

<b>AWARD/CONTRACT</b>		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING	PAGE OF PAGES 1   21
2. CONTRACT (Proc. Inst. Ident.) NO. HR0011-09-C-0055		3. EFFECTIVE DATE 19 Mar 2009		4. REQUISITION/PURCHASE REQUEST/PROJECT NO. Y141/00	
5. ISSUED BY DARPA CMO ATTN: CHRISTOPHER GLISTA 3701 N. FAIRFAX DR. ARLINGTON VA 22203		CODE HR0011	6. ADMINISTERED BY (If other than Item 5) DCMA LONG ISLAND 808 STEWART STREET GARDEN CITY NY 11530-4781		CODE SS308A
7. NAME AND ADDRESS OF CONTRACTOR (No., street, city, country, state and zip code) ALLIANT TECHSYSTEMS INC 77 RAYNOR AVE ROCKY HILL CT 06154-5848			8. DELIVERY [ ] FOB ORIGIN [X] OTHER (See below)		
			9. DISCOUNT FOR PROMPT PAYMENT N/A		
			10. SUBMIT INVOICES 1 (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN:		ITEM Section G
CODE 08426		FACILITY CODE			
11. SHIP TO/MARK FOR DARPA 3701 NORTH FAIRFAX DRIVE ARLINGTON VA 22203-1714		CODE HR0011	12. PAYMENT WILL BE MADE BY DPAS COLUMBUS CENTER NORTH ENTITLEMENT OPERATIONS P.O. BOX 182288 COLUMBUS OH 43218-2288		CODE HQ0387
13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: [ ] 10 U.S.C. 2304(c)(X) [ ] 41 U.S.C. 253(c)(X)			14. ACCOUNTING AND APPROPRIATION DATA See Schedule		
15A. ITEM NO.	15B. SUPPLIES/ SERVICES		15C. QUANTITY	15D. UNIT	15E. UNIT PRICE
SEE SCHEDULE					
15F. AMOUNT					
15G. TOTAL AMOUNT OF CONTRACT <b>\$2,913,823.00</b>					
16. TABLE OF CONTENTS					
(X) SEC.	DESCRIPTION		PAGE(S)	(X) SEC.	DESCRIPTION
PART I - THE SCHEDULE				PART II - CONTRACT CLAUSES	
X	A	SOLICITATION/ CONTRACT FORM		I	CONTRACT CLAUSES
	B	SUPPLIES OR SERVICES AND PRICES/ COSTS		PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS	
	C	DESCRIPTION/ SPECS / WORK STATEMENT		J	LIST OF ATTACHMENTS
	D	PACKAGING AND MARKING		PART IV - REPRESENTATIONS AND INSTRUCTIONS	
	E	INSPECTION AND ACCEPTANCE		K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS
	F	DELIVERIES OR PERFORMANCE		L	INSTRS., CONDS., AND NOTICES TO OFFERORS
	G	CONTRACT ADMINISTRATION DATA		M	EVALUATION FACTORS FOR AWARD
	H	SPECIAL CONTRACT REQUIREMENTS			
CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE					
17. [X] CONTRACTOR'S NEGOTIATED AGREEMENT (Contractor is required to sign this document and return it to the contracting officer.) Contractor agrees to furnish and deliver all items or perform all the services set forth or otherwise identified above and on any continuation sheets for the consideration stated herein. The rights and obligations of the parties to this contract shall be subject to and governed by the following documents: (a) this award/contract, (b) the solicitation, if any, and (c) such provisions, representations, certifications, and specifications, as are attached or incorporated by reference herein. (Attachments are listed herein.)			18. [ ] AWARD (Contractor is not required to sign this document.) Your offer on Solicitation Number _____ including the additions or changes made by you which additions or changes are set forth in full above, is hereby accepted as to the items listed above and on any continuation sheets. This award constitutes the contract which consists of the following documents: (a) the Government's solicitation and your offer, and (b) this award/contract. No further contractual document is necessary.		
19A. NAME AND TITLE OF SIGNER (Type or print) Francine Kull, Sr. Contracts Mgr.			20A. NAME OF CONTRACTING OFFICER CHRISTOPHER L. GLISTA TEL: (571) 218-4405 EMAIL: christopher.glista@darpa.mil		
19B. NAME OF CONTRACTOR BY <u>Francine Kull</u> (Signature of person authorized to sign)		19C. DATE SIGNED 3/18/09	20B. UNITED STATES OF AMERICA (b)(6) BY _____ (Signature of Contracting Officer)		20C. DATE SIGNED 3/19/09

## Section B - Supplies or Services and Prices

<u>CONTRACT LINE ITEM NO. (CLIN)</u>	<u>SUPPLIES/SERVICES</u>	<u>ESTIMATED COST</u>	<u>FIXED FEE</u>	<u>TOTAL ESTIMATED COST PLUS FIXED FEE</u>
0001	The Contractor shall perform the Vulcan Program, Phase I in accordance with Attachment No. 1 - Statement of Work entitled, "Vulcan Program, Phase I - Vulcan Turbine/Constant Volume Combustion Engine Demonstration," and Section C-1 of the Contract. Technical data, reports, and other deliverables are not separately priced and shall be provided to the Government in accordance with Sections C-2, F-2, F-3, and Attachment No. 1 of the Contract.	(b)(4)	(b)(4)	\$2,913,613.00
000101	Funding for CLIN 0001 AO No. Y141/00 ACRN AA: \$2,913,613.00			

## CLAUSES INCORPORATED BY FULL TEXT

Work Breakdown		Cumulative to Date		At Completion		
Structure or Task Element	Planned Expend	Actual Expend	% Budget Compl	At Compl	Latest Revised Estimate	Remarks
Subtotal: _____						
Management Reserve: _____						

Or  
Unallocated  
Resources: \_\_\_\_\_

TOTAL: \_\_\_\_\_

Note: Budget at completion changes only with the amount of any scope changes. (Not affected by underrun or overrun)

Based on currently authorized work:

Is current funding sufficient for the current fiscal year (FY)? (Explain in narrative if "NO")

YES NO

What is the next FY funding requirement at current anticipated levels?

\$ \_\_\_\_\_

Have you included in the report narrative any explanation of the above data and are they cross-referenced?

YES NO

(2) FINAL TECHNICAL REPORT FOR PHASE I. This report shall document the results of the complete effort and should be delivered at the completion of the Contract. Title pages shall include a disclaimer worded substantially as follows:

"The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressly or implied, of the Defense Advanced Research Projects Agency or the U.S. Government."

The Final Technical Report summary shall include:

- Task Objectives
- Technical Problems
- General Methodology (i.e., literature review, laboratory experiments, surveys, etc.)
- Technical Results
- Important Findings and Conclusions
- Significant Hardware Development
- Special Comments
- Implications for Further Research
- Standard Form 298, August 1998

(3) PHASE II PROPOSAL. The Contractor shall prepare and deliver a full cost and technical proposal for Phase II seven (7) months after the award of the Contract for the Government's consideration. The Phase II proposal shall consist of the Phase I final review deliverables, an updated Phase II Statement of Work, integrated Master Schedule (IMS), and Cost Estimate to Work Breakdown Structure (WBS) level 4 detail. Additionally, an updated management and staffing plan shall be provided. Each test and demonstration must be a uniquely described and priced WBS element. The Phase II proposal shall use the same WBS established with the Phase I proposal and this WBS should be used to link the IMS and cost. The Contractor shall also include an update to the Phase III program plan to WBS level 3 and the Phase IV program plan to WBS level 2.

