

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. Contract ID Code
Cost Plus Fixed Fee

Page 1 Of 5

2. Amendment/Modification No. P00005	3. Effective Date 2013SEP04	4. Requisition/Purchase Req No. SEE SCHEDULE	5. Project No. (If applicable)
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6. Issued By U.S. ARMY CONTRACTING COMMAND JAMES J. GIACCHINA WARREN, MICHIGAN 48397-5000 HTTP://CONTRACTING.TACOM.ARMY.MIL EMAIL: JAMES.J.GIACCHINA@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) AVL POWERTRAIN ENGINEERING, INC 47519 HALYARD DR PLYMOUTH, MI 48170-2438	<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-13-C-0005
	<input type="checkbox"/>	10B. Dated (See Item 13) 2012DEC04
Code 3Y1K3	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 checked="" 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 type="checkbox"/>	C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of:	
<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) JOHN M. HOPFNER JOHN.HOPFNER@US.ARMY.MIL (586)282-7359		
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 2013SEP04

CONTINUATION SHEET**Reference No. of Document Being Continued****Page 2 of 5**

PIIN/SIIN W56HZV-13-C-0005

MOD/AMD P00005

Name of Offeror or Contractor: AVL POWERTRAIN ENGINEERING, INC

SECTION A - SUPPLEMENTAL INFORMATION

Buyer Name: JAMES J. GIACCHINA
Buyer Office Symbol/Telephone Number: CCTA-ASG-B/(586)282-9736
Type of Contract: Cost Plus Fixed Fee
Kind of Contract: Research and Development Contracts
Type of Business: Large Business Performing in U.S.
Surveillance Criticality Designator: C
Weapon System: No Identified Army Weapons Systems
Contract Expiration Date: 2015MAR03

*** End of Narrative A0000 ***
Modification P00005

PREVIOUS NEGOTIATED CONTRACT AMOUNT:	\$4,899,000.00
AMOUNT OF THIS ACTION:	\$ 0.00
TOTAL NEGOTIATED CONTRACT AMOUNT:	\$4,899,000.00

PREVIOUS OBLIGATED CONTRACT AMOUNT:	\$3,207,506.00
OBLIGATE AMOUNT THIS ACTION:	\$ 0.00
TOTAL OBLIGATED CONTRACT AMOUNT:	\$3,207,506.00

- 1) This is a unilateral, no cost modification.
- 2) The purpose of Modification P00005 is to revise the Contracting Officer Representative (COR).
- 3) As a result of modification, the contract is modified as follows:
 - a) SECTION F
 - i. Paragraph F.1.2 is revised to reflect Constantine (Gus) Panagos in lieu of Anthony Combi for all contract deliveries. The mail stop for deliveries is also revised.
 - b) SECTION G
 - i. Clause 52.242-4016, Communications, is revised to reflect Constantine (Gus) Panagos as the Technical Representative (COR) in lieu of Anthony Combi.
 - c) SECTION J
 - i. Exhibit A, Contract Data Requirement List (CDRL), is revised to reflect Constantine (Gus) Panagos as the COR in lieu of Anthony Combi.
- 4) As a result of Modification P00005, the total contract value is neither increased nor decreased.
- 5) Except as provided herein, all other terms and conditions remain unchanged.

*** END OF NARRATIVE A0005 ***

CONTINUATION SHEET**Reference No. of Document Being Continued****Page 3 of 5****PIIN/SIIN** W56HZV-13-C-0005**MOD/AMD** P00005**Name of Offeror or Contractor:** AVL POWERTRAIN ENGINEERING, INC

SECTION F - DELIVERIES OR PERFORMANCE

F.1 DELIVERY

F.1.1 Delivery of Data set forth in this contract shall be in accordance with the Contract Data Requirements List (CDRL), DD Form 1423, Exhibit A.

F.1.2 All items other than data called for in this contract shall be delivered FOB DESTINATION to the following address:

U.S. Army TARDEC
ATTN: Mr. Constantine Panagos**
Bldg 212, RDTA-ES, M/S 121
6501 E. 11 Mile Road
Warren, MI 48397-5000

F.2 PERFORMANCE

F.2.1 All effort required under this contract, including delivery of one (1) prototype engine and submission of the final technical report, shall be completed within twenty-seven (27) months after date of contract award.

F.2.2 The Contractor shall deliver one (1) prototype engine to the address listed in F.1.2 at the completion of the contract. Acceptance of the Final Technical Report and receipt of the prototype engine will constitute completion of the contract.

