

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. Contract ID Code
Cost No Fee

Page 1 Of 10

2. Amendment/Modification No. P00005	3. Effective Date 2013AUG29	4. Requisition/Purchase Req No. SEE SCHEDULE	5. Project No. (If applicable)
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6. Issued By U.S. ARMY CONTRACTING COMMAND PATRICIA ROUSSIN WARREN, MICHIGAN 48397-5000 HTTP://CONTRACTING.TACOM.ARMY.MIL EMAIL: PATRICIA.M.ROUSSIN@US.ARMY.MIL	Code W56HZV	7. Administered By (If other than Item 6) DCMA DETROIT 35803 MOUND ROAD STERLING HEIGHTS MI 48310	Code S2305A
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8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code) BAKER ENGINEERING INC 17165 POWER DR NUNICA, MI 49448-9626	<input type="checkbox"/>	9A. Amendment Of Solicitation No.
	<input type="checkbox"/>	9B. Dated (See Item 11)
	<input checked="" type="checkbox"/>	10A. Modification Of Contract/Order No. W56HZV-09-C-0047
	<input type="checkbox"/>	10B. Dated (See Item 13) 2009FEB03
Code 1BZK9	Facility Code	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers

is extended, is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing items 8 and 15, and returning _____ copies of the amendments; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. **FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER.** If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. Accounting And Appropriation Data (If required)

NO CHANGE TO OBLIGATION DATA

**13. THIS ITEM ONLY APPLIES TO MODIFICATIONS OF CONTRACTS/ORDERS
It Modifies The Contract/Order No. As Described In Item 14.**

<input type="checkbox"/>	A. This Change Order is Issued Pursuant To: The Contract/Order No. In Item 10A.	The Changes Set Forth In Item 14 Are Made In
<input type="checkbox"/>	B. The Above Numbered Contract/Order Is Modified To Reflect The Administrative Changes (such as changes in paying office, appropriation data, etc.) Set Forth In Item 14, Pursuant To The Authority of FAR 43.103(b).	
<input checked="" type="checkbox"/>	C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of:	FAR 43.202
<input type="checkbox"/>	D. Other (Specify type of modification and authority)	

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ copies to the Issuing Office.

14. Description Of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE SECOND PAGE FOR DESCRIPTION

Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. Name And Title Of Signer (Type or print)		16A. Name And Title Of Contracting Officer (Type or print) LYNN M. BYRNE LYNN.M.BYRNE@US.ARMY.MIL (586)282-6553	
15B. Contractor/Offeror (Signature of person authorized to sign)	15C. Date Signed	16B. United States Of America By _____ /SIGNED/ (Signature of Contracting Officer)	16C. Date Signed 2013AUG29

CONTINUATION SHEET**Reference No. of Document Being Continued****Page 2 of 10****PIIN/SIIN** W56HZV-09-C-0047**MOD/AMD** P00005**Name of Offeror or Contractor:** BAKER ENGINEERING INC

SECTION A - SUPPLEMENTAL INFORMATION

Buyer Name: PATRICIA ROUSSIN

Buyer Office Symbol/Telephone Number: CCTA-ASG-C/(586)282-9610

Type of Contract: Cost No Fee

Kind of Contract: Research and Development Contracts

Type of Business: Other Small Business Performing in U.S.

Surveillance Criticality Designator: C

Weapon System: No Identified Army Weapons Systems

*** End of Narrative A000 ***

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Name of Offeror or Contractor: BAKER ENGINEERING INC

SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS

W56HZV-09-C-0047 MODIFICATION P00005

PREVIOUS NEGOTIATED CONTRACT VALUE: \$1,789,117.13
NEGOTIATED VALUE OF THIS ACTION: \$ 0.00
TOTAL NEGOTIATED CONTRACT VALUE \$1,789,117.13

PREVIOUS OBLIGATED CONTRACT AMOUNT: \$1,789,117.13
OBLIGATED AMOUNT OF THIS ACTION: \$ 0.00
TOTAL OBLIGATED CONTRACT AMOUNT: \$1,789,117.13

1. The purpose of this no-cost bilateral Modification P00005 is to:

- a) Extend the period of performance by twelve (12) months from 11 OCT 2013 to 13 OCT 2014.
- b) As consideration for the period of performance extension, revisions to the scope of work will include additional testing of the Gen 2+ engine toward the targeted power output, CFD analysis and control development of the electrical power generation system, and submission of three additional technical progress status reports IAW CDRL A001.
- c) Revise CDRLs with new Contract Specialist name and email address.

