AWARD/CONTRACT

1. This Contract Is A Rated Order Under DPAS (15 CFR 700) ▶ Rating DXA4

2. Contract (Proc. Inst. Ident) No.
DAAE07-00-C-N086

3. Effective Date

4. Requisition/Purchase Request/Project No.
SEE SCHEDULE

5. Issued By — Code W56HZV
TACOM
AMSTA-LC-CAPA-G
FREDRICK T. SEEBURGER (810) 574-8096
WARREN, MICHIGAN 48397-5000

HTTP://CONTRACTING.TACOM.ARMY.MIL

e-mail address: SEEBURGR@TACOM.ARMY.MIL

6. Administered By (If Other Than Item 5) — Code S0302A
DCM PHOENIX
TWO RENAISSANCE SQUARE
40 N. CENTRAL AVENUE, SUITE 400
PHOENIX, AZ 85004

SCD A PAS NONE ADP PT HQ0339

7. Name And Address Of Contractor (No. Street, City, County, State, And Zip Code)
HONEYWELL INTERNATIONAL INC.
ENGINES & SYSTEMS
111 SOUTH 34TH STREET
PHOENIX AZ 85072-2181

TYPE BUSINESS: Large Business Performing in U.S.

Code 99193 Facility Code

8. Delivery
☐ FOB Origin ☒ Other (See Below) SEE SCHEDULE

9. Discount For Prompt Payment

10. Submit Invoices (4 Copies Unless Otherwise Specified) To The Address Shown In: ▶ Item 12

11. Ship To/Mark For — Code
SEE SCHEDULE

12. Payment Will Be Made By — Code HQ0339
DFAS - COLUMBUS CENTER
DFAS-CO/WEST ENTITLEMENT OPERATIONS
P.O. BOX 182381
COLUMBUS, OH 43218-2381

13. Authority For Using Other Than Full And Open Competition:
☐ 10 U.S.C. 2304(c)( ) ☐ 41 U.S.C. 253(c)( )

14. Accounting And Appropriation Data
SEE SECTION G

15A. Item No.	15B. Schedule Of Supplies/Services	15C. Quantity	15D. Unit	15E. Unit Price	15F. Amount
SEE SCHEDULE	CONTRACT TYPE: Cost-Plus-Award-Fee KIND OF CONTRACT: Research and Development Contracts				

15G. Total Amount Of Contract ▶ $15,190,685.00

16. Table Of Contents

(X)	Section	Description	Page(s)	(X)	Section	Description	Page(s)
		Part I - The Schedule				**Part II - Contract Clauses**	
X	A	Solicitation/Contract Form	1	X	I	Contract Clauses	38
X	B	Supplies or Services and Prices/Costs	4			**Part III - List Of Documents, Exhibits, And Other Attachments**	
X	C	Description/Specs./Work Statement	13	X	J	List of Attachments	46
X	D	Packaging and Marking	24			**Part IV - Representations And Instructions**	
X	E	Inspection and Acceptance	25		K	Representations, Certifications, and Other Statements of Offerors	
X	F	Deliveries or Performance	26				
X	G	Contract Administration Data	28		L	Instrs., Conds., and Notices to Offerors	
X	H	Special Contract Requirements	29		M	Evaluation Factors for Award	

Contracting Officer Will Complete Item 17 Or 18 As Applicable

17. ☒ Contractor's Negotiated Agreement (Contractor is required to sign this document and return 2 signed copies to issuing office.) 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 consummates 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)

20A. Name Of Contracting Officer
JAMES DUERR
DUERRJ@TACOM.ARMY.MIL (810) 574-7220

19B. Name of Contractor
By _____
(Signature of person authorized to sign)

19c. Date Signed

20B. United States Of America
By _____
(Signature of Contracting Officer)

20C. Date Signed

SECTION A - SUPPLEMENTAL INFORMATION

	Regulatory Cite	Title	Date
A-1	52.204-4850 (TACOM)	ACCEPTANCE APPENDIX	MAR/2000

(a) Contract Number DAAE07-00-C-N086 is awarded to Honeywell Engines and Systems.

(b) The contractor, in it's proposal, provided the following data for the listed clauses in this contract:

Section E, 52.246-4025, HIGHER-LEVEL CONTRACT QUALITY REQUIREMENT -- TACOM QUALITY SYSTEM REQUIREMENT: The contractor shall utilize it's quality system which complies with current American National Standards Institute/American Society for Quality Control Q9001, Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation and Servicing (ISO9001) requirements. The Government reserves the right to disapprove the contractor's quality system or portions thereof when it fails to meet it's intended objectives or the terms, conditions and regulatory requirements of the contract.

Section E, 52.246-4028, INSPECTION POINT: 111 S. 34th Street, Phoenix, AZ 85034 for Honeywell or 1000 Western Ave, Lynn MA 01910 for General Electric Aircraft Engines.

Others:

(1) The list of Govenment furnished material (GFM) required under this contract is listed at Attachment 7 of this document.

(2) 52.232-22 - The contractor(s) shall submit in writing notification to the Government 60 days prior to the point at which the contractor(s) expect 75% of the funding to be expended.

(3) 252.225-7014 - Preference For Domestic Speciality Metals - In accordance with the letter signed by General R.W.Drews dated 12 Feb 96 and providing the contractor(s) continues it's acquisition practices for the procurement of the metals specified within this clause in accordance with the stipulations setforth in this letter, this clause is hereby waived.

(4) The approved contractor specific Honeywell and General Electric Aircraft Engine Single Process Initiatives (SPI) take precedence over corresponding contract provisions herein.

(5) Unless specified otherwise, the revision levels for all Military Standards and Specifications referenced in this contract and the applicable attachments (including lower tier standards and specifications) shall be the most current version as of the date of the contract award. The Government will consider the use of other revision levels requested by the contractor on a case by case basis.

(c) Certain attachments listed in this contract will be provided by the buyer directly to the administrative contracting officer (ACO) via e-mail. A hard copy of the award will be sent to those ACOs not EDW (Electronic Document Workflow) capable. Technical data packages will be mailed by TACOM-Warren to the ACO on CD-ROM. Within one week of this award, any office not able to obtain these attachments from TACOM's website (http://contracting.tacom.army.mil/) and still requiring a copy, can request it by sending an e-mail message to the buyer listed on the front page of this contract.

(d) The contractors Small Business/Small Disadvantaged Business Subcontracting Plans are approved and hereby incorporated by reference into the contract.

SUMMARY

This contract is for the design and development of a common engine for the Abrams tank (M1A1 and M1A2 SEP Models) and the Crusader Artillery System.

The term "Common Engine" refers to the basic engine and/or its major assemblies that are interchangeable between the Abrams and Crusader configurations. The Common Engine configuration is referred to as the "B Kit'. The term "Common Engine" does not necessarily mean identical external configurations between the Abrams and Crusader. There are variations of attaching and interfacing components to accommodate the specialized configuration and operational requirements of the Abrams and Crusader vehicle systems. Such engine specific attaching hardware necessary to interface with each vehicle are called the "A-Kits."

The engine specifications are in Attachment 1 to the contract. The specifications provide the baseline performance parameters for the design of the engine and are to be updated throughout the development process to reflect the latest approved configuration.

The Interface Control Documents (ICDs) are in Attachment 2 to the contract. There are two types of ICDs. The ICDs at Enclosure A to Attachment 2 are referred to as the B-Kit ICDs, which define the common engine configuration and the interface characteristics between the common engine and each vehicle's unique interfacing hardware. The A-kit ICDs define the interface characteristics

between the engine as configured for each vehicle and the vehicle system interfacing hardware. The A-kit ICDs are to be developed as part of this contract in conjunction with the vehicle system integrating contractors.

The design and development activities to be performed under this contract are covered by four primary functions as detailed in the SOW. Those functions are: (1) Program Management, (2) System Engineering, (3) Integrated Logistics Support, and (4) Test and Test Support. The result of the contract SOW shall be Performance Specifications, Interface Control Documents, and Computer Models documenting the validated common engine hardware and software design, interfaces and performance. Such documents shall enable the Government to procure, produce, accept and support a validated common engine design that meets the program cost and vehicle system performance requirements.

The Contract Line Item Numbers (CLIN) in Section B are structured to separate the common efforts from the unique efforts in order to provide a means for both the Abrams and Crusader programs to share in the cost of the common development effort while clearly segregating the system unique efforts to be funded separately by each program as follows:

CLIN 001 - COMMON ENGINE DESIGN AND DEVELOPMENT:
Under this CLIN, the contractor shall design and develop the basic engine and/or its major assemblies that are interchangeable between the Abrams and Crusader configurations as defined in the engine specification at Enclosure A to Attachment 1, and the B-Kit Interface Control Document for Abrams and Crusader at Enclosures A to Attachment 2. All program management activities shall be included under this CLIN.