(4) ADDITIONAL MISCELLANEOUS DATA DELIVERABLES. The Contractor shall also deliver those items listed in the Contract Attachment No. 1 - Statement of Work, as applicable. The Contractor shall adhere

to the schedule, as applicable, contained in the Statement of Work. Presentation materials (hard and softcopy) for all briefings given to the Government shall be provided in the Contractor's format.

(b) Reports delivered by the Contractor in the performance of the Contract shall be considered "Technical Data" as defined in Section I Contract clauses entitled "Rights in Technical Data - Noncommercial Items" and "Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation."

(c) Bulky Reports shall be mailed by other than first-class mail unless the urgency of submission requires use of first-class mail. In this situation, one copy shall be mailed first-class and the remaining copies forwarded by less than first-class.

(d) All papers and articles published as a result of DARPA sponsored research shall include a statement reflecting the sponsorship. In addition, a bibliography of the titles and authors of all such papers are to be included in the Final Technical Report

(1) The cover or title page of each of the above reports or publications prepared, will have the following citation:

Sponsored by  
Defense Advanced Research Projects Agency  
Tactical Technology Office (TTO)  
Program: Vulcan Program, Phase I  
Issued by DARPA/CMO under Contract No. HR0011-09-C-0055

(2) The title page shall include a disclaimer worded substantially as follows:

"The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressly or implied, of the Defense Advanced Research Projects Agency or the U.S. Government."

(3) All technical reports must (i) be prepared in accordance with American National Standards Institute (ANSI) Standard Z39.18; (ii) include a Standard Form 298, August 1998; and (iii) be marked with an appropriate Distribution Statement.

(4) Distribution Statement B applies. "Distribution authorized to U.S. Government agencies only due to the inclusion of proprietary information and to prevent Premature Dissemination of potentially critical technological information. Other requests for this document shall be referred to DARPA Technical Office via email at "tio@darpa.mil."

**Section D - Packaging and Marking**

**CLAUSES INCORPORATED BY FULL TEXT**

**D-1     Packaging and Marking**

All items shall be preserved, packaged, packed and marked in accordance with best commercial practices to meet the packing requirements of the carrier, and to ensure safe delivery at destination.

Section E - Inspection and Acceptance

CLAUSES INCORPORATED BY REFERENCE

52.246-9	Inspection Of Research And Development (Short Form)	APR 1984
252.246-7000	Material Inspection And Receiving Report	MAR 2008

CLAUSES INCORPORATED BY FULL TEXT

E-1 Inspection and Acceptance

Supplies/services will be inspected/accepted at destination by the Contracting Officer's Representative identified in Section G herein.

Use of the DD 250 is required for submission of the Final Technical Report only.

## Section F - Deliveries or Performance

## CLAUSES INCORPORATED BY REFERENCE

52.247-34

F.O.B. Destination

NOV 1991

## CLAUSES INCORPORATED BY FULL TEXT

F-1 Term of Contract

The term of the Contract commences on March 19, 2009 and continues through November 18, 2009. \*

\* An Authorization to Incur Pre-Award Costs was issued to the Contractor on March 5, 2009 (see Attachment No. 6 - Advance Agreement to Incur Pre-Award Costs under Contract HR0011-09-C-0055).

F-2 Reports and Other Deliverables

Delivery of all reports and other deliverables shall be made to the addressee specified in F-3 entitled "Report Distribution" in accordance with the following:

<u>CLIN</u>	<u>Description</u>	<u>Due Date</u>
0001	R&D Status Report	On a monthly basis, within seven (7) days after the end of the previous reporting month
0001	Final Technical Report for Phase I	Upon completion of Phase I
0001	Phase II Proposal	Seven (7) months after the award of the Contract
0001	Additional Miscellaneous Data Deliverables	See Attachment No. 1 - Statement of Work

F-3 Report Distribution

- (a) DARPA/Tactical Technology Office (TTO)  
ATTN: Dr. Thomas Bussing  
3701 North Fairfax Drive  
Arlington, VA 22203-1714  
Email: thomas.bussing@darpa.mil  
(one copy of every report and deliverable)
- (b) DARPA/Tactical Technology Office (TTO)  
ATTN: Assistant Director, Program Management (ADPM)  
3701 North Fairfax Drive  
Arlington, VA 22203-1714  
Email: adpm-tto@darpa.mil  
(one copy of the R&D Status Reports and Final Report)



- (c) Major David Hopper, Contracting Officer's Representative  
Turbine Engine Division (AFRL/RZT),  
1950 5th Street  
WPAFB OH 45433  
Email: david.hopper@us.af.mil  
(one copy of every report and deliverable)
- (d) DARPA/Library  
3701 North Fairfax Drive  
Arlington, VA 22203-1714  
(one copy of the Final Report)
- (e) Defense Technical Information Center
  - (1) Email: TR@dtic.mil  
(one electronic copy of the Final Report, if unclassified)  
OR
  - (2) Attn: DTIC-BCS  
8725 John J. Kingman Road, Suite 0944  
Fort Belvoir, VA 22060-0944  
(two hard copies of the Final Report, if unclassified)
- (f) DARPA/Contracts Management Office (CMO)  
ATTN: Christopher L. Glista  
3701 North Fairfax Drive  
Arlington, VA 22203-1714  
Email: reportscg@darpa.mil  
(one copy of the R&D Status Reports and Final Report)

Note 1: (a) through (f) – submissions of unclassified materials only. Submission of classified material shall be coordinated through DARPA SID and/or Dr. Thomas Bussing, DARPA Program Manager, in accordance with the DD 254, as applicable.

Note 2: For the Final Technical Report(s), the Contractor must also comply with the distribution requirements of DFARS 252-235-7011, as applicable.

F-4 Notice Regarding Late Delivery

In the event the Contractor anticipates difficulty in complying with the Contract delivery schedule, the Contractor shall immediately notify the Contracting Officer in writing, giving pertinent details, including the date by which it expects to make delivery; PROVIDED, however, that this date shall be informational only in character and the receipt thereof shall not be construed as a waiver by the Government of any contract delivery schedule, or any rights or remedies provided by law or under this Contract.

## Section G - Contract Administration Data

## ACCOUNTING AND APPROPRIATION DATA

ACRN AA 9780400 1320 Y141 P8G10 2525 DPAC 8 5400 S12136 62702E \$2,913,613.00  
(ARPA No. Y141/00)

## CLAUSES INCORPORATED BY FULL TEXT

G-1 Procuring Office Representative/Contracting Officer

(a) The Procuring Office Representative/Contracting Officer is Christopher L. Glista, DARPA/CMO, 3701 North Fairfax Drive, Arlington, VA 22203-1714, telephone: (571) 218-4405, Email: christopher.glista@darpa.mil.

(b) Notwithstanding any other provision of this contract, the Contracting Officer is the only individual authorized to redirect the effort or in any way amend or modify any of the terms of this contract. If, as a result of technical discussions, it is desirable to alter contract obligations or statement of work, a modification must be issued in writing and signed by the Contracting Officer.

G-2 Electronic Submission of Payment Requests

(a) Invoices for goods received or services rendered under this contract shall be submitted electronically through Wide Area Work Flow – Receipt and Acceptance (WAWF):

(1) Vendors that have never used WAWF shall follow the directions in the WAWF Vendor Getting Started Guide available at the following website:

<http://www.dfas.mil/contractorpay/electroniccommerce/wideareaworkflow.html>

This website also contains links for Vendor training and practice. Additional support can be obtained by calling WAWF Customer Service at 866-618-5988.