2. As a result of this Modification P00005, the following changes are hereby made to the contract:

<u>SECTION</u>	<u>DESCRIPTION</u>
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B	CLIN 0004AB performance completion date is changed from 11 OCT 2013 to 13 OCT 2014.
C	Add paragraph C.2.6.1.1 to indicate the additional effort being done as consideration for the schedule extension.
F	Revise paragraph F.1.2 completion date from 11 OCT 2013 to 13 OCT 2014.
J	Revise CDRL A001 to include three (3) additional technical progress status reports.
J	Revise all CDRLs to change the Contract Specialist from Marty Lynch to Patricia Roussin.

3. As a result of this Modification P00005, the total obligated value of this contract remains unchanged.

4. Except as specifically provided in this Modification P00005, all other terms and conditions remain unchanged.

*** END OF NARRATIVE B0002 ***

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SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

The New Phase II Enhancement Scope is underlined.

C.1 Introduction

C.1.1 Background

Baker Engineering has successfully completed SBIR Phase II program developing and testing of a prototype single cylinder opposed-piston engine technology. Testing of the Gen 2 Baker Opposed Engine successfully demonstrated 20.8 Hp @ 3,554 rpm. The main benefits of the technology include high power density, low weight and the use of commercial-off-the-shelf (COTS) parts. The overall goal of Baker Engineering's Phase II Enhancement program is to harvest the fuel efficient, power dense, lightweight engine developed in Phase II, and integrate it into an auxiliary power unit.

C.1.2 The Contractor, acting as an independent contractor and not as an agent of the Government, shall provide the necessary personnel, facilities, materials and services to complete the efforts described in this Statement of Work.

C.2 Scope of Work

In Phase II Enhancement, Baker Engineering will build and demonstrate a 20kW Auxiliary Power Unit (APU). The effort will first implement some engine design changes that will increase the engine output power to 34 hp and then integrate the engine into a 20kW APU. Objectives for Phase II Enhancement are broken down into three primary areas: engine upgrades including turbo machinery and piston/bore changes to optimize the delivery ratio, engine testing to verify performance goals, and APU design and build. The engines primary fuel shall be JP-8; alternate fuel shall be diesel. System shall not exceed a fuel consumption rate greater than 2.50 gallons per hour. System shall be demonstrated in the auxiliary power unit space claim of a Stryker vehicle.

C.2.1 Contractor shall finalize detailing of engine and turbo hardware outlined in the Phase I effort.

C.2.1.1 Commercial-off-the-shelf parts shall be utilized where applicable throughout the engine.

C.2.1.2 Component materials shall be investigated to reduce overall engine weight, improve balance and reduce vibration.

C.2.1.3 Power electronics architecture for controlling the electronically assisted turbocharger shall be finalized.

C.2.1.4 Engine control system enhancement shall be investigated and finalized to achieve maximum power density.

C.2.1.5 Micro Injection fuel delivery system shall be adapted for use and integrated into the engine.

C.2.1.6 Modeling & simulation shall be performed to validate basic operation with finalized design details described in C.2.1.1 through C.2.1.5.

C.2.2 Contractor shall assess thermodynamic operational characteristics of the engine using modeling & simulation software.

C.2.2.1 Modeling & simulation software shall be used to determine optimal piston bowl geometry. This analysis will aid in determining the number of fuel injectors needed.

C.2.2.2 Modeling & simulation software shall be used for component finite element analysis and combustion analysis.

C.2.2.3 Modeling & simulation software shall be used to evaluate manifold volume and effects on engine performance with respect to a compact engine design.

C.2.3 Contractor shall fabricate and assemble engine hardware.

C.2.3.1 Contractor shall fabricate and integrate all necessary engine hardware.

C.2.3.2 Pressure testing for sealing system evaluation shall occur prior to final engine assembly.

C.2.3.3 Upon sealing system verification, final engine assembly shall occur.

C.2.3.4 Turbo system hardware shall be assembled and integrated with final engine assembly.

C.2.3.5 Prototype engine shall be secured to a common chassis.

C.2.4 Contractor shall conduct engine performance testing.

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C.2.4.1 Prior to testing, contractor shall submit a test plan to COR for approval. TARDEC shall reply with approval and/or suggestions within two (2) weeks.