CLIN 002 - ABRAMS UNIQUE INTERFACING HARDWARE, PROTOTYPES AND PROTOTYPE TESTING:
Under this Clin, the contractor shall design and develop the Abrams A-Kit components. The Abrams A kit components are listed in Enclosure C to Attachment 2. In addition, under this CLIN, the contractor shall develop the Abrams A-Kit ICDs, (paragraph C.4.4) which characterize the interface relationships between the engine as configured for the Abrams Tank and vehicle system interfacing hardware/software. CLIN 0002 also includes the fabrication of Abrams prototype hardware, 13 each, and unique testing and test support (paragraph C.6.1).

CLIN 003 - CRUSADER UNIQUE INTERFACING HARDWARE, PROTOTYPES AND PROTOTYPE TESTING:
Under this Clin, the contractor shall design and develop the Crusader A-Kit components. The Crusader A-Kit components are listed in Enclosure D to Attachment 2. In addition, under this CLIN, the contractor shall develop the Crusader A-Kit ICDs, which characterize the interface relationships between the engine, as configured for the Crusader Artillery System, and vehicle system interfacing hardware/software. CLIN 003 also includes the fabrication of Crusader prototype hardware, 11 each, and unique testing and test support (paragraph C.6.2).

CLIN 0004 - OPTION FOR ABRAMS INTEGRATED PROPULSION SYSTEM
The contract includes a priced option under CLIN 0004 to conduct a power pack test for Abrams. The Government will exercise this option in accordance with H-26 of the contract within 450 days after award. In that event, the contractor shall conduct the power pack test listed in Attachment 3 and in accordance with C.7 of the contract. In the event the Government conducts the test itself (without exercising the option), the contractor shall support the test in accordance with C.6.1.3. The cost of such support shall be included in Clin 0002.

*** END OF NARRATIVE A 001 ***

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS				
0001	Supplies or Services and Prices/Costs				
	COMMON ENGINE DESIGN, TEST & DEVELOPMENT				
	SECURITY CLASS: Unclassified				
				ESTIMATED COST:	$140,708,249.
				BASE FEE (3%)	$ 4,176,799.
				TOTAL COST:	$144,855,048.
	(End of narrative B001)				
0001AA	SERVICES LINE ITEM				$ 13,592,621.00
	NOUN: FY 00 FUNDING SECURITY CLASS: Unclassified PRON: TU0A0F3147 PRON AMD: 01 ACRN: AA AMS CD: 643854.50512 CUSTOMER ORDER NO: TU0A0F311AEH				
	Inspection and Acceptance INSPECTION: Origin ACCEPTANCE: Origin				
	Deliveries or Performance DLVR SCH REL CD / QUANTITY / PERF COMPL DATE 001 / 0 / 30-NOV-2000				
	$ 13,592,621.00				

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002	Supplies or Services and Prices/Costs ABRAMS UNIQUE DESIGN, TEST & PROTOTYPES SECURITY CLASS: Unclassified	13	EA	ESTIMATED COST: BASE FEE (3%) TOTAL COST:	$ 27,464,974. $ 817,091. $ 28,282,065.

(End of narrative B001)

DLV SCH REL CD	QUANTITY	PERF COMPL DATE
001	1	17-MAY-2002
002	1	03-JUN-2002
003	1	09-JUL-2002
004	1	19-JUL-2002
005	1	07-AUG-2002
006	1	14-AUG-2002
007	1	16-AUG-2002
008	1	06-SEP-2002

DLV SCH PERF COMPL

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	REL CD QUANTITY DATE 009 1 01-OCT-2002 DLV SCH PERF COMPL REL CD QUANTITY DATE 010 1 07-OCT-2002 DLV SCH PERF COMPL REL CD QUANTITY DATE 011 1 21-OCT-2002 DLV SCH PERF COMPL REL CD QUANTITY DATE 012 1 02-NOV-2002 DLV SCH PERF COMPL REL CD QUANTITY DATE 013 1 19-NOV-2002 FOB POINT: ORIGIN SHIP TO: PARCEL POST ADDRESS SHIPPING INSTRUCTIONS FOR CONSIGNEE (SHIP-TO) WILL BE FURNISHED PRIOR TO THE SCHEDULED DELIVERY DATE FOR ITEMS REQUIRED UNDER THIS REQUISITION. (End of narrative F001)				
0002AA	SERVICES LINE ITEM NOUN: FY 00 FUNDING SECURITY CLASS: Unclassified PRON: A106M93147 PRON AMD: 01 ACRN: AB AMS CD: 633005 Inspection and Acceptance INSPECTION: Origin ACCEPTANCE: Origin Deliveries or Performance DLVR SCH PERF COMPL REL CD QUANTITY DATE 001 0 30-NOV-2000 $ 984,316.00				$ 984,316.00

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003	Supplies or Services and Prices/Costs				
	CRUSADER UNIQUE DESIGN, TEST & PROTOTYPE				
	SECURITY CLASS: Unclassified	11	EA	ESTIMATED COST:	$ 21,861,644.
				BASE FEE (3%)	$ 651,199.
				TOTAL COST:	$ 22,512,843.
	(End of narrative B001)				
	Inspection and Acceptance				
	INSPECTION: Origin ACCEPTANCE: Origin				
	DLV SCH REL CD / QUANTITY / PERF COMPL DATE				
	001 / 1 / 15-APR-2002				
	DLV SCH REL CD / QUANTITY / PERF COMPL DATE				
	002 / 1 / 06-MAY-2002				
	DLV SCH REL CD / QUANTITY / PERF COMPL DATE				
	003 / 1 / 13-JUN-2002				
	DLV SCH REL CD / QUANTITY / PERF COMPL DATE				
	004 / 1 / 15-JUL-2002				
	DLV SCH REL CD / QUANTITY / PERF COMPL DATE				
	005 / 1 / 15-AUG-2002				
	DLV SCH REL CD / QUANTITY / PERF COMPL DATE				
	006 / 1 / 06-SEP-2002				
	DLV SCH REL CD / QUANTITY / PERF COMPL DATE				
	007 / 1 / 16-SEP-2002				
	DLV SCH REL CD / QUANTITY / PERF COMPL DATE				

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	008 1 01-OCT-2002 DLV SCH PERF COMPL REL CD QUANTITY DATE 009 2 18-OCT-2002 DLV SCH PERF COMPL REL CD QUANTITY DATE 010 1 11-NOV-2002 FOB POINT: ORIGIN SHIP TO: PARCEL POST ADDRESS SHIPPING INSTRUCTIONS FOR CONSIGNEE (SHIP-TO) WILL BE FURNISHED PRIOR TO THE SCHEDULED DELIVERY DATE FOR ITEMS REQUIRED UNDER THIS REQUISITION. (End of narrative F001)				
0003AA	SERVICES LINE ITEM NOUN: FY 00 FUNDING SECURITY CLASS: Unclassified PRON: TU0A0F3247 PRON AMD: 01 ACRN: AC AMS CD: 643854.50512 CUSTOMER ORDER NO: TU0B0F311AEH Inspection and Acceptance INSPECTION: Origin ACCEPTANCE: Origin Deliveries or Performance DLVR SCH PERF COMPL REL CD QUANTITY DATE 001 0 30-NOV-2000 $ 613,748.00				$ 613,748.00

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0004	Supplies or Services and Prices/Costs				
	ABRAMS POWER PACK TESTING OPTION				
	SECURITY CLASS: Unclassified				
				ESTIMATED COST:	$ 1,456,024.
				BASE FEE (3%)	$ 43,564.
				TOTAL COST:	$ 1,499,588.
	(End of narrative B001)				
	OPTION QUANTITY, PURSUANT TO SECTION H CLAUSE ENTITLED OPTION FOR INCREASED QUANTITY--- SEPARATELY PRICED LINE ITEM				
	The quantity stated for the option CLIN DOES NOT Form a part of the basic contractual quantity. Part or all of it may, however, be added to the contract by exercise of the option clause, at the discretion of the Government.				
	(End of narrative B002)				

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0005	Supplies or Services and Prices/Costs SERVICES LINE ITEM NOUN: AWARD FEE - ALL CLINS SECURITY CLASS: Unclassified This CLIN will be utilized to fund the total award fee for all CLINs Award Fee (8%) (End of narrative B001)				

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0006	Supplies or Services and Prices/Costs				
	CONTRACT DATA REQUIREMENTS				
	SECURITY CLASS: Unclassified				
					NSP
	001 - Integrated Master Plan				
	002 - Integrated Master Schedule				
	003 - Cost Performance Report				
	004 - Contract Funds Status Report				
	005 - Reserved				
	006 - Configuration Management Plan				
	007 - Software Development Plan				
	008 - Interface Control Documents				
	009 - Production Transition Plan				
	010 - Performance Specifications				
	011 - Technical Data & Computer Models				
	012 - Integrated Support Plan				
	013 - Logistic Support Analysis Records				
	014 - Technical Manuals & IETMs				
	015 - Training				
	016 - Test Plans/Reports				
	(End of narrative B001)				

B-1

The Government shall provide funds under this contract covering the estimated cost and fee on an incremental basis as provided for in the following schedule and pursuant to the Clause entitled Limitation of Funds. It is estimated that the incremental amounts are sufficient for the performance of work in each of the cited periods. The Government may, at its discretion, provide funds on an incremental basis within each fiscal year. The contractor shall so plan and execute the work required by this contract so as to expend and/or commit funds compatible with the proposed schedule below. Whenever the contractor has reason to believe that funds obligated for any fiscal year are either insufficient or excessive for the performance of work required in that fiscal year, the Government shall be notified.