**Revised by Modification P00005

*** END OF NARRATIVE F0001 ***

CONTINUATION SHEET	Reference No. of Document Being Continued PIIN/SIIN W56HZV-13-C-0005 MOD/AMD P00005	Page 4 of 5
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Name of Offeror or Contractor: AVL POWERTRAIN ENGINEERING, INC

SECTION G - CONTRACT ADMINISTRATION DATA

<u>Status</u>	<u>Regulatory Cite</u>	<u>Title</u>	<u>Date</u>
G-1 CHANGED	52.242-4016	COMMUNICATIONS	MAY/2000

Communications on technical matters pertaining to the contract shall be direct between the contractor and the Technical Representative. Communications for the Technical Representative shall be addressed to:

Name: Constantine (Gus) Panagos**
E-mail: constantine.panagos.civ@mail.mil**

The Administrative Contracting Officer's (ACO) name and email address are also provided if known at this time:

ACO: Richard Monette
E-mail: richard.monette@dcma.mil

Please see the appointment letters prepared at time of contract award for functions the Technical Representative and ACO will perform on this contract.

**Revised by Modification P00005

[End of Clause]

CONTINUATION SHEET

Reference No. of Document Being Continued

Page 5 of 5

PIIN/SIIN W56HZV-13-C-0005

MOD/AMD P00005

Name of Offeror or Contractor: AVL POWERTRAIN 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	27-JUN-2013	011	

CONTRACT DATA REQUIREMENTS 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.: 0004
- B. EXHIBIT: A
- C. CATEGORY: N/A
- D. SYSTEM/ITEM: Next Generation Combat Engine
- E. CONTRACT NO.: W56HZV-13-C-0005
- F. CONTRACTOR: AVL Powertrain Engineering, Inc.

- 1. DATA ITEM NO. A001
- 2. TITLE OF DATA ITEM: Contractors Progress, Status and Management Report
- 3. SUBTITLE: Monthly Program Report(s)
- 4. AUTHORITY: DI-MGMT-80368A
- 5. CONTRACT REFERENCE: C.5.6
- 6. REQUIRING OFFICE: RDTA-RS
- 7. DD250 REQ: NO
- 8. APP CODE: N/A
- 9. DIST. STATEMENT REQUIRED: D, see item 16
- 10. FREQUENCY: Monthly
- 11. AS OF DATE: Date of Contract Award
- 12. DATE OF FIRST SUB: See item 16
- 13. DATE OF SUBS. See item 16
- 14. DISTRIBUTION:

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**Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil	1
John Tasdemir, Team Leader, john.tasdemir@us.army.mil	1
James Giacchina, Contract Specialist, james.j.giacchina.civ@mail.mil	1
Richard Monette, Administrative Contracting Officer, richard.monette@dcma.mil	1
- 15. TOTAL: 1ea.
- 16. REMARKS:

a. The Contractor shall email the reports to the recipients listed in item 14 above, no later than (NLT) 5:00PM, local time, Warren, MI on the days indicated in items b and c below. The reports shall summarize the work initiated, ongoing tasks and projects, completed tasks, significant accomplishments, any potential problems or delays, the status of on-going studies and studies completed during the reporting time period, and test results and their analysis and impact on the program. The reports shall also contain a risk management assessment of the top three risks in potentially delaying the progress of the program, documentation describing all calibration and variable interfaces, and basic algorithm designs. Every other report shall additionally contain total costs projected and costs incurred to date on the contract, with specific reference to the costs incurred since the last status report, and whether the contractor is on schedule and within cost to successfully complete the contract. MS Project software shall be used to follow the progress of the program, and an electronic copy of the file shall be provided to the COR with each monthly program report.

b. Item 12: The first submittal shall be NLT 30 days after the Start of Work Meeting.

c. Item 13: The subsequent submittals shall be monthly thereafter.

d. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

- 1. DATA ITEM NO. A002

2. TITLE OF DATA ITEM: Technical ReportStudy/Services
3. SUBTITLE: Technical Reports
4. AUTHORITY: DI-MISC-80508B
5. CONTRACT REFERENCE: C.5.5
6. REQUIRING OFFICE: RDTA-RS
7. DD250 REQ: NO
8. APP CODE: N/A
9. DIST. STATEMENT REQUIRED: D, see item 16
10. FREQUENCY: See item 16
11. AS OF DATE: Date of Contract Award
12. DATE OF FIRST SUB: See item 16
13. DATE OF SUBS. See item 16
14. DISTRIBUTION: COPIES
**Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil 1
John Tasdemir, Team Leader, john.tasdemir@us.army.mil 1
James Giacchina, Contract Specialist, james.j.giacchina.civ@mail.mil 1
Richard Monette, Administrative Contracting Officer, richard.monette@dcma.mil 1
15. TOTAL: 1ea.
16. REMARKS:

a. Items 12 & 13: The Contractor shall deliver the Technical Reports to the email addresses listed in item 14 above for COR review and approval as follows. If changes to the Technical Reports are required, the COR will notify the Contractor within five (5) working days of any changes that will need to be made. The Contractor shall revise (incorporating all key data and comments) and resubmit a final version of the Technical Report to the email addresses listed in item 14 above within ten (10) days of receipt of comments. In this event, the revised submission shall be identified as a revision in the e-mail subject line, and on the cover page of the submitted document.

i. The Contractor shall deliver a technical report on the initial power cylinder 3D CAD model development, as specified in section C.3.1.1.2 of the contract, NLT two (2) months after contract award.

ii. The Contractor shall deliver a technical report on the multi-cylinder power module 3D CAD model development, as specified in section C.3.1.2.2 of the contract, NLT three (3) months after contract award.

iii. The Contractor shall deliver a technical report on the 1D thermodynamic analysis by documenting analysis assumptions, boundary conditions, results and design recommendations for the 1st generation prototype engine, as specified in section C.3.2.1.2 of the contract, NLT five (5) months after contract award.

iv. The Contractor shall deliver a technical report on the 3D combustion CFD analysis by documenting analysis assumptions, boundary conditions, results and design recommendations for the 1st generation prototype engine, as specified in section C.3.2.2.1 of the contract, NLT six (6) months after contract award.

v. The Contractor shall deliver a technical report on the 3D gas exchange analysis by documenting analysis assumptions, boundary conditions, results and design recommendations for the 1st generation prototype, as specified in section C.3.2.3.1 of the contract, NLT four (4) months after contract award.

vi. The Contractor shall deliver a technical report on the 1D cooling system analysis model development, as specified in section C.3.2.4.1 of the contract, NLT four (4) months after contract award.

vii. The Contractor shall deliver a technical report on the 1D cooling system analysis by documenting analysis assumptions, boundary conditions, results and design recommendations for the 1st generation prototype engine, as specified in section C.3.2.4.2 of the contract, NLT four (4) months after contract award.

viii. The Contractor shall deliver a technical report on the 1D lubrication system analysis model development, as specified in section C.3.2.5.1 of the contract, NLT four (4) months after contract award.

ix. The Contractor shall deliver a technical report on the 1D lubrication system analysis by documenting analysis assumptions, boundary conditions, results and design recommendations for the 1st generation prototype engine, as specified in section C.3.2.5.2 of the contract, NLT four (4) months after contract award.

x. The Contractor shall deliver a technical report on the structural, thermal, buckling, 3D coolant flow, and fatigue life analyses by documenting analyses assumptions, boundary conditions, results and design recommendations for the 1st generation power cylinder system, as specified in section C.3.2.6.6 of the contract, NLT six (6) months after contract award.