C.2.4.2 All testing shall be conducted using JP-8 fuel.

C.2.4.3 Test results shall be compared with modeling & simulation results to verify accurate engine representation. Any significant differences between modeling & simulation results versus actual engine results shall be addressed in reporting.

C.2.4.4 The auxiliary power unit shall be operable with applicable standard military fuels (primary fuel is JP-8 and alternate fuel diesel), lubricants and fluids without component degradation and adverse affect on the APU performance. All initial fills shall be of standard military fuels, lubricants and fluids including those called out in A-A-52557, MIL-PRF-46167, MIL-DTL-83133, and A-A-52624.

C.2.5 Upgrade the existing Gen 2 Opposed Engine based on data collected during the Phase II effort.

C2.5.1 Reduce the bore size to improved delivery ratio and change to a parabolic bowl configuration on the piston. The bore size reduction will be agreed upon at the kickoff meeting.

C.2.5.1.1 Test engine configuration defined in C.2.5.1 and verify power increased to 25 hp.

C.2.5.2 Extend electrical assisted turbine speed through improved power electronics and equip engine with mid-sized turbine.

C.2.5.2.1 Test engine configuration defined in C.2.5.2 and verify power increased to 30 hp.

C.2.6 Generation 3 engine development

C.2.6.1 Gen 3 Engine Analysis and Modeling. The Gen 2 engine shall be further refined through analysis and simulation pertaining to combustion enhancement. Results shall be integrated through revisions to hardware affecting the combustion process such as cylinder porting, fuel delivery, turbulence, and airflow. The majority of Gen 2 engine hardware shall be retained where possible within the Gen 3 configuration. Modeling and cycle analysis shall be conducted utilizing a custom Opposed Piston Diesel Engine Simulation (OPDES) software that was used in the Phase I and Phase II programs. Computational Fluid Dynamic (CFD) analysis of the combustion process, and an Energy Balance analysis shall also be conducted.

C.2.6.1.1 Per Modification P00005, the contractor shall provide additional Gen 2+ engine testing toward the targeted power output, and CFD analysis and controls development of the electrical power generation system. Additionally, the contractor shall submit three additional technical progress status reports IAW CDRL A001.

C.2.6.2 Gen 3 Engine Design. Results from previous testing and engine combustion analysis shall be used to form the Gen 3 Opposed Engine design.

C.2.6.2.1 Baker Engineering shall evaluate the use of COTS diesel injectors on the Gen 3 Opposed Engine as a dual path.

C.2.6.2.2 The Rapid Prototype Engine Control System (RPECS) engine ECM shall be retained within the Gen 3 effort.

C.2.6.2.3 The turbo hardware shall be reconfigured to an outboard electrical assist where the rotor/stator is independently housed off the compressor inlet side of the turbo. This repositioning shall isolate the electrical components from heat and oil exposure improving system longevity. The turbo hardware shall continue to utilize the updated power electronics implemented within Task 1.

C.2.6.2.4 Core engine hardware including the ported cylinder, outboard manifolds, and pistons shall be revised to reflect the changes identified within the combustion analysis effort. The lower crank housings, crankshafts, and currently utilized accessory drives shall be retained within the Gen 3 engine design. The engine hardware shall be updated with any improvements identified within C.2.5.

C.2.6.2.5 The electrically assisted turbo shall undergo repackaging to lower the exposure temperature for the electrical components and improve turbine efficiency.

C.2.6.2.6 Gen 3 Engine Build. Components shall be manufactured and assembled into Gen 3 Engine configuration. COTS parts shall be utilized as available. Custom components shall be manufactured in-house at Baker Engineering Inc. (BEI) or procured as needed.

C.2.6.2.7 Gen 3 Engine Testing. Engine testing shall be conducted on the Gen 3 hardware to further develop the engine controls and injection strategy tailored towards the updated hardware and targeted combustion improvements. Outlined performance targets shall be the focus during engine testing to meet future APU requirements. A matrix of engine load points shall be mapped at various engine speeds to develop a performance profile. Data shall include power, fuel consumption rates, engine heat rejection, and turbo operational conditions at peak power and torque levels and at best fuel consumption point. The engine performance targets are 34 Hp w/ .37 BSFC.