(2) Back up documentation (such as timesheets, monthly status reports, etc.) can be included and attached to the invoice in WAWF. Attachments should be in PDF format, but Attachments created in any Microsoft Office product may be attached. Total limit for the size of files per invoice is 5 megabytes.

(b) The following information, regarding invoice routing DoDAAC's, must be entered for completion of the invoice in WAWF:

WAWF Invoice Type:	Select Cost Voucher for all Cost or T&M contracts or CLINs
Issuing Office DoDAAC	HR0011
Admin Office DoDAAC	S3309A
Service Approver DoDAAC (Cost Voucher)	S3309A
DCAA Office DoDAAC (Used on Cost Vouchers only)	HAA331
Paying Office DoDAAC	HQ0337

(c) Cost Vouchers from Contractors approved by DCAA for direct billing will be directly routed to DFAS. Cost Vouchers from Contractors not approved for direct billing will be routed to DCAA for approval before the Cost

Voucher is routed to DFAS. All Final Cost Voucher submissions will be routed to the Service Approver for approval. The DCAA office for this award is:

DCAA Long Island Branch Office  
 Alfonse M. D. Amato United States Courthouse  
 300 Federal Plaza  
 Central Islip, NY 11722-4423  
 E-mail: dcaa-fao2201@dcaa.mil  
 DoDAAC: HAA331

(d) For each invoice/cost voucher submitted for payment, the Contractor shall also e-mail the WAWF automated invoice notice directly to the following points of contact:

<u>Name</u>	<u>E-mail</u>	<u>Phone</u>	<u>Role</u>
Major David Hopper	david.hopper@us.af.mil	(937) 255-7070	COR
Christopher L. Glista	christopher.glista@darpa.mil	(571) 218-4405	Contracting Officer

**G-3 Delegation of Authority for Contract Administration**

DCMA Long Island is hereby designated as the Contracting Officer's authorized representative for administering this contract in accordance with current directives.

**G-4 Contracting Officer's Representative (COR)**

(a) Performance of work under this contract shall be subject to the technical direction of Major David Hopper, Turbine Engine Division (AFRL/RZT), 1950 5th Street, WPAFB OH 45433, Telephone: (937) 255-7070, Email: david.hopper@us.af.mil. Such technical direction includes those instructions to the Contractor necessary to accomplish the Statement of Work. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The COR does not have the authority to alter the Contractor's obligations or to change the specifications of the contract.

(b) Technical direction shall not include any direction which:

- (1) Constitutes additional work outside the scope of work;
- (2) Constitutes a change as defined in Section I contract clause entitled "Changes";
- (3) In any manner causes an increase or decrease in the total estimated cost or the time required for contract performance; or
- (4) Changes any of the stated terms, conditions, or specifications of the contract.

(c) A copy of the Contracting Officer's Representative designation memorandum is incorporated into the Contract as Attachment No. 3.

**G-5 Instructions for Multiple Accounting Classification Citations**

Payments under contract line items funded by multiple accounting classification citations shall be made from the earliest available fiscal year funding sources. The earliest assigned ACRN must be fully disbursed before making disbursements from a succeeding ACRN.

G-6 Payment of Cost and Fee

(a) As consideration for the proper performance of work required under this contract, the Contractor shall be paid as follows:

(1) Costs, as provided for under Section I contract clause titled "Allowable Cost and Payment" not to exceed the amount set forth as "Total Estimated Cost" in Section B, and subject further to those Section I clauses entitled "Limitation of Cost" or "Limitation of Funds".

(2) A fixed fee in the amount set forth as "Fixed Fee" in Section B, in accordance with the Section I contract clause entitled "Fixed Fee". The Contractor may bill on each invoice the amount of the fixed fee bearing the same percentage to the total fixed fee as the amount of cost billed bears to the total estimated cost.

## Section H - Special Contract Requirements

## CLAUSES INCORPORATED BY FULL TEXT

H-1 Type of Contract

This is a Cost-Plus-Fixed-Fee, Completion Contract.

H-2 Public Release or Dissemination of Information

(a) There shall be no dissemination or publication, except within and between the Contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval of the DARPA Technical Information Officer (DARPA/TIO). All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the Contractor. Papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.

(b) When submitting material for written approval for open publication as described in subparagraph (a) above, the Contractor must submit a request for public release request to the DARPA TIO and include the following information: 1) Document Information: document title, document author, short plain-language description of technology discussed in the material (approx 30 words), number of pages (or minutes of video) and document type (briefing, report, abstract, article, or paper); 2) Event Information: event type (conference, principle investigator meeting, article or paper), event date, desired date for DARPA's approval; 3) DARPA Sponsor: DARPA Program Manager, DARPA office, and contract number; and 4) Contractor's Information: POC name, e-mail and phone. Allow four weeks for processing; due dates under four weeks require a justification. Unusual electronic file formats may require additional processing time. Requests can be sent either via e-mail to [tio@darpa.mil](mailto:tio@darpa.mil) or via 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (571) 218-4235. Refer to [www.darpa.mil/tio](http://www.darpa.mil/tio) for information about DARPA's public release process.

H-3 Key Personnel

(a) The Contractor shall notify the Contracting Officer prior to making any change in key personnel. Key personnel are defined as follows:

(b)(4)



(b) The Contractor must demonstrate that the qualifications of the prospective personnel are equal to or better than the qualifications of the personnel being replaced. Notwithstanding any of the foregoing provisions, key personnel shall be furnished unless the Contractor has demonstrated to the satisfaction of the COR that the qualifications of the proposed substitute personnel are equal to or better than the qualifications of the personnel being replaced.

**H-4     Restrictions on Printing**

Unless otherwise authorized in writing by the Contracting Officer, reports, data, or other written material produced using funds provided by this contract and submitted hereunder shall be reproduced only by duplicating processes and shall not exceed 5,000 single page reports or a total of 25,000 pages of a multiple-page report. These restrictions do not preclude the writing, editing, preparation of manuscript or reproducible copy of related illustrative materials if required as part of this contract, or incidental printing such as forms or materials necessary to be used by the Contractor to respond to the terms of the contract.

**H-5     Invention Disclosure and Reports**

All written communications required by DFARS clause 252.227-7038, "Patent Rights - Ownership by the Contractor (Large Business)" (DEC 2007) shall be submitted to the Administrative Contracting Officer (ACO). All required reporting shall be accomplished using the i-Edison.gov reporting website: <https://s-edison.info.nih.gov/iEdison/>.

**H-6     Contractor Representations and Certifications**

The Contractor's Representations and Certifications dated December 19, 2008 and a copy of the Contractor's Online Representations and Certifications (ORCA) effective from November 10, 2008 through November 10, 2009 are incorporated herein by reference.

**H-7     Insurance Schedule**

(a) The Contractor shall maintain the types of insurance listed in FAR 28.307-2 (a), (b) and (c), with the minimum amounts of liability indicated therein. The types of insurance coverage listed in paragraphs (d) and (e) shall also be maintained when applicable.

**H-8     Travel**

(a) Reimbursement for travel-related expenses shall be in accordance with the Contractor's approved travel policy. The Federal Travel Regulations, Joint Travel Regulations (JTR), and Standardized Regulations as stated in FAR 31.205-46 will be used as a guide in determining reasonableness of per diem costs. Costs for travel shall be allowable subject to the provisions of FAR 31.205-46.

(b) In connection with direct charge to the contract of travel-related expenses, the Contractor shall hold travel to the minimum required to meet the objectives of the contract, and substantial deviations from the amount of travel agreed to during contract negotiation shall not be made without the authorization of the Contracting Officer.

When applicable, the Contractor shall notify the COR of proposed travel of an employee beyond that agreed to during negotiations.