- xi. The Contractor shall deliver a technical report on the structural, dynamic, vibration, FE, and fatigue life analyses by documenting analyses assumptions, boundary conditions, results and design recommendations for the 1st generation multi-cylinder power module, as specified in section C.3.2.7.5 of the contract, NLT six (6) months after contract award.
- xii. The Contractor shall deliver a technical report on the refined power cylinder system 3D CAD model development, as specified in section C.3.3.1.2 of the contract, NLT six (6) months after contract award.
- xiii. The Contractor shall deliver a technical report on the refined multi-cylinder power module 3D CAD model development, as specified in section C.3.3.2.2 of the contract, NLT six (6) months after contract award.
- xiv. The Contractor shall deliver a technical report on the final design analysis conducted in C.3.3.3.1 and 1st generation power cylinder system 3D CAD model development, as specified in section C.3.3.3.2 of the contract, NLT eight (8) months after contract award.
- xv. The Contractor shall deliver a technical report on the final design analysis conducted in C.3.3.4.1 and 1st generation multi-cylinder power module 3D CAD model development, as specified in section C.3.3.4.2 of the contract, NLT eight (8) months after contract award.
- xvi. The Contractor shall deliver a technical report on the fuel system characterization by documenting characterization assumptions, boundary conditions, results and design recommendations for the fuel system, as specified in section C.3.5.1.1 of the contract, NLT thirteen (13) months after contract award.
- xvii. The Contractor shall deliver a technical report on the control system hardware, software, wiring schematic, and algorithm development, as well as the control hardware modifications and hardware-in-loop system and dynamometer validation testing results, as specified in section C.3.5.2.4 of the contract, NLT sixteen (16) months after contract award.
- xviii. The Contractor shall deliver a technical report on the calibration and results and deliver, as specified in section C.3.5.3.1 of the contract, NLT fifteen (15) months after contract award.
- xix. The Contractor shall deliver a technical report on the mechanical verification and results, as specified in section C.3.5.4.1 of the contract, NLT eighteen (18) months after contract award.
- xx. The Contractor shall deliver a technical report on the calibration, results, and recommendations using both DF-2 and JP-8 fuels, as specified in section C.3.5.5.1 of the contract, NLT twenty (20) months after contract award.
- xxi. The Contractor shall deliver a technical report on the 1D Thermodynamic Analysis by documenting analysis assumptions, boundary conditions, results, and design recommendations for the 2nd generation prototype engine, as specified in section C.3.6.1.2 in the contract, NLT twenty-two (22) months after contract award.
- xxii. The Contractor shall deliver a technical report on the 3D combustion CFD analysis by documenting analysis assumptions, boundary conditions, results, and design recommendations for the 2nd generation prototype engine, as specified in section C.3.6.2.1 of the contract, NLT twenty-two (22) months after contract award.
- xxiii. The Contractor shall deliver a technical report on the structural, thermal, buckling, 3D coolant flow, and fatigue life analyses by documenting analyses assumptions, boundary conditions, results and design recommendations for the 2nd generation power cylinder system, as specified in section C.3.6.3.6 of the contract, NLT twenty-two (22) months after contract award.
- xxiv. The Contractor shall deliver a technical report on the 2nd generation power cylinder development process, as specified in section C.3.7.1.2 of the contract, NLT twenty-two (22) months after contract award.
- xxv. The Contractor shall deliver a technical report on the final design analysis conducted in C.3.7.2.1 and 2nd generation power cylinder system model development, as specified in section C.3.7.2.2 of the contract, NLT twenty-three (23) months after contract award.
- xxvi. The Contractor shall deliver a technical report on the calibration and results, as specified in section C.3.9.1.1 of the contract, NLT twenty-four (24) months after contract award.
- xxvii. The Contractor shall deliver a technical report on the final calibration and transient calibration, as specified in section C.3.9.2.3 of the contract, NLT twenty-six (26) months after contract award.

xxviii. The Contractor shall deliver a technical report on the final performance and validation testing results, as specified in section C.3.9.3.2 of the contract, NLT twenty-six (26) months after contract award.

xxix. The Contractor shall deliver a technical report on the 50-hour durability assessment test results at contract completion, as specified in section C.3.9.4.1 of the contract, prior to the period of performance expiration date identified in Section F of this contract.

b. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

- 1. DATA ITEM NO. A003
- 2. TITLE OF DATA ITEM: Report, Record of Meeting/Minutes
- 3. SUBTITLE: Meeting Minutes
- 4. AUTHORITY: DI-ADMN-81505
- 5. CONTRACT REFERENCE: C.4.1, C.4.2, C.4.3, C.5.3
- 6. REQUIRING OFFICE: RDTA-RS
- 7. DD250 REQ: NO
- 8. APP CODE: N/A
- 9. DIST. STATEMENT REQUIRED: D, see item 16
- 10. FREQUENCY: See item 16
- 11. AS OF DATE: Date of Contract Award
- 12. DATE OF FIRST SUB: See item 16
- 13. DATE OF SUBS: See item 16
- 14. DISTRIBUTION:

	COPIES
**Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil	1
John Tasdemir, Team Leader, john.tasdemir@us.army.mil	1
James Giacchina, Contract Specialist, james.j.giacchina.civ@mail.mil	1
Richard Monette, Administrative Contracting Officer, richard.monette@dcma.mil	1
- 15. TOTAL: 1ea.
- 16. REMARKS:

a. Items 12 & 13: The Contractor shall deliver all Meeting Minutes to the email addresses listed in item 14 above as follows:

i. Agenda and presentation materials shall be delivered NLT five (5) days prior to each meeting, including the Start of Work meeting (see section C.4.1 of the contract), In Process Review (IPR) Meetings (see section C.4.2 of the contract), and the Final Review Meeting (see section C.4.3 of the contract).