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C.2.6.8 Government Defined Engine Control Module (ECM). Gen 3 Engine testing shall be concluded by operating the engine on a government defined ECM, the Bosh Flex ECM. The contractor shall transfer Software code from the existing RPECS ECM and modify to ensure proper performance and operability.

C.2.7 APU System

C.2.7.1 Design-Power Generation. The engine shall be outfitted with two identical 12 kW generators integrated into the synchronous drive system of the opposed piston engine. The external rotors shall carry the synchronous drive belt in addition to their main task of supporting the permanent magnet array. The stators shall consist of a wound lamination stack mounted directly to the engine tie plate. The system is targeted to deliver 17 kW at 28 Volts Direct Current (VDC) output power. The engine mounted generators shall be liquid cooled allowing an enclosure to suppress audible engine noise. Generator controls shall adjust system voltage and send target speed set points to the engine ECM based on current demand. Generator output shall be a speed dependent parameter where voltage and current become regulated within the power conditioning equipment. High voltage of 400 VDC is tentatively targeted for the regulated generator output and battery bank sizing. The power conditioning equipment shall regulate the APU power output and provide up to 20kW at 28VDC through a DC/DC converter. This allows current carrying transmission lines to be reasonably sized within the APU system.

C.2.7.1 System Integration Controls and Electronic Hardware. Electronic hardware for the engine ECM, turbo drive, and generator power conditioning equipment shall be refined to the level of vehicle system demonstration. No fieldable hardware is proposed at this time. CAN communication shall be utilized throughout the system as the means of communication protocol.

C.2.7.2 System Layout. The 20kW APU system is targeted for implementation within one of three applicable platforms, the M1 Abrams, the M2 Bradley, and the IAV Stryker. Within the Phase II enhancement effort, the prototype system shall be configured in a chassis designed to be placed and demonstrated within the Stryker or M1 Abrams space claims.

C.3 Meetings

C.3.1 Contractor shall conduct a Start of Work meeting within thirty (30) days of contract award at TACOM, Warren, MI. or as mutually agreed between the contractor and the COR. At the meeting, the contractor shall discuss their planned approach to complete the contract effort.

C.3.2 Contractor shall conduct a program review thirteen (13) months after contract award. The meeting shall take place at TACOM, Warren, MI. or as mutually agreed between the contractor and the COR. At the meeting, the contractor shall discuss their progress toward completing the contract effort as well as their planned approach to completing the effort.

C.3.3 Contractor shall conduct a program review thirty (30) months after contract award. The meeting shall take place at TACOM, Warren, MI. or as mutually agreed between the contractor and the COR. At the meeting, the contractor shall discuss their program outcomes and potential future work.

C.3.4 Contractor shall conduct a program review 7 months after contract award in accordance to IAW CDRL 5. The meeting shall take place at Baker Engineering or TACOM, Warren, MI or as mutually agreed between the contractor and the COR. At the meeting, the contractor shall discuss the progress to date and present the path forward. The purpose of the meeting is to validate that the engine is meeting the performance targets and to discuss the APU integration effort.

C.4 Reporting

C.4.1 Contractor shall submit quarterly Progress Status and Management Reports (CDRL A001) to Contracting Officers Representative (COR) with the first report due three (3) months after contract award. Upon request by the contractor, COR will provide a quarterly progress report template. Quarterly progress reports shall include a summary of work completed in the quarter, issues encountered, work planned for the following quarter and financial information.

C.4.2 The contractor shall submit a publicly releasable SBIR Phase II Research & Development Project Summary (CDRL A002) at the end of contract. The summary shall be an unclassified, non-sensitive, and non-proprietary summation of results that is intended for public viewing on the Army SBIR / STTR Small Business Portal. It should address the Data Item requirements on a summary basis and must not exceed 700 words.

C.4.2.1 Since the Department of Defense (DOD) will be publishing the summary, the summary shall not contain any proprietary, classified, or ITAR restricted data. The summary must shall be submitted electronically and be in HTML format.

C.4.2.2 The Contractor shall deliver one (1) draft "SBIR Phase II R&D Project Summary" twenty-nine (29) months after contract award. The COR shall review the draft report and return it to the Contractor within fifteen (15) days of receipt with comments. The Contractor shall submit one (1) final "SBIR Phase II R&D Project Summary" within fifteen (15) days after receipt of draft comments (30 months after contract award).