(c) Approval of the Contracting Officer shall be obtained in advance for attendance by personnel at training courses, seminars, and other meetings not directly related to contract performance if the costs for the courses, seminars, and other meetings are charged to the contract.

(d) All foreign travel shall be authorized and approved in advance, in writing, by the Contracting Officer. Request for such travel must be submitted to the Contracting Officer at least thirty (30) days in advance of traveler's anticipated departure date, and shall include traveler's itinerary of United States Flag Air Carriers.

**H-9     Metric System**

(a) The Defense Advanced Research Projects Agency (DARPA) will consider the use of the metric system in all of its activities consistent with operational, economical, technical and safety requirements.

(b) The metric system will be considered for use in all new designs. When it is deemed not to be in the best interest of the DoD to provide metric design, justification shall be provided.

(c) Physical and operational interfaces between metric items and U.S. customary items will be designed to assure that interchangeability and interoperability will not be affected.

(d) Existing designs dimensioned in U.S. customary units will be converted to metric units only if determined to be necessary or advantageous. Unnecessary retrofit of existing systems with new metric components will be avoided where both the new metric and existing units are interchangeable and interoperable. Normally, the system of measurement in which an item is originally designed will be retained for the life of the item.

(e) During the metric transition phase hybrid metric and U.S. customary designs will be necessary and acceptable. Material components, parts, subassemblies, and semi-fabricated material, which are of adequate or when it is otherwise specifically determined to be in the best interest of the Department of Defense. Bulk materials will be specified and accepted in metric units when it is expedient or economical to do so.

(f) Technical reports, studies, and position papers, (except those pertaining to items dimensioned in U.S. customary units) will include metric units of measurement in addition to or in lieu of U.S. customary units. With respect to existing contracts, this requirement applies only if such documentation can be obtained without an increase in contract costs.

(g) Use of the dual dimensions (i.e., both metric and U.S. customary dimensions) on drawings will be avoided unless it is determined in specific instances that such usage will be beneficial. However, the use of tables on the document to translate dimensions from one system of measurement to the other is acceptable.

#### H-10 Consent to Subcontract

(a) Pursuant to the clause of the General Provisions entitled "Subcontracts (JUN 2007)," FAR 52.244-2(j), the Contracting Officer hereby consents to the placement of subcontract(s) with the following firm(s)/consultant(s) at the ceiling amounts specified:

<u>Subcontractor</u>	<u>Estimated Cost</u>
(b)(4)	(b)(4)
TOTAL:	

(b) Approval must be obtained from the Contracting Officer to increase the use or number of subcontractors from the level established in paragraph (a) above.

#### H-12 Small Business Subcontracting Plan and Goals

The Contractor's Small Business Subcontracting Plan dated December 16, 2008 is incorporated herein and made a part of the Contract by reference.

**H-13 Proprietary Technical Data and Computer Software**

Any deliverable technical data or computer software developed or generated at private expense and considered to be proprietary by the Contractor or subcontractors shall be delivered in accordance with DFARS 252.227-7013 and 252.227-7014. A list of such data and/or software is incorporated into the Contract as Attachment No. 4.

**H-14 Export Control Clause**

Should this project develop beyond fundamental research (basic and applied research ordinarily published and shared broadly within the scientific community) with military or dual-use applications the following apply:

(a) The contractor shall comply with all U. S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of this contract. In the absence of available license exemptions/exceptions, the Contractor shall be responsible for obtaining the appropriate licenses or other approvals, if required, for exports of (including deemed exports) hardware, technical data, and software, or for the provision of technical assistance.

(b) The Contractor shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of this contract, including instances where the work is to be performed on-site at any Government installation (whether in or outside the United States), where the foreign person will have access to export-controlled technical data or software.

(c) The Contractor shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.

(d) The Contractor shall be responsible for ensuring that the provisions of this clause apply to its subcontractors.

**H-15 Military Security Classification**

Military security requirements in the performance of the Contract shall be maintained in accordance with the DD Form 254, Contract Security Classification Specification, contained in Section J, Attachment No. 5.

**H-16 Pre-Contract Costs**

The extent of allowability of costs incurred by the Contractor prior to the effective date of the Contract shall be governed by the Advance Agreement to Authorize Incurrence of Pre-Award Costs dated March 5, 2009, a copy of which is incorporated into the Contract as Attachment No. 6 under Section J.



## Section I - Contract Clauses

## CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	SEP 2007
52.204-2	Security Requirements	AUG 1996
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.204-7	Central Contractor Registration	APR 2008
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	SEP 2006
52.215-2	Audit and Records--Negotiation	JUN 1999
52.215-8	Order of Precedence--Uniform Contract Format	OCT 1997
52.215-10	Price Reduction for Defective Cost or Pricing Data	OCT 1997
52.215-12	Subcontractor Cost or Pricing Data	OCT 1997
52.215-14 Alt I	Integrity of Unit Prices (Oct 1997) - Alternate I	OCT 1997
52.215-15	Pension Adjustments and Asset Reversions	OCT 2004
52.215-16	Facilities Capital Cost of Money	JUN 2003
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other than Pensions	JUL 2005
52.215-21	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data--Modifications	OCT 1997
52.216-7	Allowable Cost And Payment	DEC 2002
52.216-8	Fixed Fee	MAR 1997
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.219-9	Small Business Subcontracting Plan	APR 2008
52.219-16	Liquidated Damages-Subcontracting Plan	JAN 1999
52.219-28	Post-Award Small Business Program Rerepresentation	JUN 2007
52.222-2	Payment For Overtime Premiums	JUL 1990
52.222-3	Convict Labor	JUN 2003
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	MAR 2007
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-39	Notification of Employee Rights Concerning Payment of Union Dues or Fees	DEC 2004
52.222-50	Combating Trafficking in Persons	AUG 2007
52.223-14	Toxic Chemical Release Reporting	AUG 2003
52.225-13	Restrictions on Certain Foreign Purchases	JUN 2008
52.226-1	Utilization Of Indian Organizations And Indian-Owned Economic Enterprises	JUN 2000

52.227-1 Alt I	Authorization And Consent (Dec 2007) - Alternate I	APR 1984
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	DEC 2007
52.227-10	Filing Of Patent Applications--Classified Subject Matter	DEC 2007
52.228-7	Insurance--Liability To Third Persons	MAR 1996
52.230-3	Disclosure And Consistency Of Cost Accounting Practices	OCT 2008
52.230-6	Administration Of Cost Accounting Standards	MAR 2008
52.232-9	Limitation On Withholding Of Payments	APR 1984
52.232-17	Interest	OCT 2008
52.232-20	Limitation Of Cost	APR 1984
52.232-23 Alt I	Assignment Of Claims (Jan 1986) - Alternate I	APR 1984
52.232-25	Prompt Payment	OCT 2008
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3 Alt I	Protest After Award (Aug 1996) - Alternate I	JUN 1985
52.233-4	Applicable Law for Breach of Contract Claim	OCT 2004
52.242-1	Notice of Intent to Disallow Costs	APR 1984
52.242-3	Penalties for Unallowable Costs	MAY 2001
52.242-4	Certification of Final Indirect Costs	JAN 1997
52.242-13	Bankruptcy	JUL 1995
52.242-15 Alt I	Stop-Work Order (Aug 1989) - Alternate I	APR 1984
52.243-2 Alt V	Changes--Cost-Reimbursement (Aug 1987) - Alternate V	APR 1984
52.244-2	Subcontracts	JUN 2007
52.244-5	Competition In Subcontracting	DEC 1996
52.244-6	Subcontracts for Commercial Items	DEC 2008
52.245-1 (Dev)	Government Property (June 2007)	JUN 2007
52.245-9	Use And Charges	JUN 2007
52.246-23	Limitation Of Liability	FEB 1997
52.247-63	Preference For U.S. Flag Air Carriers	JUN 2003
52.249-6	Termination (Cost Reimbursement)	MAY 2004
52.249-14	Excusable Delays	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2004
252.204-7000	Disclosure Of Information	DEC 1991
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7004 Alt A	Central Contractor Registration (52.204-7) Alternate A	SEP 2007
252.204-7009	Requirements Regarding Potential Access to Export-Controlled Items	JUL 2008
252.205-7000	Provision Of Information To Cooperative Agreement Holders	DEC 1991
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	DEC 2006
252.211-7003	Item Identification and Valuation	AUG 2008
252.211-7007	Reporting of Government-Furnished Equipment in the DoD Item Unique Identification (IUID) Registry	NOV 2008
252.215-7000	Pricing Adjustments	DEC 1991
252.215-7002	Cost Estimating System Requirements	DEC 2006
252.215-7004	Excessive Pass-Through Charges	MAY 2008
252.219-7003	Small Business Subcontracting Plan (DOD Contracts)	APR 2007
252.225-7006	Quarterly Reporting of Actual Contract Performance Outside the United States	MAY 2007
252.225-7012	Preference For Certain Domestic Commodities	MAR 2008