Proposed Funding Schedule Requirements:

Performance Period	Amount
Total - FY00 - Award through Nov 30, 00	$ 15,210,165.
Clin 0001	$ 13,592,621.
Clin 0002	$ 984,316.
Clin 0003	$ 613,748.
Clin 0004	$ 19,480.
Total - FY01 - Dec 01, 00 through Nov 30, 01	$ 71,483,688.
Clin 0001	$ 58,371,417.
Clin 0002	$ 6,941,177.
Clin 0003	$ 5,508,738.
Clin 0004	$ 662,356.
Total - FY02 - Dec 01, 01 through Nov 30, 02	$102,951,936.
Clin 0001	$ 67,140,007.
Clin 0002	$ 19,938,599.
Clin 0003	$ 15,169,323.
Clin 0004	$ 704,007.
Total - FY03 - Dec 01, 02 through Completion	$ 22,703,628.
Clin 0001	$ 16,919,133.
Clin 0002	$ 2,596,915.
Clin 0003	$ 2,958,066.
Clin 0004	$ 229,514.

The offeror shall complete the proposed funding requirements lines above which shall represent the total cumulative amounts by funding period and by line item for all clins shown elsewhere in Section B of this solicitation.

*** END OF NARRATIVE B 001 ***

SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

STATEMENT OF WORK

C.1 GENERAL:
The contractor, acting independently and not as an agent of the Government, shall design and develop a common engine and any unique interfacing hardware (combined A and B kits) for the Abrams tank (M1A1 and M1A2 SEP Models) and the Crusader Artillery System.

The design shall be fully validated and documented by a development program that, upon completion of the contract, shall result in Government approved performance specifications, ICDs, computer solid models, a set of contractor drawings (electronic format)and process sheets that will enable the procurement, production and acceptance of an engine/propulsion system that meets the following overarching program requirements when integrated in each vehicle.

a. Reduced Total Ownership Cost. The goal is to achieve a Design to Operating Support Cost (DTOSC) of $41/hr for Abrams and $23/hr for Crusader.

b. Capable of being integrated into the Crusader power pack space claim while contributing to overall Crusader system weight reduction. The design to weight objective for the Crusader engine to be provided under this contract is 2460 lbs. The maximum weight of the Crusader engine (combined A-kit and B-Kit) shall not exceed 2529 lbs. The Abrams engine weight (combined A-kit and B-Kit) shall not exceed 2539 lbs.

c. Satisfy Abrams and Crusader system performance requirements referenced in the Enclosures E, F and G to Attachment 1.

d. Capable of being integrated into the Abrams Tank while minimizing changes to the basic platform or other subsystems.

e. Capable of being produced within a Design to Unit Rollaway Cost (DTURC) of $608,808. for Abrams and of $579,843. for Crusader, and of meeting the Abrams and Crusader program test and production schedules at Attachment 3.

f. Maximize the operational and logistics benefit to the war-fighter, by employing an optimum level of commonality between the Abrams and Crusader design to reduce the unit Authorized Stockage List (ASL) items while allowing ease of removal/ installation, maintenance, and sustainment

C.2 APPLICABLE DOCUMENTS:
The system specification in Attachment 1 and Interface Control Documents (ICDs) at Attachment 2 provide the design baseline from which the contractor shall develop the objective engine configuration for each vehicle.

The contractor shall maintain and update such engine specifications and ICDs throughout the development program in accordance with its Configuration Management Plan (CMP). As these documents evolve, the contractor shall continuously coordinate with GDLS and UDLP to assure that any planned design changes do not degrade vehicle system level performance. Design changes/tradeoffs which impact any of the following items require Government approval prior to implementation: (1)vehicle system interface requirements (e.g. A-Kit configuration); (2) power pack, propulsion system or vehicle system performance; (3) ERU/recuperator design or performance; (4) vehicle system size or weight (increases); (5) composition of the A and B Kits, including shifting of components from one kit to another; (6) interfaces or performance of the B-Kit.

In addition, the Contractor shall generate production level drawings and process sheets ready to be used for production orders once the individual hardware capabilities have been validated. These drawings shall be controlled in accordance with the contractor's CMP. All drawings shall be generated, released, reproduced and exchanged via an electronic system capable of exchanging all technical data consistent with the requirements of the Integrated Data Environment (IDE)/Common Data Environment (CDE) specified in paragraph C.3.6.

The final specifications and ICDs to be delivered under this contract shall be validated through a contractor and Government test program (paragraphs C.6.1 & C.6.2) using the prototype hardware to be delivered under Contract Line Item Numbers (CLIN) 0002 for Abrams and 0003 for Crusader.

C.3 PROGRAM MANAGEMENT (CLIN 001):
The contractor shall exercise the requisite planning, direction and control over the program to accomplish development objectives within performance, cost and schedule constraints including, but not be limited to: data management, scheduling, and an earned value management costing system that shall accurately and proactively report costs.

C.3.1 REVIEWS:
The contractor shall support and conduct the necessary meetings and reviews required to effectively manage the development efforts in an IPT environment with the Government, Suppliers and the respective system integrators. Such efforts include supporting (or conducting when appropriate) working level Technical Interchange Meetings (TIMs), monthly Program Management Reviews (PMRs), quarterly In-Process Reviews (IPRs) and annual System Level Reviews (SLRs) conducted by the Government Program Management Office and the Crusader and Abrams prime contractors. These meetings and reviews are conducted to manage the status of

all facets of the program on a recurring basis.

C.3.2 INTEGRATED PRODUCT TEAM:
The Contractor shall participate in a streamlined Integrated Product & Process Development (IPPD) and Systems Engineering (SE) environment that integrates the product's design, development, integration, logistics, and manufacturing. The Contractor shall participate with the Government and the system's integrating contractors in an IPT located at General Dynamics Land Systems in Sterling Heights, Michigan. The Contractor shall assign the appropriate number of people to this location for the entire program. All infrastructure (i.e. Office Space and Furniture, Computer Internet Connections, Phones and Phone Service) shall be provided by the Government at GDLS. The contractor shall provide its own computers. The IPT's primary responsibility shall be the timely identification and resolution of program and technical issues across all program functional areas.

The Contractor shall conduct IPT training and teambuilding exercises. In that regard, the Contractor shall present two courses. The first course, "Integrated Product Team (IPT) Development", is for the purpose of facilitating the team arrangements and relationships between the Army, System Integrators, Contractor, major Subcontractors, and Vendors. The expected outcome of this training will be a document that defines the inputs and outputs of the ACCE Program's process steps, as well as, identifying the team-members responsible for performing each of the specific process steps. This document, to be consolidated and reproduced by the Contractor, will be provided as a reference tool to all IPT members. The second course, "Government Test and Evaluation", is for the purpose of familiarizing Government personnel (i.e. - mechanics, technicians, engineers, etc.) with the operation and maintenance requirements of the engine.

C.3.3 INTEGRATED MASTER PLAN (CDRL 001):
The Contractor shall develop and deliver a comprehensive Integrated Management Plan (IMP) within 60 days after contract award. The IMP shall describe the management processes and key events required to complete the systems design, engineering and integration efforts in accordance with the program objectives. The IMP shall provide a framework for implementing and measuring performance required at completion of those key events. Moreover, each task shall be accompanied by specific accomplishment criteria that shall be used to assess the completion of the task for a given event. At a minimum the IMP shall cover:

A description of 1) the technical and management processes for interfacing with the Army and the System Integration Contractors, and for ensuring the common engine configuration is maintained, 2) an approach for managing requirements and interfaces across programs and contracts, 3) plans and processes for managing changes to requirements and interfaces, and 4) plans and processes for achieving issue resolution across programs and contracts.

The key technical performance measures (TPMs), supporting technical performance parameters (TPPs) to be tracked during development and "Success Criteria" for products to be delivered during the development phase (Phase I) and proposed "Transition Criteria" for transitioning from Phase I to the production contract (Phase II).