C.4.3 Contractor shall submit a draft of the Scientific and Technical Report (CDRL A003) to the COR twenty-nine (29) months after award

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of the contract. The draft report shall include a completed Standard Form (SF) 298 (Report Documentation Page) as the report's cover sheet. Upon request of contractor, COR shall provide a quarterly progress report template upon contractors request. The COR shall review and respond, if necessary, within 30 days of receipt of the draft report. After receipt of the CORs comments, if any, the contractor shall prepare and submit the final version of the report.

C.4.3.1 Contractor shall include digital copies of all auxiliary power unit models and simulations with draft and final technical report.

C.4.3.2 Contractor shall include and explain auxiliary power unit test results from C.2.4 in the draft and final scientific and technical report.

C.4.4 The contractor shall prepare the final scientific and technical report in accordance with CDRL Item A003, Exhibit A, of the contract. The report shall summarize the work completed, the contract tasks not completed, significant accomplishments, problems and delays. The report shall include a thorough description of what specific approaches and procedures have been used in the project, studies completed during the project, as well as test results and their analysis and impact on the program. This report will also offer recommendations on what strategies and approaches should be used for future development.

C.4.5 The contractor shall submit a Performance and Cost Report in accordance with CDRL Item A004 of the contract. This document shall be included with the quarterly progress status and management reports (C.4.1) and final scientific and technical report (C.4.4).

C.5 Deliverables

C.5.1 Progress Status and Management Report to Contracting Officers Representative (COR) (CDRL Data Item Number A001).

C.5.2 Research & Development Project Summary (C.4.2) (CDRL Data Item Number A002)

C.5.3 Draft Technical and Scientific Report (C.4.3) (CDRL Data Item Number A003)

C.5.4 Final Technical and Scientific Report (C.4.4) (CDRL Data Item Number A003)

C.5.5 Performance and Cost Report (C.4.5) (CDRL Data Item Number A004)

C.5.6 Contractor shall deliver prototype engine test plan (C.2.4.1) to COR. Contractor shall deliver the prototype engine to TARDECs facilities in Warren, MI. The contractor shall include safety and operators manual for the prototype engine. The contractor shall include data bus in prototype system that is delivered to TARDEC.

C.5.7 Contractor shall deliver a 20 kW APU ready for vehicle demonstration and laboratory testing that is designed for a defined Stryker space claims. Space claim will be provided at the seven month program review.

C.6 Government-Furnished Equipment/Materials/Property

C.6.1 The engine hardware developed in the Phase II SBIR will be utilized for this effort.

*** END OF NARRATIVE C0001 ***

CONTINUATION SHEET**Reference No. of Document Being Continued****Page 9 of 10****PIIN/SIIN** W56HZV-09-C-0047**MOD/AMD** P00005**Name of Offeror or Contractor:** BAKER ENGINEERING INC

SECTION F - DELIVERIES OR PERFORMANCE

F.1 Period of Performance

F.1.1 All effort required under the basic Phase II effort, including delivery of the final technical report, shall be completed by 27-Jul-2012.

F.1.2 All effort for the Phase II Enhancement, including delivery of the final technical report, shall be completed by 13-Oct-2014.

F.2 Data Deliverables

F.2.1 Delivery of data set forth in the contract shall be in accordance with the Contract Data Requirements List, DD Form 1423.

F.3 Material / Hardware Deliverables (if required)

F.3.1 All materials / hardware required to be delivered under the contract shall be delivered FOB Destination to the following address:

Commander

U.S. Army TARDEC
ATTN: RDTE-RS, Mr. Darin Kowalski
6501 E. 11 Mile Road
Warren, MI 48397-5000

*** END OF NARRATIVE F0001 ***

CONTINUATION SHEET

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Name of Offeror or Contractor: BAKER ENGINEERING INC

SECTION J - LIST OF ATTACHMENTS

<u>List of</u> <u>Addenda</u>	<u>Title</u>	<u>Date</u>	<u>Number</u> <u>of Pages</u>	<u>Transmitted By</u>
Exhibit A	CONTRACT DATA REQUIREMENTS LIST	29-AUG-2013	004	

CONTRACT DATA REQUIREMENT LIST

Form Approval OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO.: 0002
B. EXHIBIT.....: A
C. CATEGORY.....: Reports
D. SYSTEM/ITEM.....: Small Fuel Efficient Multi-Fuel Capability Engine
E. CONTRACT/PR NO.....: W56HZV-09-C-0047
F. CONTRACTOR.....: Baker Engineering, Inc.