252.226-7001	Utilization of Indian Organizations and Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns	SEP 2004
252.227-7013	Rights in Technical Data--Noncommercial Items	NOV 1995
252.227-7014	Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation	JUN 1995
252.227-7015	Technical Data--Commercial Items	NOV 1995
252.227-7016	Rights in Bid or Proposal Information	JUN 1995
252.227-7019	Validation of Asserted Restrictions--Computer Software	JUN 1995
252.227-7025	Limitations on the Use or Disclosure of Government-Furnished Information Marked with Restrictive Legends	JUN 1995
252.227-7027	Deferred Ordering Of Technical Data Or Computer Software	APR 1988
252.227-7030	Technical Data--Withholding Of Payment	MAR 2000
252.227-7037	Validation of Restrictive Markings on Technical Data	SEP 1999
252.227-7038	Patent Rights--Ownership by the Contractor (Large Business)	DEC 2007
252.231-7000	Supplemental Cost Principles	DEC 1991
252.232-7003	Electronic Submission of Payment Requests and Receiving Reports	MAR 2008
252.232-7010	Levies on Contract Payments	DEC 2006
252.235-7011	Final Scientific or Technical Report	NOV 2004
252.242-7004	Material Management And Accounting System	NOV 2005
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.244-7000	Subcontracts for Commercial Items and Commercial Components (DoD Contracts)	JAN 2007
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

**Remarks:**

At FAR 52.222-2, insert the word, "zero," in spaces marked with an asterisk (\*)  
 At DFARS 252.211-7003, insert "N/A" under subparagraph (c)(1)(ii)

**CLAUSES INCORPORATED BY FULL TEXT****52.215-19 NOTIFICATION OF OWNERSHIP CHANGES (OCT 1997)****(a) The Contractor shall make the following notifications in writing:**

(1) When the Contractor becomes aware that a change in its ownership has occurred, or is certain to occur, that could result in changes in the valuation of its capitalized assets in the accounting records, the Contractor shall notify the Administrative Contracting Officer (ACO) within 30 days.

(2) The Contractor shall also notify the ACO within 30 days whenever changes to asset valuations or any other cost changes have occurred or are certain to occur as a result of a change in ownership.

**(b) The Contractor shall--**

(1) Maintain current, accurate, and complete inventory records of assets and their costs;

(2) Provide the ACO or designated representative ready access to the records upon request;

(3) Ensure that all individual and grouped assets, their capitalized values, accumulated depreciation or amortization,

and remaining useful lives are identified accurately before and after each of the Contractor's ownership changes; and

(4) Retain and continue to maintain depreciation and amortization schedules based on the asset records maintained before each Contractor ownership change.

The Contractor shall include the substance of this clause in all subcontracts under this contract that meet the applicability requirement of FAR 15.408(k).

#### 52.247-1 COMMERCIAL BILL OF LADING NOTATIONS (FEB 2006)

When the Contracting Officer authorizes supplies to be shipped on a commercial bill of lading and the Contractor will be reimbursed these transportation costs as direct allowable costs, the Contractor shall ensure before shipment is made that the commercial shipping documents are annotated with either of the following notations, as appropriate:

(a) If the Government is shown as the consignor or the consignee, the annotation shall be:

"Transportation is for the authorized contract supplies and the actual total transportation charges paid to the carrier(s) by the consignor or consignee are assignable to, and shall be reimbursed by, the Government."

(b) If the Government is not shown as the consignor or the consignee, the annotation shall be:

"Transportation is for the authorized contract supplies and the actual total transportation charges paid to the carrier(s) by the consignor or consignee shall be reimbursed by the Government, pursuant to cost-reimbursement contract no. HR0011-09-C-0055. This may be confirmed by contacting Christopher L. Glista at telephone no. (571) 218-4405."

#### 52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es): <http://www.arnet.gov> and [http://farsite.hill.af.mil/farsite\\_script.html](http://farsite.hill.af.mil/farsite_script.html)

#### 52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the clause.

(b) The use in this solicitation or contract of any Defense Federal Acquisition Regulation (48 CFR Chapter 2) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

#### 252.204-7006 BILLING INSTRUCTIONS (OCT 2005)

When submitting a request for payment, the Contractor shall--

(a) Identify the contract line item(s) on the payment request that reasonably reflect contract work performance; and

(b) Separately identify a payment amount for each contract line item included in the payment request.

**252.235-7010 Acknowledgment of Support and Disclaimer. (MAY 1995)**

(a) The Contractor shall include an acknowledgment of the Government's support in the publication of any material based on or developed under this contract, stated in the following terms: This material is based upon work supported by the Defense Advanced Research Projects Agency under Contract No. HR0011-09-C-0055.

(b) All material, except scientific articles or papers published in scientific journals, must, in addition to any notices or disclaimers by the Contractor, also contain the following disclaimer: Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Defense Advanced Research Projects Agency.

**Section J - List of Documents, Exhibits and Other Attachments**

- Attachment No. 1 - Statement of Work entitled, "Vulcan Turbine/Constant Volume Combustion Engine Demonstration Program" (4 pages)
- Attachment No. 2 - Go and No-Go Criteria for Vulcan Program Phase II (2 pages)
- Attachment No. 3 - Contracting Officer's Representative (COR) Designation Memorandum (3 pages)
- Attachment No. 4 - Identification and Assertion of Restrictions on the Government's Use, Release, or Disclosure of Technical Data or Computer Software, dated March 16, 2009 (2 pages)
- Attachment No. 5 - Contract Security Classification Specification, DD Form 254, Revision No. 1, dated March 18, 2009 (4 pages)
- Attachment No. 6 - Advance Agreement to Incur Pre-Award Costs, dated March 5, 2009 (2 pages)