The program, technical, cost, and schedule risks for hardware and software, their risk ranking and the risk mitigation plans proposed to reduce these risks early in the program. The risk assessment technique/methodology to be used to determine these risk ratings shall be fully described. The risk mitigation plans shall include specific risk reduction metrics (RRM) for measuring the progress/status of risk reduction initiatives. The Contractor's objective shall be to reduce all technical risks to "Low" by the conclusion of Phase I.

The processes to be used for managing life cycle cost (LCC) in order to minimize the Army's total ownership cost (TOC). The Contractor shall use Cost as an Independent Variable (CAIV), Design to Unit Rollaway Cost Objectives (DTURC), and Operations and Support (O&S) cost objectives along with appropriate glide paths to manage program activities.

The Contractor's approach for managing engine and propulsion system weight. The weight program shall differentiate between estimates, calculations and actual measurements of similar and identical parts, and evaluate risk in accordance with these computational types. Design-to-weight objectives shall be assigned and managed throughout the development phase.

The method to be used for managing Reliability, Maintainability and product Durability. "R/M/D" objectives shall be established and managed throughout the development program. Growth curves shall be established with projected glide path and planned activities for achieving these targets.

C.3.4 INTEGRATED MASTER SCHEDULE (CDRL 002):
The Contractor shall develop an Integrated Master Schedule (IMS) that defines the time phasing of key program tasks, events, milestones and their interdependencies. The IMS shall be used to assess program status and conduct schedule planning, critical path and risk assessments. The IMS shall identify long lead items (LLI) that drive development and procurement time lines and all major milestones leading to production deliveries. The LLI list shall define those parts and components whose procurement times exceed 120 days, and shall be maintained throughout the program. This list shall include information on estimated cost and lead-time for each item. During program execution, the IMS shall be updated on a monthly basis to accurately reflect the established development plan and status.

C.3.5 EARNED VALUE MANAGEMENT:
The Contractor shall prepare and submit a monthly Cost Performance Report (CPR) (CDRL 003), and quarterly Contract Funds Status Report (CFSR) (CDRL 004). The CPR shall be submitted using DO-MGMT-81466 as a guide, and shall report costs through the third

level of the WBS. The CFSR shall be prepared and submitted using DI-MGMT-81467 as a guide. This report shall clearly present the Contractor's progress against its Performance Measurement Baseline (PMB), provide insight as to the cumulative variances in the CWBS legs, and report on the usage of Management Reserve. The earned value management system shall conform to the criteria set forth in the EVMS ANSI standard (ANSI/EIA-748-1998) for Defense Acquisition. The report shall be broken out to the third indenture level (at a minimum). These cost and earned value management reports shall be distributed via IDE.

The Contractor shall electronically produce contract cost data in accordance with the Contractor Cost Data Reporting Manual.

The Contractor shall generate a WBS (using MIL-HDBK-881 as a guide) and a WBS Dictionary that describes each and every WBS element. The Contractor shall ensure that all subcontracted effort is included within the WBS, as shall all contract effort. All Contract Change Proposals and Supplemental Agreements shall be subjected to the same level of WBS identification, definitions, and SOW relationships as the basic contract. The WBS shall be used for planning, managing and reporting program status and projections for cost, schedule and technical achievements. The Contractor shall make no changes at or above the third level of the WBS without government approval.

The Contractor shall develop a detailed Performance Measurement Baseline (PMB) Updates shall be made during the program per the Program EVMS description. Within 120 days after contract award, the Contractor shall support an integrated Baseline Review (IBR) at its facility. At this time, the Contractor shall generate a time-phased budget baseline assigning all contract costs to specific WBS elements. The PMB shall be the basis for the Cost Performance Report (CPR). No budgetary changes shall be made to the PMB once it has been approved without prior Government notification.

C.3.6 INTEGRATED DATA ENVIRONMENT (IDE)/COMMON DATA ENVIRONMENT (CDE):
The Contractor shall use IDE/CDE, provided by the Government, to develop, manage and disseminate program management and technical information. The information management tools provided by IDE/CDE are: Requirements Traceability Manager (RTM); RDD-100; ProENGINEER; Rational software development tools including Apex, Rose code analyser, Testmate, Cross-compiler to Lynx OS; and Open Plan. These tools are used to facilitate program-wide integration activities and shall become the standard tool set for data management applied across the ACCE program. Design activity within the main engine casings may be pursued with currently employed tools, provided that all external points of potential and actual interface will be communicated via ProENGINEER software.

A T1 line with the domestic version of Netscape shall be used to acquire access to these information management (IM) tools. The Contractor shall provide all printers, plotters, UNIX workstations, PC desktops, NT desktops, LAN, office automation equipment, phones, video teleconferencing services, fax machines and support services associated with this electronic IM system. The Contractor shall clearly identify IDE or CDE servers used for the ACCE program and shall notify the Army when IDE/CDE tools are not fully used.

C.4 SYSTEM ENGINEERING:

C.4.1 GENERAL:
The Contractor shall design and develop an engine of one configuration that fully satisfies all of the requirements of this contract for both the Abrams Propulsion System and the Crusader Integrated Power pack when interfacing it with the A-Kits as defined herein. The capabilities of this engine design shall be fully validated and documented by a development program that shall demonstrate full compliance with each of the Abrams System Specifications, the Crusader Power Pack Requirements Document, Engine Specification,Interface Control Documents, and Production Drawings.

To ensure that technical, cost, and schedule risk is minimized, and the overall program objectives are satisfied, the contractor shall maintain a Systems Management approach utilized throughout the program. The Systems Management approach shall include a variety of multi-discipline individuals, who shall perform trade studies as required throughout the program to ensure that optimal product decisions are being made. The Systems Management approach, shall include, but not be limited to the following disciplines: Systems Engineering, Reliability Engineering, Maintainability Engineering, System Safety/Health Hazard Engineering, Survivability Engineering, MANPRINT, Human Factors Engineering, Quality Assurance, Producibility (or Manufacturing Engineering), Configuration Management, and Environmental Engineering. At a minimum, the contractor shall perform trade studies to evaluate: cost, schedule, reliability, performance, and risk impacts to the program.

C.4.2 TECHNICAL ANALYSIS:
The engine and its constituent components shall be designed utilizing the latest computer modeling techniques, codes, processes and checklists that are employed by the Contractor. Analysis and evaluation of these components shall include but not be limited to: aerodynamic capability, structural integrity, reliability, maintainability, supportability, human factors engineering, quality assurance, producibility, hazardous materials, ILS and all appropriate interfaces. A concurrent engineering approach shall be used that ensures that all drawings have been reviewed in accordance with the contractor's configuration management plan by the appropriate discipline prior to drawing release. Each component performance level shall be routinely assessed against the overall system requirement.

Design reports shall be written to document the adequacy of each component. Aerodynamic, performance, lifing reports to include cyclic analysis, and containment analysis shall be performed on the compressor and turbine blades and disks. An Average Performance Model shall be generated that documents the average performance of the development engines. Additionally, a Minimum

Performance Model shall be generated that documents the minimum performance levels of shaft horsepower and fuel flow/specific fuel consumption to be delivered to the customer. A computer model with user instructions shall be forwarded to the customer after adequate test hours have been accumlated to ensure accurate representation of the product.

To ensure that each component is properly reviewed for integration, a structural analysis of all pertinent casings, attachment points, interfaces and boundary conditions shall be performed. The structural analysis shall be performed with the latest 2-D and 3-D modeling tools that account for thermal and mechanical loads as well as material property variations. All structural casings, whether they constitute outer engine shells or gearbox housings, shall be reviewed for structural capability. Shock loads, vibratory loads, transmission reactive loads as well as all rotor dynamic loading shall be analyzed to ensure adequate design and operation.

The Contractor shall develop and maintain detailed solid models to include dimensions, alignment, tolerances, assembly/attachment points, weight, density, moments of inertia and center of gravity information. These solid models shall be developed and converted to ProEngineer in accordance with the requirements and guidelines for solid modeling provided by the Government. UDLP and GDLS shall be given these solid models to roll-up the system model and conduct system integration assessments and analyses (e.g. interference checks, determination of vehicle center of gravity, dynamic modeling, etc.).

C.4.3 REQUIREMENTS AND CONFIGURATION MANAGEMENT:
All requirements shall be placed and managed in a program Requirements Traceability Management (RTM) database. The Contractor shall update a Requirements Compliance Matrix (RCM) on a regular basis to reflect the expected capability of the current design.

The Contractor shall prepare a Configuration Management Plan (CMP) (CDRL 006) and Software Development Plan (SDP) (CDRL 007) that covers both Abrams and Crusader hardware and software using the Crusader Configuration Management Plan at IDE location 00000400 (CMPLAN01.doc)as a guideline. A software package shall be utilized to effectively communicate these requirements and their flow-down to members within the team.