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1. DATA ITEM NO.: A001
2. TITLE OF DATA ITEM : Contractor's Progress Status and Management Report
3. SUBTITLE:
4. AUTHORITY: DI-MGMT-80227(T) (see 16a. below)
5. CONTRACT REFERENCE.....: C.2.6.1.1, C.5.1
6. REQUIRING OFFICE.....: AMSRD-TAR-R / MS 233
7. DD250 REQ: LT
8. APP CODE: N/A

9. DIST. STATEMENT REQUIRED:

10. FREQUENCY : Quarterly

11. AS OF DATE:

12. DATE OF FIRST SUB: 60 DAC

13. DATE OF SUBS. SUB:

14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Darin Kowalski, CONTRACTORS OFFICER REPRESENTATIVE E-MAIL: darin.i.kowalski.civ@mail.mil
Patty Roussin, CONTRACT SPECIALIST E-MAIL: patricia.m.roussin.civ@mail.mil
Thomas Engelsma, COGNIZANT ACO, DCMA E-MAIL: thomas.engelsma@dcma.mil

15. TOTAL:

16. REMARKS:

a. DI-MGMT-80227 is tailored by deleting 10.2, 10.3(f), 10.3(g), 10.3(h) and 10.3(i), 10.3(j) 10.3(k), and 10.3(l).
b. Per Modification P00005, the contractor shall provide an additional three (3) progress reports due on 25 OCT 2013, 25 JAN 2014, and 25 APR 2014.

17. PRICE GROUP:

18. ESTIMATED TOTAL PRICE:

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1. DATA ITEM NO.: A002
2. TITLE OF DATA ITEM : Research and Development (R&D) Project Summary
3. SUBTITLE:
4. AUTHORITY: DI-MISC-81612B(T)
5. CONTRACT REFERENCE.....: C.5.2
6. REQUIRING OFFICE: AMSRD-TAR-R / MS 233
7. DD250 REQ: DD
8. APP CODE: A

9. DIST. STATEMENT REQUIRED:

10. FREQUENCY : SEE ITEM 16

11. AS OF DATE:

12. DATE OF FIRST SUB: SEE ITEM 16

13. DATE OF SUBS. SUB: SEE ITEM 16

14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Darin Kowalski, CONTRACTORS OFFICER REPRESENTATIVE E-MAIL: darin.i.kowalski.civ@mail.mil
Patty Roussin, CONTRACT SPECIALIST E-MAIL: patricia.m.roussin.civ@mail.mil

15. TOTAL:
16. REMARKS:

- a. DID DI-MISC-81612B is tailored by deleting the underlined text as noted in Attachment 002 to the contract.
- b. The contractor must submit a publicly releasable SBIR Phase II R&D Project Summary at the end of contract. The summary is an unclassified, non-sensitive, and non-proprietary summation of results that is intended for public viewing on the Army SBIR / STTR Small Business Portal. It should address the Data Item requirements on a summary basis and must not exceed 700 words.

Since the Department of Defense (DOD) will be publishing the summary, it must not contain any proprietary, classified, or ITAR restricted data. The summary must be submitted electronically and be in HTML format.

- c. BASE EFFORT INSTRUCTIONS: The Contractor shall deliver one (1) draft "SBIR Phase II R&D Project Summary" twenty nine (29) months after contract award. The COR shall review the draft report and return it to the Contractor within fifteen (15) days of receipt with comments. The Contractor shall submit one (1) final "SBIR Phase II R&D Project Summary" within fifteen (15) days after receipt of draft comments (24 months after contract award).
- d. ENHANCEMENT EFFORT INSTRUCTIONS: The Contractor shall deliver one (1) draft "SBIR Phase II R&D Project Summary" on or before September 27, 2013. The COR shall review the draft report and return it to the Contractor within fifteen (15) days of receipt with comments. The Contractor shall submit one (1) final "SBIR Phase II R&D Project Summary" within fifteen (15) days after receipt of draft comments on or before October 28, 2013.