**Statement of Work  
for  
Vulcan Program, Phase I -  
Vulcan Turbine/Constant Volume Combustion Engine Demonstration**

<b>WBS</b>	<b>Task</b>	<b>Work to be Performed</b>
1.1	Vulcan Trade Studies	ATK shall conduct trade studies which will lead to definition of the preferred Vulcan engine system design.
1.1.1	Propulsion system model assembly	ATK shall develop a propulsion system model which is validated by existing data and which has sufficient fidelity and statistical confidence to allow assessment of the ability of the Vulcan system to meet Phase II Go/No-Go criteria.
1.1.1.1	Turbine deck development	In Phase I, ATK will develop turbine engine performance model utilizing the government provided, General State-of-the-Art Generic Engine Description as a basis.
1.1.1.2	(b)(4)	
1.1.1.3	Conventional Ramjet deck development	ATK will develop a conventional ramjet engine performance deck, to provide comparison to the CVC engine in the Mach 1.5 to Mach 4.0+ range.
1.1.2	Vehicle model assembly	
1.1.2.1	(b)(4)	
1.1.2.2	(b)(4)	
1.1.3	Vehicle-propulsion Integration	
1.1.3.1	Inlet characterization and engine BC generation	The ATK Team will develop an inlet concept to meet turbine and CVC component airflow and inlet face Mach number requirements. The inlet system shall feature flow switching and flowpath isolation feature(s) located downstream of the inlet throat.
1.1.3.2	External nozzle characterization	The ATK Team will develop a nozzle concept to efficiently integrate the exhaust requirements of the CVC and turbine systems. The nozzle shall feature flow switching and flowpath isolation feature(s) located upstream of the nozzle throat.
1.1.3.3	Vehicle engine model integration	The ATK Team will perform geometric and mechanical integration of the engine and vehicle models, and specify critical interface requirements.
1.1.4	Fly off UNCLASSIFIED	
1.1.4.1	Trajectory Analysis	The ATK Team will conduct vehicle trajectory simulations in order to evaluate the ability of the Vulcan engine concepts to meet the customer defined trajectory.
1.1.5	Propulsion System Evaluation	
1.1.5.1	PDE / Ramjet Comparison	ATK will compare the performance results from the various CVC engine decks with the conventional ramjet engine deck to benchmark their performance. Comparison will also be made based on vehicle integration considerations.
1.2.	Conceptual Design	
1.2.1	Concept Analysis	
1.2.1.1	Engine lines and sizing	An engine flowpath will be configured to meet or exceed the government specified uninstalled thrust curve.

1.2.1.2	(b)(4)	
1.2.1.3	(b)(4)	
1.2.1.4	Mechanical design	Mechanical design of the Vulcan engine will be performed.
1.2.1.5	Thermal management	Design of the thermal management system will be performed based on engine flowpath, thermal loads, and trajectory.
1.2.1.6	Structural/thermal analysis	Structural and thermal Finite Element Analyses (FEA) will be performed in order to evaluate the mechanical design.
1.2.1.7	(b)(4)	
1.2.1.8	Turbine Integration and thermal management	Turbine integration will be performed, including design of systems required to thermally protect and cocoon the engine during high speed flight.
1.2.1.9	Inlet integration	Design of the flow switching inlet will be performed, and will consider engine required flow conditions, flow distortion requirements, and propagation of engine flow disturbance to the inlet throat.
1.2.1.10	Nozzle integration	Design of the flow switching nozzle will be performed, and will consider thrust efficiency, throttling and control of the upstream engines, and the needs of turbine isolation and cocooning.
1.2.2	SLA Models UNCLASSIFIED	
1.2.2.1	SLA Fabrication	ATK will fabricate four copies of an SLA model of the selected Vulcan engine candidate.
1.2.2.2	SLA Deliverable	ATK will deliver four copies of an SLA model of the selected Vulcan engine candidate 6 months after Award to Proceed (ATP).
1.2.3	Vulcan Engine Computer Animation	
1.2.3.1	Generate Computer Animation	ATK will generate a computer animation of the leading Vulcan engine candidate. The computer animation will clearly illustrate all operating modes and key physics of the engine.
1.2.3.2	Vulcan Engine Computer Animation Deliverable	ATK will deliver a computer animation of the leading Vulcan engine candidate 6 months after award to proceed.
1.2.4	Engine Performance Model	
1.2.4.1	Engine Performance Model Prep	ATK will prepare an engine performance model for the Vulcan engine, including CVC engine, turbine engine, inlet, and nozzle. A ramjet model will also be delivered for comparison to the CVC engine.
1.2.4.2	Engine Performance Model Deliverable	ATK will deliver an engine performance model for the Vulcan engine and ramjet model 6 months after ATP
1.2.5	Review Meetings	
1.2.5.1	Interim Design Review	ATK will prepare summaries of the trade studies, update to the Critical Technology

	Preparation (IDR)	Development Plan (CTDP) and performance model development progress in support of the interim design review.
1.2.5.2	IDR Deliverable	ATK will conduct an interim design review at 3 months after ATP and deliver information described in 1.2.5.1.
1.2.5.3	SRR/CoDR Preparation	ATK will prepare material for the Vulcan System Requirement review (SRR). This material will include functional flow analysis, requirements and requirements allocation, results of the configuration trade study, Vulcan engine conceptual design review, Phase IV demonstration system design review, integrated test demonstration planning, engine performance assessment, and a description of the Phase II systems engineering plan.
1.2.5.4	SRR of Vulcan System Deliverable	ATK will hold a System Requirements Review for the conceptual Vulcan system including the CVC engine, turbine, the inlet and nozzle. The SRR will occur 6 months after ATP and deliver information described in 1.2.5.3 for the Vulcan Engine.
1.2.5.5	SRR of Phase III Demonstration System Deliverable	ATK will hold a System Requirements Review for the Phase III Demonstration System made up of the CVC engine, inlet and nozzle. This SRR will occur 6 months after ATP and deliver the information described in 1.2.5.3 for the Phase III Demonstration System.
1.3	Critical Technology Development Plan – A documentation of all the planned risk reduction tasks in all phases of the program. An update to the plan will be given at the IDR and will be finalized at the CoDR/SRR that occurs 6 months ATP.	
1.3.1	Phase II Critical Technology Development Plan	
1.3.1.1	Risk Identification and Registration	ATK will evaluate all significant risks relative to the Phase II technology demonstrations; link them to the System Requirements Document, and to the CTDP.
1.3.1.2	CTDP Development Deliverable	ATK will generate a final CTDP for Phase II to be presented at SRR.
1.3.2	Phase III Critical Technology Development Plan	
1.3.2.1	Risk Identification and Registration	ATK will evaluate all significant risks relative to the Phase III demonstration system; link them to the System Requirements Document and to the CTDP.
1.3.2.2	CTDP development	ATK will generate a final CTDP for Phase III to be presented at SRR.
1.3.3	Phase IV Critical Technology Development Plan	
1.3.3.1	Risk Identification and Registration	ATK will evaluate all significant risks relative to the Phase IV demonstration system; link them to the System Requirements Document, and to the CTDP.
1.3.3.2	CTDP development	ATK will generate a final CTDP for Phase IV to be presented at SRR.
1.3.4	Phase II Demo component Hardware Design	
1.3.4.1	Design	ATK will conduct conceptual design for all Phase II technology demonstrations.
1.3.4.2	CoDR	ATK will conduct a conceptual design review for all Phase II technology demonstrations.
1.4	Program Office	
1.4.1	Program Management UNCLASSIFIED	
1.4.1.1	Program Manager	A program manager will be assigned to the Vulcan program. The program manager will be responsible for overseeing budget and schedule, subcontracts management, and will insure the program proceeds towards timely delivery of all deliverables.