ii. All final meeting minutes, including all agendas, presentations, briefing slides, discussed items, and future action items shall be delivered NLT ten (10) days after each meeting, including the Start of Work meeting (see section C.4.1 of the contract), IPR Meetings (see section C.4.2 of the contract), and the Final Review Meeting (see section C.4.3 of the contract).

b. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

- 1. DATA ITEM NO. A004
- 2. TITLE OF DATA ITEM: Scientific and Technical Reports
- 3. SUBTITLE: Final Technical Report
- 4. AUTHORITY: DI-MISC-80711A
- 5. CONTRACT REFERENCE: C.4.3, C.5.7
- 6. REQUIRING OFFICE: RDTA-RS
- 7. DD250 REQ: NO

- 8. APP CODE: N/A
- 9. DIST. STATEMENT REQUIRED: D, see item 16
- 10. FREQUENCY: See item 16
- 11. AS OF DATE: Date of Contract Award
- 12. DATE OF FIRST SUB: See item 16
- 13. DATE OF SUBS: See item 16

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**Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil	1
John Tasdemir, Team Leader, john.tasdemir@us.army.mil	1
James Giacchina, Contract Specialist, james.j.giacchina.civ@mail.mil	1
Richard Monette, Administrative Contracting Officer, richard.monette@dcma.mil	1
15. TOTAL:	1ea.
16. REMARKS:	

a. Items 12 & 13: The Contractor shall prepare a draft technical report and deliver it to the email addresses listed in item 14 above within sixty (60) days of the contracts period of performance completion date (see section F of this contract). The COR will review the draft technical report, add comments, and return it to the Contractor within fifteen (15) days of receipt of draft. The Contractor shall revise (incorporating all key data and comments) and resubmit a final version of the Technical Report to the email addresses listed in item 14 above within fifteen (15) days of receipt of comments, but NLT the day of the Final Review Meeting (see section C.4.3 of this contract). The report shall contain a summary of all contract tasks performed under this contract, as well as the technical laboratory setup with schematics and maximum operating conditions that were used during performance of this contract.

b. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

- 1. DATA ITEM NO. A005
- 2. TITLE OF DATA ITEM: Contract Work Breakdown Structure (CWBS)
- 3. SUBTITLE: CWBS & Integrated Master Schedule (IMS)
- 4. AUTHORITY: DI-MGMT-81334D
- 5. CONTRACT REFERENCE: C.5.1 & C.5.2
- 6. REQUIRING OFFICE: RDTA-RS
- 7. DD250 REQ: NO
- 8. APP CODE: N/A
- 9. DIST. STATEMENT REQUIRED: D, see item 16
- 10. FREQUENCY: See item 16
- 11. AS OF DATE: Date of Contract Award
- 12. DATE OF FIRST SUB: See item 16
- 13. DATE OF SUBS: See item 16

14. DISTRIBUTION:	COPIES
**Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil	1
John Tasdemir, Team Leader, john.tasdemir@us.army.mil	1
James Giacchina, Contract Specialist, james.j.giacchina.civ@mail.mil	1
Richard Monette, Administrative Contracting Officer, richard.monette@dcma.mil	1
15. TOTAL:	1ea.
16. REMARKS:	

a. The Contractor shall develop and maintain a CWBS which shall be traceable through the IMS, and an IMS which shall be traceable through the CWBS. The CWBS shall establish a framework for program planning and cost tracking. The CWBS shall be defined, at a minimum, down to the fourth level. The Contractor shall track and report on costs according to the CWBS down to the third level, at a minimum. The IMS shall be used to verify attainability of contract objectives, evaluate progress toward meeting program objectives, integrate the program schedule activities with all related components, and verify the schedule of deliverables. The CWBS and IMS shall be reviewed at each quarterly IPR Meeting IAW section C.4.2 of the contract.

b. Items 12 & 13: The Contractor shall deliver a draft CWBS and IMS to the email addresses listed in item 14 above NLT the same day as the Start of Work meeting (see section C.4.1 of this contract). The COR will review the draft CWBS and IMS, add comments, and return them to the Contractor within fifteen (15) days of receipt of the draft. The Contractor shall revise (incorporating all key data and comments) and resubmit a final version of the CWBS and IMS to the email addresses listed in item 14 above within fifteen (15) days of receipt of comments.

c. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

1. DATA ITEM NO. A006
2. TITLE OF DATA ITEM: Developmental Design Drawings/Models and Associated Lists
3. SUBTITLE: Interim and Final Technical Models
4. AUTHORITY: DI-SESS-81002E
5. CONTRACT REFERENCE: C.5.8
6. REQUIRING OFFICE: RDTA-RS
7. DD250 REQ: NO
8. APP CODE: N/A
9. DIST. STATEMENT REQUIRED: D, see item 16
10. FREQUENCY: See item 16
11. AS OF DATE: N/A
12. DATE OF FIRST SUB: See item 16
13. DATE OF SUBS: See item 16
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**Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil	1
John Tasdemir, Team Leader, john.tasdemir@us.army.mil	1
15. TOTAL:	1ea.
16. REMARKS:

a. DI-SESS-81002E is tailored by deleting 5 and 7, and revising 2, 3, and 6 to replace TDP Option Selection Worksheet incorporated in the contract or purchase order with contract.