The engineering data and related configuration documentation prepared by the Contractor shall reflect the product structure, as-designed configuration and as-built configuration for all deliverable hardware and software products. This data shall be entered into the IDE and made available to GDLS and UDLP for viewing. The Contractor shall prepare for and participate in annual CM reviews and audits to evaluate the effectiveness of the CM program and Software Configuration Management (SCM) process.

The Contractor shall execute parts control and standardization activities at the subsystem and sub-tier levels concurrent with the objective subsystem configuration. The parts control process shall be applied as defined in the Parts Standardization Process Plan, IDE location 00008954 (STDPARTS.doc) and the SEMP for both Abrams and Crusader, IDE locations 00002710 (SEMP_TOC.doc) and 00002652 (SEMPSEC5.doc). The Contractor shall use parts that are listed in the Standard Parts Pick List, IDE location 00023379 (SPPL.xls) and the Crusader Program Parts Selection List, IDE location 00006186 (PPSLDOC.xls). Part selection, identification of additional PPSL candidate parts and the processing of nonstandard part requests received from other contractors or vendors shall be accomplished throughout the program. Additionally, the Contractor shall flow down parts control and standardization requirements to other contractors and vendors as required. All design modeling efforts shall use the Standard Parts Library provided in IDE.

C.4.4 INTERFACE CONTROL AND MANAGEMENT:
Interface Control Documents shall be developed and maintained to: (1) describe all interface requirements (e.g., mechanical, electrical, hydraulic, software) between common engine and any engine specific accessory components/hardware required to make the common engine compatible with each vehicle system (B-Kit ICD), and (2) describe all interface requirements between the Abrams and Crusader engines and any interfacing systems on each vehicle (A-Kit ICDs). The B-Kit ICDs are included in Attachment 2 of the contract. The Abrams A-Kit ICDs shall be delivered within 90 days after contract award (CDRL 008). The Crusader A-Kit ICDs (CDRL 008) will be developed in conjunction with UDLP as the Crusader Vehicle System matures.

The ICDs shall be prepared in contractor format, subject to the approval of the Government. Once approved by the Government, the ICDs shall not be changed without written approval of the COR. The contractor shall maintain interface control and manage changes to these requirements and interfaces in accordance with the following requirements:

Physical Interfaces. The Contractor shall support the program Physical Interface Working Group for the Crusader and Abrams and the physical interface change control process, and the creation and maintenance of interface documents to include mounting provision (MP) data sheets and power pack space claim models and hydraulic connections.

Electrical/Electronic Interfaces. The Contractor shall use the Cable Interconnect Diagrams (CID) and Component Data Set (CSD) databases to define electrical/electronic interfaces. The Contractor shall provide usage and interface data for all engine electrical/electronic components. Data shall be of sufficient detail and accuracy to support 1) generation of interface control documentation through the CDS database, 2) design of interface cabling, 3) design of interface control and power distribution circuitry, 4) verify use of Standard Electronics has been maximized, and 5) verify use of Common (electrical) parts has been maximized.

Electronic/Logic (software) Interfaces. The Contractor shall support the program Electrical System Interface Working Group

(ESIWG) and electrical/electronic change control process, the program Software Interface Working Group and software interface change control process, and the program Automotive Controls Interface Working Group (ACIWG). The electronic hardware and software shall be made compatible with the Crusader and Abrams vehicle electronics architecture and software architecture interfaces. If under this contract, new software is developed or commercial off the shelf (COTS) software is modified by 35 percent or more, the Contractor shall follow a Software Development Plan that reflects its software life cycle processes and meets IEEE/EIA ISO 12207 as tailored by the IPT. The Contractor shall assure external interfaces are designed per the requirements of DOD Joint Technical Architecture (JTA).

The Contractor shall use models and simulations to emulate the signals and the data exchanged at electrical and logical interfaces of the power pack hardware and software. Models and simulations shall be used to replicated sub-system features for the purpose of early design iteration, interface definition and integration evaluation. The Contractor shall use these models and simulations to perform design analyses/validations, assess functionality and conduct performance measurements and predictions and assess timing and states/modes transition effects.

The Contractor shall use 1) Simulation, Emulation and Stimulation (SES) to achieve early verification and validation of electrical, electronic and software interfaces; 2) Low Fidelity Models to verify and validate external powerpack interfaces early in development, 3) High Fidelity Models for Crusader only to perform design analysis and validation, conduct performance measurements and predictions, and assess timing and mode transition effects early in development. The Contractor shall deliver simulators and emulators of the engine external interfaces and support integration of these products into UDLP's SIF and GDLS' SIL. These simulators and emulators shall consist of both Contractor-developed software and UDLP/GLDS-supplied hardware. Delivery of the emulators and simulators shall be achieved in order to support early integration of the engine electrical/electronic controllers with external vehicle interfaces.

C.4.5 NBC CONTAMINATION SURVIVABILITY (NBCCS):
The design shall satisfy the NBC Contamination Survivability (NBCCS) criteria for hardness, compatibility, and decontaminability specified in AR 70-75 and the quantitative NBC Survivability Criteria for Army Materiel (12 August 1991). Materials used in the design shall be selected accordingly.

The Contractor shall provide assistance to UDLP and GDLS for the risk identification and NBCCS assessment of the engine design. This assistance shall include, but not be limited to: access to drawings, performance criteria, design parameters, specifications, Human Factors information, failures mode information, description of operation, and a list of materials. A list of non-NBCCS qualified materials used in the design shall be maintained and presented at regularly schedule IPRs and reviews. Material information shall be exchanged on a concurrent basis, to the maximum extent possible, so that GDLS and UDLP can assist the Contractor on NBCCS aspects of the design.

C.4.6 EMBEDDED DIAGNOSTICS/PROGNOSTICS:
The Contractor shall develop an integrated diagnostic strategy (embedded and external) that defines the interface between the engine, its embedded software, the operator and the maintainer on a flow of information basis. The diagnostic strategy shall contain a logic decision tree that identifies a category of particular operator input and identifies steps to make a corrective or scheduled maintenance decision. The diagnostic strategy shall reflect categorical equipment differences and diagnostic approaches.

The engine shall have on-vehicle embedded diagnostics capability. The objective of the embedded diagnostics system shall be to eliminate the need for off board diagnostic/test equipment at the tactical field level, improve maintenance and readiness, reduce operations and support costs and enable the Army's anticipatory logistics system.

The engine shall be capable of performing health monitoring and health checks using embedded resources of the weapon system to the maximum extent possible. This capability shall include system level diagnostics and fault isolation that integrates the engine with the platform. Weapon system on-board processing shall use data to provide the health check and fault isolation, and robust predictive and prognostic capability.

The design shall feature prognostic strategy whose primary consideration is condition monitoring of equipment and determination of prognostic results. The Contractor shall implement the prognostic strategy by incorporating prognostic sensors, wiring and software hooks for prognostic data collection and mitigation. At a minimum, the sensors listed in Attachment 5 shall be incorporated in the system design.

C.4.7 MANUFACTURING ENGINEERING:
Drawings shall be prepared for all laboratory fixtures, test fixtures, and tooling that are required to support the program during both Phase I and Phase II at the factory level. Additionally, the analysis required to support the selection of these designs and ensure their safety and functionality shall be performed. Special Test Equipment required to perform any tasks shall be identified and specified. Production Tooling shall be used to the maximum extent possible during the development.

A Production Transition Plan (CDRL 009) shall be developed by the Contractor that addresses subcontractor/vendor controls, critical materials and production lead times, make/buy trade plans, process and plant layouts, equipment, tooling, special test equipment and test capabilities, plant capacity, labor relations, workforce skills, workforce training and certifications,

facility modernization, and computer aided manufacturing. Additionally, the plan shall address the functional requirements needed to establish a Depot overhaul/repair capability in conjunction with the Anniston Army Depot.

C.4.8 HUMAN ENGINEERING:
The Contractor shall maintain and provide Government access to all documentation, reports and technical data required for inclusion into MANPRINT documents. Such documentation includes:

- Crew operation and maintenance task analysis for inclusion into the Human Engineering Design Approach Document - Operator (HEDAD-O) using DI-HFAC-80747 as guidance.

- Maintainer task analysis for inclusion into the Critical Task Analysis and Human Engineering Design Approach Document - Maintainer (HEDAD-M) using DI-HFAC-80747 as guidance.

The Contractor shall perform design support, tests and evaluation using MIL-HDBK-46855 as guidance to ensure that applicable human engineering requirements are incorporated into the design. The human engineering design criteria of MIL-STD-1472 and MIL-HDBK-759 shall also be used as guidance during the design activity.

