted under this BAA is up to \$2 million, with a base period of performance of up to 12 months with up to 4 additional 12 month option periods. The desirable outcome of a completed project is the acceleration of production for critical items or maintaining critical industrial capability during peacetime to ensure ramp-up time during surges in production is minimized. For selectable projects, DLA may consider using existing contracts, if appropriate. Proposers may recommend such a contracting arrangement, but should confirm with the Contracting Officer of the existing contract that all existing contract scope, terms, conditions and ceiling requirements are met before proposing such an arrangement. The government is anticipating the award of cost, cost plus fixed fee, or cost sharing contracts.

2. **GENERAL PROPOSAL SUBMISSION INFORMATION:**

Proposers must submit an electronic copy of the full proposal referring to BAA-0002-09 in PDF format to the Contracting Officer listed above in the Point of Contact information. Proposals must be submitted via email in the format shown in Attachment B. Proposals must be submitted prior to 1:00 PM (Philadelphia Time) on March 24, 2009. However, since each proposal will be evaluated on its own merit, proposers are encouraged to submit a proposal prior to the closing date.

No additional information is available, nor shall a formal RFP or other solicitation regarding this announcement be issued. Requests for same shall be disregarded. The Government reserves the right to select for award all, some, or none of the proposals received.

This is an unrestricted acquisition. All responsible sources capable of satisfying the Government's needs may submit a proposal which shall be considered by DLA. DLA encourages industry, small businesses, and small disadvantaged business concerns to submit proposals under this BAA. However, no portion of this BAA will be set aside. All correspondence and questions on this solicitation, including request for information on how to submit a proposal to this BAA, should be directed to the POC at the top of the BAA; e-mail is preferred.

3. **WARSTOPPER PROGRAM INFORMATION:**

The Warstopper Program was created to preserve the industrial base for critical go-to-war items that had insufficient peacetime business to keep the defense industrial base known producers in operation. Funding provided by the Warstopper Program is now used to support efforts aimed at keeping a viable industrial base and ensuring that, together with DLA's normal peacetime procurements and inventory and any Service pre-positioned war reserve stock, every effort is made to meet the Service's go-to-war requirements with industrial preparedness measures. Criteria were established to identify potential Warstopper items. The basic criteria are:

1. Mission Essential or Critical
2. Low peacetime demand but high wartime demand
3. Limited shelf life
4. Long production lead time
5. Cost-effective alternative to War Reserve Inventory

Funding can be used for production equipment, necessary facility enhancements or modernization and associated costs specifically identified and measurable, or costs to maintain access to a trained unique DoD labor pool. It includes industrial preparedness measures, such as modernization and preservation of the production facilities, and contributory activities and services for planning with industry which are essential to the accomplishment of the complete industrial preparedness program, specifically identified and measurable to the following:

1. Replacement, rehabilitation, modernization, and other than normal maintenance of industrial facilities.
2. Reactivation of idle industrial facilities.
3. Layaway, maintenance, and protection of idle industrial facilities and similar actions related to the retention of under-utilized capacity being retained for mobilization or other emergency use.
4. Acquire, maintain, or modernize special tooling and equipment as required to support a viable industrial capability.
5. Maintenance of production data packages.
6. Other actions designed to facilitate the attainment of scheduled production goals, such as overall management, support, activity inspections, etc. An example in this category is a Lean 6 Sigma initiative designed to increase production yields.

The Program excludes costs of activities other than industrial facilities which are directly identifiable to the support of end items which are themselves identified to unique specific program elements.

4. **AREAS OF INTEREST:**

The areas of interest align with all of DLA's supply chains: Aviation, Clothing and Textiles, Construction and Equipment, Land, Maritime, Medical, Subsistence, and Energy. Each offeror should clearly have a target NSN or group of NSNs for improving industrial capability. If proposals are submitted by a sub-tier raw material supplier, then the target NSN population must still be identified. Proposals without a clearly identified target will not be considered for award. Equal consideration will be given to all approaches that enable improved surge and sustainment capability (i.e. significant reduction of lead-times, increased production capability, etc).