1.4.1.2	Chief Engineer	A chief engineer will be assigned to the Vulcan program. The chief engineer will be responsible for technical conduct of the program, including application of quality standards and processes.
1.4.1.3	Systems Engineering	A systems engineer will be assigned to the Vulcan program. The systems engineer will be responsible for the logic and rigor of the systems engineering program, including conduct of SRR for the Vulcan system and Phase IV demonstration systems.
1.4.2	Program Security	
1.4.2.1	Security Management	A program security manager will be assigned to the Vulcan program. The program security manager will be responsible for coordinating with the ATK Security officer and IT department to meet the programs needs regarding the secure facility and networking.
1.4.2.2	Materials	ATK shall manage all classified materials in accordance with the National Industrial Security Program Operating Manual.
1.4.3	Program Management Reviews	ATK will deliver monthly technical and financial reports to DARPA in accordance with this specification in the Vulcan BAA.
1.4.4	Monthly Technical and Financial Reports Deliverables	ATK will provide to DARPA written technical and cost status reports on a monthly basis.
1.4.5	Monthly Program Status Teleconference	ATK will host monthly program status teleconferences with DARPA to convey status in major technical areas.
1.4.6	Phase II Preparation	
1.4.6.1	Phase II Program Plan	ATK will perform a Phase II Plan based on technical progress on Phase I trades and conceptual design tasks. The Phase II replan will result in plans for modifications to the Phase II proposal and will include a demonstration schedule with success criteria, a staffing plan and a cost ROM that includes a breakout of the cost for each major demonstration. These will be delivered to the government as a Phase II Program Plan deliverable.
1.4.6.2	Phase II Program Plan Deliverable	ATK will deliver a Phase II program plan, outlining our planned Phase II proposal that includes the items described in 1.4.6.1. The Phase II Program Plan will be delivered at the SRR, 6 months from ATP.
1.4.6.3	Phase II Proposal Preparation	Based on the contents of the Phase II Program Plan, ATK will prepare a Phase II proposal, consisting of both technical and cost input with a breakdown of schedule and cost at least to a WBS level 4.
1.4.6.4	Phase II Proposal Deliverable	ATK will deliver the Phase II technical and cost proposal updates 7 months after ATP.
1.4.7	Final Report	
1.4.7.1	Final Report Preparation  UNCLASSIFIED	ATK will prepare a final report covering all of the work performed during the Vulcan Phase I program. This report will document technical tasks performed in Phase I and will specifically contain documentation of the SRR, CTDP, Vulcan performance model description, and Vulcan conceptual design.
1.4.7.2	Final Report Deliverable	ATK will deliver the Vulcan Phase I final report to DARPA 8 months after ATP.

~ End ~

## GO AND NO-GO CRITERIA FOR VULCAN PROGRAM PHASE II

In order for the Government to evaluate the effectiveness of proposed solutions in achieving the stated program objectives, Go and No-Go criteria have been established to measure whether program objectives have been met. These Go and No-Go criteria along with Phase II proposal content will serve as the basis for determining whether satisfactory progress is being made to warrant continued performance into the next phase. As the design of the Vulcan engine and its subsystems mature, additional quantifiable metrics will be defined for the follow-on phases.

The Go and No-Go requirements for Phase II and all follow-on phases shall be based upon meeting the non-tradable requirements, listed below, at the Vulcan engine system level. The way in which these criteria must be met will have increasing fidelity as the design matures.

### PHASE II GO/NO GO CRITERIA

- Final Phase IV Demonstration System Design meets the demonstration objectives and required performance curves in Figure 1 and 2 by simulation or analysis.
- Final CTDIP identifies all Phase II-IV risk reduction activities and includes quantifiable success metrics for each test/demonstration
- Initial Vulcan engine performance model that can be used to generate engine performance adequate to meet the performance objectives.

### NON-TRADABLE REQUIREMENTS FOR THE VULCAN SYSTEM

- A CVC engine(s) will be developed as an element of the Vulcan engine
- An existing production Turbine Engine will be another element of the Vulcan engine
  - Must use an existing, production engine from the following list: the F100-229, F110-129, F119 or F414. A Government provided, General State-of-the-Art Generic Engine Description may be used.
- Notional uninstalled thrust for the hypersonic vehicle is to be provided by one or more Vulcan engines and must be greater than the values outlined in Figure 1
- Notional vehicle flight path to be met or exceeded on a trajectory to Mach 4 is outlined in Figure 2
- CVC engine must be able to operate on fuel qualified for the turbine engine and must at least be capable of throttling between half and full power
- Design must include a Turbine Engine cocooning architecture and restart capability
- Full scale Vulcan engine must be capable of:
  - Demonstrating in three modes with continuous operation between Mach 0 to 4+: Turbine only, Turbine & CVC engine, and CVC engine only
  - Demonstrating an efficient combined inlet architecture
  - Demonstrating an efficient combined nozzle architecture

	<b>Vulcan</b>	<b>Turbine</b>	<b>CVC</b>
<b>Mach</b>	<b>Uninstalled</b>	<b>Uninstalled</b>	<b>Uninstalled</b>
<b>Number</b>	<b>Thrust (lbs)</b>	<b>Thrust (lbs)</b>	<b>Thrust (lbs)</b>
0	80,000	80,000	-
1.5	90,000	80,000	10,000
2.0	70,000	60,000	10,000
3.0	50,000	-	50,000
4.0	50,000	-	50,000

Figure 1. Total Uninstalled Thrust Curve for Notional Hypersonic Vehicle

### Trajectory

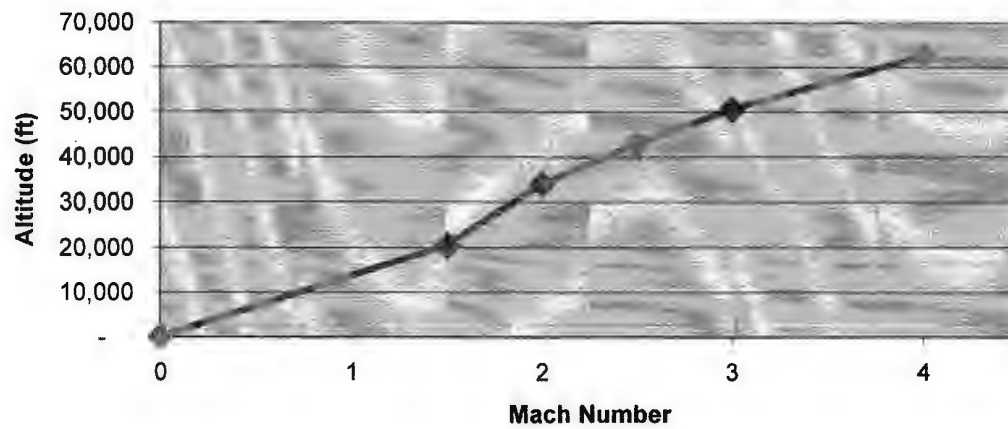


Figure 2. Flight Trajectory of Notional Vehicle to maintain ( $Q = 1,500 \text{ lb/ft}^2$ )

~ End ~



**DEFENSE ADVANCED RESEARCH PROJECTS AGENCY**  
3701 NORTH FAIRFAX DRIVE  
ARLINGTON, VA 22203-1714

HR0011-09-C-0055  
Attachment No. 3

January 5, 2009

**MEMORANDUM FOR CONTRACTING OFFICER'S REPRESENTATIVE**

**FROM:** DARPA, Contracts Management Office

**TO:** Major David Hopper, Deputy Chief, Turbine Engine Division (AFRL/RZT),  
1950 5th Street, WPAFB OH 45433; Email: david.hopper@us.af.mil

**SUBJECT:** Appointment as Contracting Officer's Representative (COR)

**1. You are hereby appointed as the Contracting Officer's Representative for:**

**Contract Number:** HR0011-09-C-0055  
**Contractor:** Alliant Techsystems Inc. (ATK)  
**Project Description:** Vulcan Turbine/Constant Volume Combustion Engine  
Demonstration Program

**2. This appointment authorizes and designates you to perform the following duties and/or responsibilities as specified herein:**

- a. Furnish plans, schedules, specifications, descriptions, and other documents to the contractor as required by the contract.
- b. Assist the contractor in interpreting technical aspects of the contract specifications/statement of work. Differences of opinion and interpretations which could affect the terms and conditions of the contract will be referred to the contracting officer for resolution.
- c. Provide Government recommendations/approvals to the contractor promptly in all cases where the contract calls for technical approval.
- d. Observe, monitor, and assess the contractor's performance under the terms of the contract. This includes reporting promptly to the contracting officer any failures, delays, or significant deviations of performance, quality, costs, or other actions which might jeopardize contract performance.