C.4.9 SAFETY ENGINEERING:
The Contractor shall perform safety engineering for hardware and software to ensure that safety and health hazard requirements are met. The UDLP Integrated System Safety Program Plan (ISSPP) shall be used as a guideline for both Crusader and Abrams activities. The safety program shall be in accordance with applicable sections of the ISSPP. The contractor shall maintain and provide Government access to Material Safety Data Sheets, data needed to generate Safety Assessment Reports for delivery of prototype hardware to Government test sites and data needed to support System Safety Working Group Meetings.

C.4.10 ENVIRONMENTAL ENGINEERING:
The Contractor shall have an active environmental program that accomplishes the following: 1) aids in the compliance of applicable federal, state and local environmental laws and regulations in effect, 2) ensures no Class 1 Ozone Depleting Substances (C1ODS) or Cadmium plated parts are used in the performance of this contract. The Environmental Design Guidelines within IDE location 44114 E-6383 shall be observed by the Contractor to identify, evaluate and select materials and/or processes from the preferred materials and processes lists. If the Contractor selects a material and/or process from the restricted list, it shall provide justification as being mission and/or cost critical. The Contractor shall additionally provide a list of materials and/or processes used in the manufacture or support of the product. Hazardous material management and pollution prevention plans shall be developed to minimize life cycle environmental impacts and to ensure minimum industrial pollution and hazardous wastes are generated in the engine design, development, production, test, operation, maintenance, demilitarization, and disposal activities. The Contractor shall support and provide information on the amount and disposition of hazardous materials and wastes and for integrating environmental impact and cost consideration issues into the systems engineering process. Material safety data sheets (MSDS) shall be provided for any mixtures or substances subject to FAR 52.223-3 and Federal Standard 313C and components recycled products and closed-loop recycling of items, such as batteries, shall be identified. The Contractor shall support and provide data for the statement required for testing, milestone decision review and type classification. Information to be supplied shall include: part weight, energy and water consumption, waste outputs, and environmental, safety and health costs. The Contractor shall submit environmental reports and logs to the State.

C.4.11 MAINTAINABILITY:
The Contractor shall provide 1) maintainability support to design reviews, formal and informal, including system level design reviews; 2) access to maintainability data (MTTR, MR fix forward, correctability within one hour and pre-op and total PMCS) down to the LRU level to be used for system level maintainability modeling, which shall include corrective maintenance and scheduled maintenance; 3) access to maintainability prediction data to be used by UDLP and GDLS for system level maintainability predictions.

C.4.12 RELIABILITY:
The Reliability engineering effort shall include the following, at a minimum:

1) Access to engine hardware and software reliability models and predictions to be used by UDLP and GDLS for system level reliability modeling and predictions. This modeling and predictions shall be conducted, at a minimum, to the LRU level. Where possible, these reliability prediction data shall be based on demonstrated test or field operational data for the equipment or for equipment substantially similar to that proposed.

2) Access to expected engine failure modes to the LRU level, with probable causes for each. The list shall include the failure mode ratio effects, detection method, and compensation provisions for each failure mode. The sum of the failure mode ratios for the part or item shall equal one.

3) Reliability support of design reviews, reliability analysis questions/issues and failure scoring conferences; 4) Reliability growth support for planning, tracking and assessing power pack growth through development, which shall include growth curve documentation.

C.4.13 PRODUCT ASSURANCE:
All program activities shall be conducted in compliance with ISO 9001 requirements in accordance with existing Government / Contractor agreements. The contractor shall maintain a Quality Program Plan (QPP), a Software Quality Program Plan (SQPP) and acceptable product assurance procedures; and product quality metrics. Contractor Engineering and Operations personnel shall validate product specifications, witness software acceptance testing and review hardware drawings/software products.

The contractor shall support future Abrams production and Crusader EMD manufacturing by implementing process control, inspection, final product acceptance and supplier control plans; managing material non-conformance/corrective actions; and maintaining quality records. The contractor will maintain inspection and acceptance test records, first article/first piece inspection results, and material/process certifications as specified in Contractor procurement documentation. The contractor shall specify sub-tier supplier quality requirements in procurement documents, define acceptance criteria, validate quality records conform to requirements, perform or witness acceptance tests, and perform source/receiving inspections. The contractor shall support requirements verification testing by validating results and participating on FRACAS review boards.

C.4.14 DRAWINGS AND TECHNICAL DATA:
The result of this system engineering effort, technical analysis and coordination shall be the generation of performance specifications, and drawings ready to be used for production orders once the individual hardware capabilities have been verified via development testing. All drawings and specifications shall be controlled in accordance with the contractor's ISO 9001 compatible configuration management system.

C.4.14.1 Performance Specifications: (CDRL 010) The contractor shall update (including adding QA and test requirements) the development specifications at Enclosure A to Attachment 1 to reflect the latest configuration throughout the development process. The development specifications shall evolve into a production specification that will enable the procurement, test and acceptance of production engines that reflect the validated configuration. The final production specifications shall be delivered in accordance with CDRL 010.

C.4.14.2 Drawings (CDRL 011): All drawings shall be generated, released, reproduced and exchanged via an electronic system capable of exchanging all technical data consistent with the IDE/CDE. Converted data is acceptable. Drawings shall be prepared and released that define all aspects of the engine design. The drawing effort shall include but not be limited to all detail part drawings, source control vendor drawings, section layout drawings, stack drawings, sub-assembly and top assembly drawings as well as an indentured parts list that fully defines every part required to manufacture the product. The Contractor shall prepare and maintain technical data using MIL-DTL-31000 as a guide. Data shall include the Engineering Bill of Materials (EBOM), three dimensional solid models, two dimensional assembly and detail part drawings, test plans/procedures, detailed specifications, and any other information necessary to verify the engine, transmission, powerpack and propulsion system designs meet all requirements. These product drawings and associated lists shall be developed using MIL-STD-100G and ASME Y14.24M-1989 as guides. Drawings shall provide a level of detail and design disclosure equivalent to product drawings, as defined in MIL-DTL-31000. Drawing practices shall be in accordance with the Design Drawing Requirements stated within IDE location 00028666 (drwreg.doc), use the standard Abrams and Crusader drawing formats defined in ProEngineer, and be identified with the Contractor assigned drawing number and CAGE Code. Product marking, based on the requirements of MIL-STD-130 shall be defined in the applicable drawing notes.

All physical interfaces shall conform to the International System of Units program requirements. All dimensions and tolerances used in reports, specifications and drawings developed under this contract shall be given in metric units. The components shall be designed and produced in metric, unless there is a performance penalty, a cost penalty, or items are unavailable in metric, in which case soft conversion metrics are acceptable. Mill-run purchased materials and Commercial Off the Shelf (COTS) components are excluded from the metric requirement.

In addition, to the drawings required to fabricate the engine parts, the process sheets required to assemble and test the engine for production shall be prepared and released. These Manufacturing Operation Techniques (MOTs) shall be released during the development phase in the same format that they shall be ultimately used in production. A minimum of eight (8) of the twenty-four prototype engines shall be produced and delivered by observing these MOTs.

C.4.15 Testability.
The contractor shall use Crusader RM&T Design Guidelines, IDE location 00003010 (RMTGUID.doc), for the purpose of guiding design toward achievement of specified Power Pack testability requirements for both Crusader and Abrams. The contractor shall provide access to design and dependency modeling data down to the LRU level to support the use of testability analysis (modeling and prediction) for requirement assessment and corresponding feedback into design for testability requirement compliance.

C.5 INTEGRATED LOGISTICS SUPPORT (ILS):
The Contractor shall plan, implement, execute and manage an Integrated Logistics Support (ILS) program focused on design influence, development of support data, and preparation for supporting Abrams/Crusader with an Integrated Life-Cycle Support Environment for engine development. The ILS program shall be structured to consider logistics supportability integrated with the design process. A maintenance concept that is consistent with the Army's Two Level Maintenance concept and uses Anniston Army Depot for Depot Level Repair shall be developed. On-board, built-in fault isolation/diagnostic/prognostic features shall preclude the need for any external engine test equipment at the tactical field level to the maximum extent practicable. Any external

requirements for diagnostics shall be compatible with the Integrated Family of Test Equipment (IFTE) and Direct Support Electrical System Tests Sets (DSESTS). An approach shall be developed and implemented to meet the spare and repair part support requirements to comply with the Army's readiness goal of 90 percent.

The contractor shall develop and deliver preliminary technical data to include Integrated Support Plan (CDRL 012), Logistics Support Analysis Records (CDRL 013), Technical Manuals / IETMs (CDRL 014), and Training (CDRL 015). All packing and container design modifications needed to support the Engine effort shall be provided.