17. PRICE GROUP:
18. ESTIMATED TOTAL PRICE:

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- 1. DATA ITEM NO.: A003
- 2. TITLE OF DATA ITEM : SCIENTIFIC AND TECHNICAL REPORT
- 3. SUBTITLE: DRAFT/FINAL TECHNICAL REPORT
- 4. AUTHORITY: DI-MISC-80711A(T) (see 16a. below)
- 5. CONTRACT REFERENCE.....: C.5.3, C.5.4
- 6. REQUIRING OFFICE: AMSRD-TAR-R / MS 233
- 7. DD250 REQ: DD
- 8. APP CODE: A
- 9. DIST. STATEMENT REQUIRED:
- 10. FREQUENCY : SEE ITEM 16
- 11. AS OF DATE:
- 12. DATE OF FIRST SUB: SEE ITEM 16
- 13. DATE OF SUBS. SUB: SEE ITEM 16
- 14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Darin Kowalski, CONTRACTORS OFFICER REPRESENTATIVE E-MAIL: darin.i.kowalski.civ@mail.mil
Patty Roussin, CONTRACT SPECIALIST E-MAIL: patricia.m.roussin.civ@mail.mil

15. TOTAL:
16. REMARKS:

- a. DI-MISC-80711A is tailored by deleting 10.2.
- b. BASE EFFORT INSTRUCTIONS: The Draft of the Final Technical Report (C.4.3) shall be delivered twenty nine (29) months after date of contract award. The draft report shall include a completed Standard Form (SF) 298 (Report Documentation Page) as the report's cover sheet. The Government will review and respond within 30 days of receipt. The contractor shall submit the Final Technical Report (with the completed SF 298) within 30 days after receipt of draft comments/approval.
- c. ENHANCEMENT EFFORT INSTRUCTIONS: The Draft of the Final Technical Report (C.4.3) shall be delivered by August 27, 2013, sixteen (16) months after date of contract award. The draft report shall include a completed Standard Form (SF) 298 (Report Documentation Page) as the report's cover sheet. The Government will review and respond within 30 days of receipt. The contractor shall submit the Final Technical Report (with the completed SF 298) within 30 days after receipt of draft comments/approval on or before October 28, 2013.
- d. You may download the SF 298 form, from the following internet address:

<http://www.dtic.mil/dtic/forms/sf298 template.doc>

Instructions for completing the SF 298 are provided in Attachment 001 to the contract.

Here are some additional instructions for completing the SF 298 form that apply when submitting reports under the SBIR Program:

For each unclassified report, the Contractor shall fill in Block 12a (Distribution/Availability Statement) of the SF 298 with one of the following statements:

- (a) Approved for public release; distribution unlimited.
- (b) Distribution authorized to U.S. Government Agencies only; contains proprietary information

Note: After reviewing the Contractor's entry in Block 12a, TARDEC has final responsibility for assigning a distribution statement. The contractor shall mark the actual report itself in accordance with the appropriate legends set forth in DFARS 252.227-7018, "RIGHTS IN NONCOMMERCIAL TECHNICAL DATA AND COMPUTER SOFTWARE -- SMALL BUSINESS INNOVATIVE RESEARCH (SBIR) PROGRAM".

Block 13 (Abstract) of the SF 298 must include the first sentence, "Report developed under SBIR contract for topic (insert topic number)." The abstract must identify the purpose of the work and briefly describe the work carried out, the finding or results, and the potential applications of the effort. Since the Department of Defense (DOD) will be publishing the abstract, it must not contain any proprietary or classified data.

Block 14 (Subject Terms) of the SF 298 must include the term "SBIR Report."

- 17. PRICE GROUP:
- 18. ESTIMATED TOTAL PRICE:

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- 1. DATA ITEM NO.: A004
- 2. TITLE OF DATA ITEM.....: Performance and Cost Report
- 3. SUBTITLE
- 4. AUTHORITY: DI-FNCL-80912
- 5. CONTRACT REFERENCE.....: C.5.5
- 6. REQUIRING OFFICE.....: AMSRD-TAR-R / MS 233
- 7. DD250 REQ: LT
- 8. APP CODE: N/A
- 9. DIST. STATEMENT REQUIRED:
- 10. FREQUENCY : Quarterly
- 11. AS OF DATE:
- 12. DATE OF FIRST SUB: 60 DAC
- 13. DATE OF SUBS. SUB:
- 14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Darin Kowalski, CONTRACTORS OFFICER REPRESENTATIVE E-MAIL: darin.i.kowalski.civ@mail.mil
Patty Roussin, CONTRACT SPECIALIST E-MAIL: patricia.m.roussin.civ@mail.mil