5. **EVALUATION CRITERIA:**

To be eligible for award of a contract, all prospective offerors must meet certain minimum standards pertaining to financial resources, adequacy of accounting systems under a cost type contract, ability to comply with performance schedules, and a prior record of past performance, integrity, organization structure, experience, operational controls, technical skills, facilities and equipment. For additional information and guidance concerning qualifications and standards for responsibility of prospective contractors, please refer to Part 9 of the Federal Acquisition Regulation (FAR). As soon as the proposal evaluation is completed, the proposer will be notified of selectability or non-selectability. Selectable proposals will be considered for funding; non-selectable proposals will be destroyed. (One copy of non-selectable proposals may be retained for file purposes). Not all proposals deemed selectable will be funded. Decisions to fund selectable proposals will be based on funds availability and merits of the proposal. Proposals may be considered for funding for a period of up to one year. The Government reserves the right to select for award all, some, or none of the proposals received. Proposals will not be evaluated against each other since they are not submitted in accordance with a common work statement. Evaluation of proposals shall be accomplished through a detailed review of each proposal, using the following criteria listed in descending order of relative importance:

1. **Project Scope:** Address the critical item(s) that meet(s) Warstopper criteria, and how these items impact readiness of combat forces and end item applications used during wartime and contingency operations. At a minimum this includes NSN(s), demand history, and applicable Warstopper criteria.

2. **Overall technical merit of the proposed project/investment:** Provide detailed technical approach, rationale, and strategy for improving overall production capability (either output or lead-time). Note that projects that propose a finished product inventory solution as a primary component will not be considered. Demonstrate an understanding of the overall supply chain for the targeted supply items and provide evidence that proposed solution will eliminate the constraints within the supply chain.

3. **Past Performance:** Provide confirmation that the supplier is certified/qualified to supply the item(s) to DLA and the Military Services including a listing of past contracts awarded for the items included in the proposal.

4. Project Management: Provide a milestone schedule. Show how the contract shall be managed. Show that the proposer's organizational structure shall ensure performance stability, reliable customer service, and a commitment to DLA and the Warstopper Program.

5. Cost Realism: Provide an itemized investment list and time-phased funding requirement. Provide Return on Investment (ROI) calculations (see proposal format for ROI guidance in Attachment B). Demonstrate realism of total costs proposed (i.e. copy of quotes for material/equipment that must be purchased, labor costs to install equipment or complete modernization effort, basis for and management fees to manage inventory, etc.).

It is the Government's intention to award contracts based upon proposals that demonstrate knowledge, experience, and expertise in the areas of interest identified in Section 4. The proposal must clearly articulate the proposed project/investment and the improved capability that would result if the project were approved.

6. **PROPOSAL INFORMATION**:

This BAA may result in the award of multiple contracts or tasks added to existing contracts. Selectable proposals will be considered for funding, but not all proposals deemed selectable will be funded. Decisions to fund selectable proposals will be based on funds availability and the merits of the proposal. Proposals may be considered for funding for a period of up to one year. The Government reserves the right to select for award all, some, or none of the proposals received. The Government contemplates award of a cost, cost plus fixed fee, or cost sharing contracts.

A warstopper project proposal shall be submitted in response to this BAA. **Proposals must be submitted electronically as a PDF file in the format provided in Attachment B to this BAA. Proposals should be submitted via email to the Contracting Officer listed in the Point of Contact Information:**

Contracting Officer: Nick Strasser, email: nicklos.strasser@dla.mil.

Technical proposals in response to this BAA shall be limited to fifteen (15) single sided, 8 x 11 pages, including Appendices and Attachments. If less than fifteen pages is required there is no penalty for submitting shorter proposals, so long as the offeror covers all the required material. Additional pages beyond 15 shall not be considered in the evaluation. Type font shall be 12 point Times New Roman with 1 inch margins around the page.

Business (cost) proposals shall be limited to five (5) single sided, 8 x 11 pages, including Appendices and Attachments. If less than five pages is required there is no penalty for submitting shorter proposals, so long as the offeror covers all the required material. Additional pages beyond 5 shall not be considered in the evaluation. Type font shall be 12 point Times New Roman with 1 inch margins around the page.

Class of Supply Areas of Interest

- I Combat Rations
- II Personal protective gear
(Examples Body armor, Fire retardant clothing, JSLIST, etc.)
- IV Barrier Material
- VIII
 - 1) Vaccines
 - 2) Short Shelf Life Reagents
 - 3) Injectable Drugs
 - 4) Medical Equipment
- IX
 - 1) Bearings
 - 2) Power Sources (i.e. batteries)
 - 3) Water Purification Systems
 - 4) Fasteners
 - 5) Industry Sectors with go-to-war items that would receive significant benefit through the application of Lean concepts
 - 6) Rapid Manufacturing - Identify Industry manifesting cells that are capable of producing low demand critical items using Rapid Prototyping and Manufacturing concepts.
 - 7) Small Arms Federal Supply Class 1005 (Guns, thru 30 mm)
 - 8) Electron Tubes and Associated Hardware

Warstopper Project Proposal

Section I

Proposal From: *Please provide the name of the company proposing the project*

Broad Agency Announcement Number: *Please provide the BAA number*

Supply Chain Impacted: *Please state which DLA supply chain is impacted by the proposal (Aviation, Land, Maritime, Clothing and Textile, Subsistence, Medical, Construction and Equipment, or Energy)*

TITLE: *Please provide the name of the initiative proposed under the BAA*

POINTS OF CONTACT:

Technical POC:

Administrative/Contracting POC:

Check the appropriate box indicating your company type.