The Contractor ILS program shall focus on achieving a significant reduction in O&S costs while increasing end item readiness. A tailored LSA process shall be developed and implemented as the primary method for achieving these O&S cost goals. It shall use the former MIL-STD 1388-1A and MIL-STD 1388-2B as guides. The LSA process shall target identification of critical supportability requirements and resolution of potential problems through design solutions. An Integrated Support Plan (CDRL 012), that describes the ILS program, shall be supplied in contractor format in accordance with the Integrated Master Schedule.

The Contractor shall perform the LSA, addressing key support drivers, critical tasks, and source data for operator organizational and selected direct support level technical publications and training. As a part of the LSA process, the Contractor shall describe support/test equipment and special facilities requirements. The following LSA tasks shall be performed at the corresponding level of detail:

Standardization - Define support-related design constraints based on standardization
-Provide design recommendations for standardization approaches.

Design factor - Influence hardware/software design, including support equipment, by identifying technological advancements and state-of-the-art design approaches which will enhance system support
- Document and track specific design recommendations and improvements

Functional requirements
Identification - Provide listing of all tasks required to support hardware/software
- Task list should be substantiated by RCM, FMECA, other analysis or specification

Support alternatives - Develop support alternatives to correct supportability design deficiencies and reduce or simplify support resources

Alternatives/tradeoffs - Include support considerations in all component level trade studies
- Perform level of repair analysis
- Document trade-off including assumptions

Task analysis - Perform detailed task analysis of crew/unit level task and onboard direct support tasks

Test and evaluation - Provide planning inputs to supportability demonstration

C.6 TEST AND EVALUATION

The contractor shall provide a joint Government/contractor test concept that: (1) meets the overall milestone schedules in Attachment 3, (2) validates the design with a high degree of confidence that the system meets the integration and performance requirements; placing particular emphasis on durability/reliability, and a low risk transition to production, and (3) takes advantage of common test data between the contractor and Army testing programs for both Abrams and Crusader.

The approved test concept shall be reflected in detailed test plans (CDRL 016) for Abrams and Crusader that shall specify the particulars of the engineering development tests, performance verification tests, and system verification tests necessary to verify engine, transmission, power pack and propulsion system characteristics and performance.

Test reports (CDRL 016) shall be prepared and provided to the Government within fifty days after the completion of each test identified in the test plan.

The contractor shall conduct testing to verify compliance of the engine with the performance and integration requirements prior to delivery of prototypes to the Government. The contractor's test effort should include a logical sequence of component, subsystem and system level hardware and software tests, including models and simulations to demonstrate acceptable system integration and compliance with performance and supportability requirements in the systems specification.

Two of the deliverable LV100-5 prototype engines shall be instrumented to ensure that blade response to vibratory excitation, spool thrust balance, and component operations are well documented. Subsequent engine testing shall focus on engine transients and environmental conditions. Three factory engines shall be used to acquire engine test time early in the development program so that reliability growth curves can be validated with substantial data. Factory endurance testing shall be planned early in the program so that individual engines delivered to the field shall not acquire more operating hours than endurance engines within the factory. Accumulated engine run times shall be sufficient to support all of the program milestone objectives. Deficiencies

found during this testing shall be corrected by the contractor and incorporated in the delivered prototype hardware and software.

C.6.1 Abrams Prototype Hardware and Test Support
The Contractor shall procure and deliver 13 common prototype engines (B-Kits) and 13 Abrams unique hardware sets (A-Kits) in accordance with the contract delivery schedules in Section F to support the Abrams Contractor/Government Test Program as follows:

C.6.1.1 Abrams Prototype Bench Testing: Four of the thirteen Abrams engines shall be analyzed / evaluated in test cells as follows: One engine shall be delivered to the transmission manufacturer for powerpack development and testing. Two of the Abrams engines shall remain at contractor facilities to support in-house engineering and test cell testing. Each of these engines shall be subjected to the Abrams 1000-hour test specified in Attachment 4. Engineering data shall be collected, analyzed and conformance to specification requirements shall be determined. As each engine completes lab cell testing it shall undergo a tear down inspection for wear patterns, weaknesses and/or incipient failures. One engine shall be delivered to the TACOM-TARDEC Propulsion Test Laboratory for Government test and evaluation.

C.6.1.2 Abrams Government Testing (In-vehicle).
The contractor shall support the integration and installation assessment in accordance with C.6.1.3. In that regard, the Government will use two (2) of the thirteen prototype engines, one (1) in a M1A1 tank and one (1) in a M1A2 SEP Abrams tank to evaluate the integration and installation of the system. Integration is defined as that portion of the non-recurring development program that involves packaging all the systems and subsystems of the propulsion system into a single concept that optimizes the system performance of the vehicle. Installation is defined as that portion of the recurring production or retrofit program associated with installing the propulsion system into the vehicle. The M1A2 SEP integration/installation will be evaluated by the Government in an Engineering tank located in GDLS' shop/software SIL facility. The M1A1 integration/installation will be evaluated by the Government in a Logistics (M1A1) tank located at GDLS' Log Center.

In addition, the contractor shall supply seven (7) of the thirteen production representative prototype engines for vehicle (M1A1 and M1A2 SEP) and support testing at government test sites. Three (3) of these units will be used for Reliability/Durability endurance testing and will accumulate no less than 7500 Abrams OPMODE miles (750 hour engine hours) each. Two engines will be used for Engineering in-vehicle performance evaluation, one at APG and one at YPG. Two (2) engines will be used as spares. Operation in an extreme cold environment shall be evaluated in the cold chamber at APG as part of the performance test.

A maximum of four prototype sets of hardware may utilize parts that have been produced using development processes; and at a minimum, nine of these prototype hardware sets shall be processed using production processes only. The common engines that utilize development processes shall be limited to the power pack testing that take place at the transmission manufacturer and the vehicle integration tests scheduled at GDLS. This shall ensure that all field tests occurring with the tank vehicles utilize the full-up production processed hardware.

C.6.1.3 Abrams Test Support. The contractor shall support power pack installation, integration and test at each site for each power pack asset. During testing, the contractor shall provide full engineering and logistics support to include spare/repair parts, tools, special tools, test equipment, maintenance support and failure analysis for the engine/power pack. During Propulsion Test Lab (PTL) testing, the contractor shall provide engineering, maintenance and logistics support; Army technicians are available to physically conduct the PTL tests. The contractor shall also support vehicle chassis integration, assembly test and checkout (IAT&C) at the GDLS SIL and Logistic Center. The IAT&C will be performed to ensure the proper physical and functional integration of power pack hardware, electronics/firmware and software with the chassis and the vehicle, respectively. Contractor support during IAT&C shall include on-site engineering support to perform integration activities identified in the system test plan, troubleshooting/failure analysis and repair.

C.6.1.4 Failure Reporting and Corrective Action System (FRACAS): The contractor shall employ a FRACAS to maintain a history of test configurations, test results, test incidents and corrective actions for all contractor and Government testing identified in the test plan. FRACAS will be implemented for all engine, transmission and power pack testing. The contractor shall record test incidents during all contractor testing and make them available to the Government. During Government testing, the Government will use Test Incident Reports (TIRs) and Corrective Action Reports (CARs) in the Government Army Test Incident Reporting System (ATIRS) database. For developmental configuration testing, the contractor's internal FRACAS is acceptable; for Abrams production verification and Crusader objective configuration testing, the contractor shall use ATIRS. The contractor shall establish a Failure Review Board (FRB) to provide a technical forum for review and resolution of hardware and software failures.

C.6.2 Crusader Prototype Hardware and Test Support
The Crusader prototype engines to be delivered in accordance with the schedules in Section F of the contact will be tested as part of the Crusader integrated power pack. The Contractor shall procure and deliver 11 common prototype engines (B-Kits) and 11 Crusader unique hardware sets (A-Kits) to be integrated with the transmission under the UDLP system integration contract.

C.6.2.1 Crusader PDRR Testing: The contractor shall allocate two (2) engines (developmental configuration acceptable) for early power pack performance testing during PDRR. The test results will be used by the Government to demonstrate the achieveability of the Crusader MS II mobility exit criteria. Engine, transmission and power pack test results must be available no later than 5 months prior to the scheduled MS II decision review.

C.6.2.2 Crusader Prototype Bench Testing: The contractor will allocate three (3) objective configuration engines for contractor in-house engineering development testing. In addition, the contractor shall allocate one (1) engine for power pack performance verification testing. This testing will encompass performance verification of all power pack performance specification requirements (excluding those beyond the capabilities of the test cell) and culminate with the conduct of the TACOM Combat Vehicle 600-Hour Mission Profile test.

One engine shall be delivered to the TACOM-TARDEC Propulsion Test Laboratory for Government test and evaluation. The contractor shall also provide one (1) engine to support chassis integration activities at the Crusader chassis integration site, and one (1) engine to support Crusader vehicle integration activities in the UDLP System Integration Facility (SIF). The emphasis of these IAT&C activities will be on the electrical/electronic and software integration of the engine with the chassis and vehicle respectively. Two (2) spare objective configuration engines are required to address program contingencies as required.