- 15. TOTAL:
- 16. REMARKS:
- 17. PRICE GROUP:
- 18. ESTIMATED TOTAL PRICE:

=====

- 1. DATA ITEM NO.: A005
- 2. TITLE OF DATA ITEM.....: Mid Program Review
- 3. SUBTITLE
- 4. AUTHORITY: DI-MGMT-81605
- 5. CONTRACT REFERENCE.....: C.3.4
- 6. REQUIRING OFFICE: AMSRD-TAR-R/MS 233
- 7. WAWF/DD250 REQ: DD
- 8. APP CODE: A
- 9. DIST. STATEMENT REQUIRED:
- 10. FREQUENCY: SEE ITEM 16
- 11. AS OF DATE:

12. DATE OF FIRST SUB: SEE ITEM 16

13. DATE OF SUBS. SUB: SEE ITEM 16

14. DISTRIBUTION ADDRESSEES: SUBMIT REPORTS ELECTRONICALLY TO THE E-MAIL ADDRESSES SHOWN IMMEDIATELY BELOW:

Darin Kowalski, CONTRACTORS OFFICER REPRESENTATIVE E-MAIL: darin.i.kowalski.civ@mail.mil
Patty Roussin, CONTRACT SPECIALIST E-MAIL: patricia.m.roussin.civ@mail.mil
Thomas Engelsma, COGNIZANT ACO, DCMA E-MAIL: thomas.engelsma@dcma.mil

15. TOTAL:

16. REMARKS:

The Contractor shall host a mid program review at the contractor facility 7 months after contract MOD P00004 award, on or before November 27, 2012. The review shall include data to support the engine is achieving the performance targets discussed in the scope of work. The auxiliary power unit design shall also be presented in detail.

17. PRICE GROUP:

18. ESTIMATED TOTAL PRICE:

***** THE FOLLOWING INSTRUCTION APPLIES TO ALL REPORTS DELIVERABLE UNDER THE CONTRACT *****

Prepare the reports in Contractor format. Submit the reports using any of the following electronic formats:

(1) Files readable using these Microsoft* Office XP or Microsoft* Office 2002 & lower Products: Word, Excel, PowerPoint, or Access. Spreadsheets must be sent in a file format that includes all formulae, macro and format information. Print or scan images of spreadsheets are not acceptable. Please see security note below for caution regarding use of macros.

(2) Files in Adobe PDF (Portable Document Format). When scanning documents, scanner should be set to 200 dots per inch.

(3) Files in HTML (Hypertext Markup Language) Format. HTML documents must not contain active links to Internet websites or web pages for reference information. All linked information must be contained within your electronic report, and be accessible offline.

(4) Other electronic formats. Before preparing your report in any other electronic format, please e-mail the COR, with an e-mail copy-furnished to amsta-idq@tacom.army.mil, to obtain a decision as to the format's acceptability. This e-mail must be received by the COR not later than ten (10) calendar days before the draft report's due date. All alternate methods must be at no cost to the Government.

(5) Please note that we can no longer accept .zip files due to increasing security concerns.

NOTE. Macros: The virus scanning software used by our e-mail systems cannot always distinguish a macro from a virus. Therefore, sending a macro embedded in an e-mail message or an e-mail attachment may cause the e-mail report to be quarantined.

d. Acceptable media: The Contractor shall submit reports via e-mail. If e-mail is not workable, another acceptable media is a 650 megabyte CD ROM. Identify the software application and version used to create each file submitted.

(1) E-MAIL. Maximum size of each e-mail message shall be three and one-half (3.5) megabytes. Previously "zipped" files were accepted, but due to security concerns these zipped attachments cannot be received through our mail system. You may use multiple e-mail messages if necessary, however, you must annotate the subject lines in this manner: "Message 1 of 3, 2 of 3, 3 of 3."

(2) 650 MEGABYTE CD ROM to be delivered via U.S. Mail or other carrier. The Contractor shall label all submitted disks with the Contract number, the Contractor's name and address, and a contact's phone number. Exterior mailing envelopes containing disks must be addressed to the following address:

Mr. Darin Kowalski, Contracting Officer's Representative (COR)
ATTN: RDTA-RS
U.S. Army TACOM Life Cycle Management Command (TACOM LCMC)
6501 East 11 Mile Road
Warren, MI 48397-5000

NOTE: Please select only one type of electronic media to transmit each report. For instance, do not submit a report via e-mail and CD-ROM.

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