Large Small Disadvantaged Business Other, Small business

Other, Non-profit

Is there an existing contract for the item that can be leveraged in the event of an award?

- Yes No

If yes, please provide the following:

Contract Number:

Contracting Officer contact info:

****Please provide a signed transmittal letter with this proposal**

Section II

Executive Summary: *Please provide an executive summary for your proposed project.*

Section III

PROJECT SCOPE: Please identify the scope of your proposed investment/project by providing the following information.

Affected System(s) and Target Population of NSNs: Please provide a list of target NSNs for this investment/project and the system they support if known. If the proposed investment is for a raw material component, please include the NSNs and systems they support.

Demand History: Please provide historical demand data for the item(s) included in this proposal for at least the last 5 years.

Warstopper Criteria: (check all that apply—minimum criteria are indicated by *)

- | | |
|---|--|
| <input checked="" type="checkbox"/> MISSION
ESSENTIAL/CRITICAL* | <input checked="" type="checkbox"/> COST-EFFECTIVE
ALTERNATIVE TO
WRM INVENTORY* |
| <input type="checkbox"/> LOW PEACETIME
DEMAND BUT HIGH
WARTIME DEMAND | <input type="checkbox"/> LONG PRODUCTION
LEAD TIME |
| <input type="checkbox"/> LIMITED SHELF LIFE | |

TECHNICAL MERIT: Summarize the proposed investment/project and be sure to include the following information:

Supply Chain Assessment: Please provide a brief description of the end-to-end supply chain for the targeted items including current production capability. Please provide a flow chart and a description of the constraint at a minimum.

Check the appropriate box indicating the area of the supply chain constraining the production/supply.

- Sub-tier Supplier Manufacturer/Assembler Distributor

Industrial Capability Improvement: Explain how the initiative will improve industry’s capability to respond to surges in demand and mitigate the need to purchase and store finished product as WRM. Be sure to include any assumptions used in your analysis.

PAST PERFORMANCE: Please confirm certification/qualification to provide the items referenced in this proposal.

PROJECT MANAGEMENT: Please provide a milestone schedule for the investment/project showing when the planned improvements/increased capability will be achieved. This section should also address how the project will be managed.

COST REALISM: Please provide funding estimates for your proposed investment/project. Please add rows as necessary.

What are the itemized investments for the proposed solution?

Investment Description	Category	Cost	Start Date	End Date
<i>i.e. Extruder</i>	<i>Equipment</i>			
<i>i.e. 1000 lbs fiber A</i>	<i>Material</i>			
<i>i.e. 1000 lbs fiber B</i>	<i>Material</i>			
<i>i.e. Inventory management fee</i>	<i>Management Fee</i>			

Exhibit 1 – TIME PHASED FUNDING (in \$000): There should be only one row for each category listed above.

	<i>Year1</i>	<i>Year2</i>	<i>Year3</i>	<i>Year4</i>	<i>Year5</i>	TOTAL
Equipment						
Material						
Management Fees						
TOTAL:						

Return on Investment (ROI) Summary: Please complete the following table to compute an ROI for the proposed investment.

	Year 1	Year 2	Year 3	Year 4	Year 5
Cost of proposed project	\$ 50,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Total 1 (sum 5 year costs)	\$70,000.00				
Cost to stock an equivalent amount of end item inventory	\$ 142,416.00	\$ 38,601.00	\$ 38,601.00	\$ 38,601.00	\$ 38,601.00
Total 2 (sum 5 year costs)	\$296,823.00				
ROI					
(Total 2/Total 1)	5.4				

If the proposed investment is for material, equipment, or a facility modernization initiative then supporting documentation must be provided to validate the purchase or lease costs (i.e. vendor quotes). If the proposed investment is a study or an initiative requiring skilled labor, then the proposal must include:

1. Direct Labor: Individual labor categories or assigned persons with associated labor hours and unburdened direct labor rates

2. Indirect Costs: Fringe benefit, Overhead, G&A, Cost of Money, etc.
(must show base amount and rate)
3. Travel: Number of trips, destinations, durations, etc.
4. Other Direct Costs: All other costs associated with the project should be itemized.

Please include a statement related to the latest DCAA audit and whether the offeror's accounting system has been approved by the DCAA. State if there are currently negotiated DCAA rates and factors being used in the proposal.