*b. Items 12 & 13: The Contractor shall deliver all interim and final models to the email addresses listed in item 14 above as follows. If the file size exceeds 3.5 Megabytes, the Contractor shall deliver the interim or final model to the mailing address specified in General Instruction (5)(b) below. The Contractor shall also deliver software that is configured to this application, programming utilities and tools, and calibration tools as well as a full list of all third party software modeling tools utilized for development of the models.

i. The Contractor shall deliver the 3D CAD model of the initial power cylinder system design, including all components identified in section C.3.1.1.1 of the contract, using Pro/Engineer Wildfire 3 software, or alternate software approved by the COR, developed in section C.3.1.1.2 in the contract no later than two (2) months after contract award.

ii. The Contractor shall deliver the 3D CAD model of the initial multi-cylinder power module design, including all engine systems and components identified in section C.3.1.2.1 of the contract, using Pro/Engineer Wildfire 3 software, or alternate software approved by the COR, developed in section C.3.1.2.2 in the contract NLT three (3) months after contract award.

*iii. The Contractor shall deliver the computational models and simulations of the Contractor-selected base engine designed and developed in section C.3.2.1.1 of the contract NLT six (6) months after contract award. The one dimensional model delivered by Contractor shall have portions accessible only as executable code in order to protect intellectual property of Contractor or Subcontractor that has been developed outside of this contract.

iv. The Contractor shall deliver the 1D cooling analysis system model, including all cooling system components identified and developed in section C.3.2.4.1 of the contract NLT four (4) months after contract award.

v. The Contractor shall deliver the 1D lubrication system analysis model, including all oil system components identified and developed in section C.3.2.5.1 of the contract NLT four (4) months after contract award.

vi. The Contractor shall deliver the refined power cylinder system 3D CAD model developed in section C.3.3.1.2 of the contract NLT six (6) months after contract award.

vii. The Contractor shall deliver the refined multi-cylinder power module 3D CAD model developed in section C.3.3.2.2

of the contract NLT six (6) months after contract award.

viii. The Contractor shall deliver the 1st generation power cylinder system 3D CAD model developed in section C.3.3.3.2 of the contract NLT eight (8) months after contract award.

ix. The Contractor shall deliver the 1st generation multi-cylinder power module 3D CAD model developed in section C.3.3.4.2 of the contract NLT eight (8) months after contract award.

x. The Contractor shall deliver the computational models and simulations of the 1st generation prototype engine designed and developed in sections C.3.1-C.3.5 of the contract NLT twenty-two (22) months after contract award.

xi. The Contractor shall deliver the initial 2nd generation power cylinder system 3D CAD model developed in section C.3.7.1.2 of the contract NLT twenty-two (22) months after contract award.

xi. The Contractor shall deliver the final 2nd generation power cylinder system 3D CAD model developed in section C.3.7.2.2 of the contract NLT twenty-three (23) months after contract award.

*xii. The Contractor shall deliver the engine control system software and algorithms developed in section C.3.5.2.2 of the contract NLT sixteen (16) months after contract award. The engine control system software and algorithms are provided under this Contract as commercial computer software as specified under 48 C.F.R \a7\ a7 12.212 and 227.7202-1 through -4 and are provided under Achates Powers then-customary commercial license agreement. Contract shall also deliver a configuration file delivered in Section C.3.5.2.2 of the contract.

c. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

- 1. DATA ITEM NO. A007
- 2. TITLE OF DATA ITEM: Operation and Maintenance Instructions for Research and Development (R&D) Equipment
- 3. SUBTITLE: Technical Manuals
- 4. AUTHORITY: DI-MISC-81414
- 5. CONTRACT REFERENCE: C.5.4
- 6. REQUIRING OFFICE: RDTA-RS
- 7. DD250 REQ: NO
- 8. APP CODE: N/A
- 9. DIST. STATEMENT REQUIRED: D, see item 16
- 10. FREQUENCY: See item 16
- 11. AS OF DATE: N/A
- 12. DATE OF FIRST SUB: See item 16
- 13. DATE OF SUBS: See item 16
- 14. DISTRIBUTION: COPIES
- **Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil 1
- John Tasdemir, Team Leader, john.tasdemir@us.army.mil 1
- 15. TOTAL: 1ea.