3. In the performance of the duties delegated to you in this letter, you are cautioned that you could be held personally liable for actions taken or directions given by you to the contractor that are beyond the authorities given to you in this letter. The duties or authorities in this letter are not delegable; therefore, you must advise the Contracting Officer or the Contract Administrator/Specialist immediately when you are unable to perform these duties.
4. In your dealings with the contractor you must not give technical direction as though the contractor's employees are Government employees. You must maintain a formal, arms-length relationship with the contractor in order to avoid even an appearance that the contract is one for personal services. If the contractor's performance takes place in a Government facility, then to the maximum extent practicable, the contractor's work area should be physically separated from areas in which Government employees work, and communication with the contractor's employees on contractual matters should be only through that contractor employee(s) designated by the contractor to supervise them. You must not give any direction to the contractor that is not authorized by the statement of work because it is not the intent of the Government that a contractor be required to do anything that is not included in the contract.
5. You are responsible for providing prompt notification to the contracting officer any significant deficiencies with respect to contractor performance or other actions which might jeopardize contract performance.
6. You are not authorized by this letter to take any action, either directly or indirectly, that could result in a change in the pricing, quantity, quality, place of performance, delivery schedule or any other terms and conditions of the basic contract, or to direct the accomplishment of effort which would exceed the scope of the basic contract. You must be especially cautious in providing interpretation of the specifications/ statement of work. The agreement reached or technical direction given must be formalized in writing with copies to the contracting officer. You shall also inform the contractor that if he believes that the COR's interpretation is erroneous, the contractor must notify the contracting officer in writing concerning the details of his position.
7. Specific duties in addition to those above are as follows:
  - a. Control all government technical interfaces with the contractor.
  - b. Ensure that copies of government technical correspondence are forwarded to the contracting officer for placement in the contract file.
  - c. Promptly furnish documentation on any requests for change, deviation, or waiver (whether generated by the Government or the contractor) to the contracting officer for appropriate action.
  - d. Review and, if required (i.e., Fixed Price Payments), accept invoices submitted through WAWF as stipulated in Section G of the Contract.

- e. Provide required review of Patent/Invention Disclosures made in I-Edison (<http://www.iedison.gov>).
  - f. The COR must maintain a separate file for each contract for which he/she acts as COR. The file should serve as a repository and record of all documents and communications between the contractor and the COR. At a minimum, the file must include a copy of the contract and all modifications as well as the COR appointment letter. Examples of other file documentation may include:
    - Reports required per the contract, e.g. interim and final technical or patent reports
    - Memoranda for Record documenting important contract discussions
    - Records of formal meetings, e.g. post award conference, program reviews, etc.
  - g. Assist ACO and/or PCO, as requested, with closeout activities at completion of contract period of performance.
8. If this is your first appointment as a COR or if you have not performed COR duties within the last two years, and in order to comply with DFARS 201.6-2, you must complete COR training immediately so that you can properly execute your responsibilities under this contract. A good source of COR training is available via a web-based module, CLC 106, "Contracting Officer Representative with a Mission Focus" at [www.dau.mil](http://www.dau.mil).
9. Your appointment as COR for this effort expires upon final disposition of the contract.
10. Your good judgment in performing your duties under the contract will have an important effect on the value of the performance obtained by the Government.

(b)(6)

Christopher L. Glista  
Contracting Officer

1/5/09  
Date

  
Major David Hopper  
Contracting Officer's Representative

9 Jan 09  
Date

Identification and Assertion of Restrictions on the Government's Use, Release, or Disclosure of Technical Data. The Contractor asserts for itself, or the persons identified below, that the Government's rights to use, release, or disclose the following technical data should be restricted

Technical Data to be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(b)(4)	(b)(4)	(b)(4)	(b)(4)
(b)(4)			
(b)(4)	(b)(4)	(b)(4)	(b)(4)
(b)(4)			
(b)(4)	(b)(4)	(b)(4)	(b)(4)
(b)(4)			
(b)(4)	(b)(4)	(b)(4)	(b)(4)
(b)(4)			
(b)(4)	(b)(4)	(b)(4)	(b)(4)

(b)(4)	(b)(4)	(b)(4)	(b)(4)
(b)(4)	(b)(4)	(b)(4)	(b)(4)
(b)(4)	(b)(4)	(b)(4)	(b)(4)

Date:

3-16-09

Print Name and Title:

Francine Hull, SR. CONTRACTS MGR.

Signature:

Francine Hull



DD FORM 254

PAGES 33 – 36

WITHHELD IN TOTAL

FOIA EXEMPTION (b)(2)



DEFENSE ADVANCED RESEARCH PROJECTS AGENCY  
3701 NORTH FAIRFAX DRIVE  
ARLINGTON, VA 22203-1714

Alliant Techsystems Inc.  
77 Raynor Avenue  
Ronkonkoma, NY 11779-6649

REFERENCE: Alliant Techsystems' Proposal for Vulcan Program, Phase I

SUBJECT: AUTHORIZATION TO INCUR PRE-AWARD COSTS

The Defense Advanced Research Projects Agency (DARPA), Contracts Management Office (CMO), has received a valid and properly funded procurement request, in support of performance of the referenced proposal. DARPA anticipates awarding a contract (cost-plus-fixed-fee) to Alliant Techsystems Inc. for this effort.

Since the DARPA Contracting Officer has determined that incurrence of costs prior to the effective date of the anticipated contract is necessary to ensure compliance with the proposed schedule, the Government and the Contractor agree as follows:

FIRST: In the event a contract is awarded, pre-award costs, not to exceed \$500,000 shall be allowable under the Contract, provided that the individual costs therein shall be:

- (a) otherwise allowable, reasonable, and allocable;
- (b) incurred during the period March 9, 2009 through May 8, 2009; and,
- (c) incurred specifically and exclusively to accomplish the effort described in the referenced proposal.

SECOND: Contract specifications and price shall be agreed to by the earlier of:

- (a) May 8, 2009; or
- (b) the date on which the amount of funds obligated, committed or expended under this Advance Agreement is equal to no more than \$500,000.

THIRD AND FINALLY: It is the intention of the Government to award a contract to the Contractor, subject to final agreement on contract terms, specifications and price, which contract shall incorporate this Advance Agreement. It is understood and agreed by both parties that this Agreement concerns the treatment of pre-award costs in the event of award of a contract. This Agreement does not require the Contractor to incur any such costs, and any costs incurred are at the risk of the Contractor, pending the award of a contract.

For the Contractor:

Francine Kull

(Signature)

3-5-09

Date

Francine Kull, SR. Contracts mgr.

(Print Name and Title)

For the Government:

(b)(6)

Christopher L. Glista  
Contracting Officer

3/5/09

Date