16. REMARKS:

a. DI-MISC-81414 is tailored by deleting 10.2.e.

b. Items 12 & 13: The Contractor shall deliver Technical Manuals to the email addresses listed in item 14 above as follows:

i. The Contractor shall deliver the draft engine manual developed per section C.3.4.2 of the contract, containing all measurements taken during the 1st generation prototype engine build, as well as instructions for engine operation, technical specifications of the engine and components, functional limits of the engine, and the break-in procedure used for the engine NLT ten (10) days after the 1st generation prototype engine build is complete.

ii. The Contractor shall deliver the manual containing all technical specifications of the engine controller developed per section C.3.5.2 of the contract NLT sixteen (16) months after contract award.

iii. The Contractor shall deliver the final engine manual revised in section C.3.8.2 of the contract, containing all measurements taken during the 1st generation prototype engine modification, as well as any necessary revisions to the instructions for engine operation, technical specifications of the engine and components, functional limits of the engine, and the break-in procedure used for the engine NLT one (1) day prior to the period of performance completion date identified in Section F of this contract.

c. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

- 1. DATA ITEM NO. A008
- 2. TITLE OF DATA ITEM: Briefing Material
- 3. SUBTITLE: Training Material
- 4. AUTHORITY: DI-MGMT-81605
- 5. CONTRACT REFERENCE: C.5.12
- 6. REQUIRING OFFICE: RDТА-RS
- 7. DD250 REQ: NO
- 8. APP CODE: N/A
- 9. DIST. STATEMENT REQUIRED: D, see item 16
- 10. FREQUENCY: See item 16
- 11. AS OF DATE: N/A
- 12. DATE OF FIRST SUB: See item 16
- 13. DATE OF SUBS: See item 16
- 14. DISTRIBUTION: COPIES
- **Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil 1
- John Tasdemir, Team Leader, john.tasdemir@us.army.mil 1
- 15. TOTAL: 1ea.
- 16. REMARKS:

a. The Contractor shall develop training material for one (1) training session for approximately five Government personnel on how to program the engine controller developed in section C.3.5.2 of this contract, change the software for the controller, and load new code into the controller.

b. Items 12 & 13: The Contractor shall deliver the training material to the email addresses listed in item 14 above NLT five (5) days prior to training start.

c. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

- 1. DATA ITEM NO. A009
- 2. TITLE OF DATA ITEM: Test/Inspection Report
- 3. SUBTITLE: Inspection Reports
- 4. AUTHORITY: DI-NDTI-80809B
- 5. CONTRACT REFERENCE: C.5.9
- 6. REQUIRING OFFICE: RDТА-RS
- 7. DD250 REQ: NO
- 8. APP CODE: N/A
- 9. DIST. STATEMENT REQUIRED: D, see item 16
- 10. FREQUENCY: See item 16
- 11. AS OF DATE: N/A
- 12. DATE OF FIRST SUB: See item 16
- 13. DATE OF SUBS: See item 16

14. DISTRIBUTION: COPIES
**Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil 1
John Tasdemir, Team Leader, john.tasdemir@us.army.mil 1
15. TOTAL: 1ea.

16. REMARKS:

a. The Contractor shall develop inspection reports resulting from the inspection of each procured and fabricated 1st generation prototype engine system and component using the engine system and component 2D drawings developed in sections C.3.3.3.1 and C.3.3.4.1 of the contract, and 2nd generation prototype engine system and component using the engine system and component 2D drawings developed or updated in section C.3.7.2.1 of the contract. The inspections shall focus specifically on the critical dimensions noted on each 2D drawing. Inspection reports for commercially available components are not required.

b. Items 12 & 13: The Contractor shall deliver the inspection reports to the email addresses listed in item 14 above NLT fourteen (14) days prior to the 1st generation prototype engine build and testing (see section C.3.4.2) and 1st generation prototype engine modification and testing (see section C.3.8.1) for COR review and approval. The COR will review the inspection reports and provide approval or comment to the Contractor within seven (7) days of receipt. If COR comment is received, the Contractor shall revise (incorporating all key data and comments) and resubmit the inspection reports to the email addresses listed in item 14 above within seven (7) days of receipt of comments.

c. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

1. DATA ITEM NO. A010
2. TITLE OF DATA ITEM: Test Plans
3. SUBTITLE: Validation Test Plan
4. AUTHORITY: DI-NDTI-80566
5. CONTRACT REFERENCE: C.5.10
6. REQUIRING OFFICE: RDTA-RS
7. DD250 REQ: NO
8. APP CODE: N/A
9. DIST. STATEMENT REQUIRED: D, see item 16
10. FREQUENCY: See item 16
11. AS OF DATE: N/A
12. DATE OF FIRST SUB: See item 16
13. DATE OF SUBS: See item 16
14. DISTRIBUTION: COPIES
**Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil 1
John Tasdemir, Team Leader, john.tasdemir@us.army.mil 1
15. TOTAL: 1ea.

16. REMARKS:

a. Items 12 & 13: The Contractor shall deliver the validation test plan to the email addresses listed in item 14 above NLT one (1) month prior to the start of performance and final validation testing conducted IAW section C.3.9.3.1 of the contract. The COR will review the validation test plan and provide comment or approval to the Contractor within ten (10) days of receipt of the draft. The Contractor shall revise (incorporating all key data and comments) and resubmit a final version of the validation test plan to the email addresses listed in item 14 above within ten (10) days of receipt of comments.

b. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

1. DATA ITEM NO. A011

- 2. TITLE OF DATA ITEM: Test Procedures
- 3. SUBTITLE: Validation Test Procedures
- 4. AUTHORITY: DI-NDTI-80603
- 5. CONTRACT REFERENCE: C.5.11
- 6. REQUIRING OFFICE: RDTA-RS
- 7. DD250 REQ: NO
- 8. APP CODE: N/A
- 9. DIST. STATEMENT REQUIRED: D, see item 16
- 10. FREQUENCY: See item 16
- 11. AS OF DATE: N/A
- 12. DATE OF FIRST SUB: See item 16
- 13. DATE OF SUBS: See item 16
- 14. DISTRIBUTION:
**Constantine (Gus) Panagos, COR, constantine.panagos.civ@mail.mil COPIES
John Tasdemir, Team Leader, john.tasdemir@us.army.mil 1
15. TOTAL: 1ea.
- 16. REMARKS:

a. The validation test procedures shall include general planning factors, objectives, scope and details of the contract portions of the test programs. In defining specific test objectives, data priorities, support, resource and configuration requirements, it is used to evaluate the proposed test program/ test procedures.

b. Items 12 & 13: The Contractor shall deliver the validation test procedures to the email addresses listed in item 14 above NLT one (1) month prior to the start of performance of final validation testing conducted IAW section C.3.9.3.1 of the contract. The COR will review the validation test procedures and provide comment or approval to the Contractor within ten (10) days of receipt of the draft. The Contractor shall revise (incorporating all key data and comments) and resubmit a final version of the validation test procedures to the email addresses listed in item 14 above within ten (10) days of receipt of comments.

c. Item 9: Distribution Statement D: The Contractor shall insert the following restrictive marking on all correspondence, Distribution Statement D: Distribution authorized to the Department of Defense and U.S. DoD contractors only (critical technology) (Date of Determination). Other requests for this document shall be referred to TACOM, ATTN: CCTA-ASG-B (James Giacchina), 6501 East 11 Mile Road, M/S 322, Warren, MI 48397-5000. This document is not releasable to the public or media. Destroy by shredding or tearing to make unreadable, when no longer needed. This document should not be sent over the INTERNET unencrypted, or posted to any public web sites.

GENERAL INSTRUCTIONS APPLICABLE TO ALL DATA ITEMS:

Submit all reports using any of the following electronic formats:

- (1) Files shall be readable using these Microsoft* Office XP or Microsoft* Office 2007 & 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). Scanners 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 email copy-furnished to amsta-idg@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 calendar days before the draft report's due date. All alternate methods must be at no cost to the Government.

Notes: Please note that we can no longer accept .zip files due to increasing security concerns.

(5) 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.

(a) E-MAIL. Maximum size of each e-mail message shall be three and one-half (3.5) megabytes. Any compressed files must be self-extracting, and you must provide appropriate instructions. 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."

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

U.S. Army TARDEC
ATTN: Mr. Constantine Panagos
Bldg 212, RDTA-ES, M/S 121
6501 East 11 Mile Road
Warren, MI 48397-5000

NOTE: Please select only one medium by which to transmit each report. For instance, do not submit a report via e-mail and CD ROM.

*Registered Trademark

**Revised by Modification P00005