C.6.2.3 Crusader Test Support. The contractor shall support power pack installation, integration and test at each site for each power pack asset. During testing, the contractor shall provide full engineering and logistics support to include spare/repair parts, tools, special tools, test equipment, maintenance support and failure analysis for the engine/power pack. During Propulsion Test Lab (PTL) testing, the contractor shall provide engineering, maintenance and logistics support; Army technicians are available to physically conduct the PTL tests. The contractor shall also support vehicle chassis integration, assembly test and checkout (IAT&C) at the Crusader chassis integration site, and vehicle IAT&C at the UDLP System Integration Facility (SIF). The IAT&C will be performed to ensure the proper physical and functional integration of power pack hardware, electronics/firmware and software with the chassis and the vehicle, respectively. Contractor support during IAT&C shall include on-site engineering support to perform integration activities, troubleshooting/failure analysis and repair.

Failure Reporting and Corrective Action System (FRACAS): The contractor shall employ a FRACAS to maintain a history of test configurations, test results, test incidents and corrective actions for all contractor and Government testing identified in the test plan. FRACAS will be implemented for all engine, transmission and power pack testing. The contractor shall record test incidents during all contractor testing and make them available to the Government. During Government testing, the Government will use Test Incident Reports (TIRs) and Corrective Action Reports (CARs) in the Government Army Test Incident Reporting System (ATIRS) database. For developmental configuration testing, the contractor's internal FRACAS is acceptable; for Abrams production verification and Crusader objective configuration testing, the contractor shall use ATIRS. The contractor shall establish a Failure Review Board (FRB) to provide a technical forum for review and resolution of hardware and software failures.

C.7 Abrams Propulsion System Test (CLIN 0004)
Under this option the contractor shall conduct an Abrams power pack test using one of the thirteen (13) prototype LV100-5 engines and a Government furnished X1100-3B transmission in accordance with the schedules at Attachment 3. The test will be conducted using an existing facility and existing test cell equipment to simulate the installed condition.

*** END OF NARRATIVE C 001 ***

	Regulatory Cite	Title	Date
C-1	52.204-4003 (TACOM)	START OF WORK MEETING	MAY/2000

The contractor shall host a start of work meeting at its facility, unless some other location is designated in the contract, within 30 days after contract award. The contractor shall at a minimum invite the Contracting Officer's Representative (COR) identified in Section G or in an appointment letter, the Contract Specialist identified on the face page of this document, and the Administrative Contracting Officer (ACO). The COR, Contract Specialist, and ACO shall be given at least 14 days advance notice of the time, date, and location of the start of work meeting. The preferred method of notification is by email.
(end of clause)

C-2	TACOM	SUPPLEMENTAL STATEMENT OF WORK: TAILORING OF MIL-L-61002 TO ELIMINATE USE OF CIODS	JUL/1995

The following change applies to MIL-L-61002, Amendment 1, dated 10 Jan 92, which is part of the technical data package (TDP) or specification for this contract. Paragraph 4.6.3.2 requires immersion testing in methyl chloroform, a Class I Ozone-Depleting Substance, or CIODS. Therefore, in order to eliminate the use of CIODS, MIL-L-61002 is changed as follows:

When meeting the requirements of MIL-L-61002, Amendment 1, delete the immersion testing requirements of paragraph 4.6.3.2.
(End of clause)

C-3	TACOM	SUPPLEMENTAL STATEMENT OF WORK: TAILORING OF MIL-STD-129 TO ELIMINATE USE OF CIODS	JUL/1995

The following change applies to MIL-STD-129M, dated 15 Jun 93, which is part of the technical data package (TDP) or specification for this contract. The following references to Class I Ozone-Depleting Substances, or CIODS, are part of

MIL-STD-129M:

a. Paragraphs 3.27 and 3.28 reference MIL-P-116;

b. Paragraphs 5.1.1.2 and 5.1.1.3 reference MIL-C-46168 and MIL-C-53039;

c. Numerous paragraphs require labels per MIL-L-61002.

Therefore, in order to eliminate the use of CIODS, MIL-STD-129M is changed as follows:

a. For paragraphs 3.27 and 3.28, comply with MIL-P-116J, Amendment 2, dated 18 Aug 93.

b. For paragraphs 5.1.1.2 and 5.1.1.3, comply with both MIL-C-46168D, Amendment 3, dated 21 May 93 and MIL-C-53039A, Amendment 2, dated 19 May 93.

c. For paragraph 4.6.3.2 of MIL-L-61002, Amendment 1, dated 10 Jan 92, delete the immersion testing requirements for all references to MIL-L-61002.

(END OF CLAUSE)

C-4 52.239-4001 YEAR 2000 (Y2K) COMPLIANCE MAY/1999
(TACOM)

(a) In the event that this contract calls for the delivery of any data processing hardware, software and/or firmware (to be referred to as information technology), such deliverables shall be required to perform accurate date/time processing involving dates subsequent to December 31, 1999. The information technology shall be Year 2000 compliant upon delivery.

(b) Definition. Year 2000 compliant means information technology that accurately processes date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations. Furthermore, Year 2000 compliant information technology, when used in combination with other information technology, shall accurately process date/time data if the other information technology properly exchanges date/time data with it.

(c) If this contract contains another provision requiring Y2K compliance, that provision shall take precedence.

(End of clause)

SECTION D - PACKAGING AND MARKING

D2 Preservation, Packing and Marking

D2.1 Packaging

Each protype engine shall be processed in accordance with the contractor's standard commercial practice and the current Packaging Pilot Program at Honeywell Engines and Systems and GE Aircraft Engines. The contractor's standard commercial procedures shall protect each prototype during shipment, handling and temporary storage. Adequate protection and security must be given to equipment and components susceptible to damage or loss from pilferage, vandalism, vibration, corrosion or other enviromental deterioration and other conditions incindental to the shipment of each prototype.

D2.2 Marking

Each prototype shall be marked in accordance with ASTM-D-3951 for shipments to the Department of Defense

D2.3 Preservation

Items shall be free from dirt and other contaminants which would contribute to the deterioration of the item or which would require cleaning prior to reassembly. Unprotected exterior metal surfaces of the item susceptible to corrosion or deterioration shall be provided protection, such as contact preservative coatings.

*** END OF NARRATIVE D 001 ***

SECTION E - INSPECTION AND ACCEPTANCE

	Regulatory Cite	Title	Date
E-1	52.246-5	INSPECTION OF SERVICES - COST-REIMBURSEMENT	APR/1984
E-2	52.246-8	INSPECTION OF RESEARCH AND DEVELOPMENT -- COST-REIMBURSEMENT	APR/1984
E-3	52.211-4069 (TACOM)	WELDING INSPECTOR QUALIFICATION REQUIREMENTS	SEP/1997

(a) INSPECTION: As the contractor, during performance of this contract you will verify weld quality and workmanship using qualified inspectors trained to perform these inspection functions. Acceptable qualification of your inspectors may be based on:

(1) current or previous certification as an AWS Certified Welding Inspector; or

(2) current or previous certification by the Canadian Welding Bureau (CWB); or

(3) inspection performed by an engineer or technician who is competent in the use of weld inspection techniques and equipment, on the basis of (i) formal training or (ii) experience, or both, in metals fabrication, inspection, and testing.

(b) NON BALLISTIC VISUAL INSPECTION. You will perform all non-ballistic visual inspections of weld quality and workmanship for structural steel in accordance with Section 6 of AWS D1.1-96 or, a standard that meets or exceeds this standard. For structural aluminum, you may perform non-ballistic visual inspections of weld quality and workmanship using the guidelines given in MIL-STD-370A, dated 21 Sep 93.

(c) BALLISTIC VISUAL INSPECTION. You will perform all ballistic visual inspections in accordance with section 6 of the UDLP/TACOM Ground Combat Vehicle Code--Aluminum, dated July 1996, or to a standard that meets or exceeds these requirements. Copies of this document can be obtained by written request to:

Commander, US Army Tank-automotive and Armaments Command
ATTN: AMSTA-TR-E/Materials
Warren, MI 48397-5000

***

E-4	52.246-4027 (TACOM)	HIGHER-LEVEL CONTRACT QUALITY REQUIREMENT--TACOM QUALITY SYSTEM REQUIREMENT (NEW DESIGN/DESIGN CONTROL/COMPLEX OR CRITICAL ITEM)	OCT/1997

(a) As the contractor, you shall implement and maintain a quality system that ensures the functional and physical conformity of all products or services you furnish under this contract. Your quality system shall achieve (i) defect prevention and (ii) process control, providing adequate quality controls throughout all areas of contract performance.

(b) Your quality system may be based on (i) international quality standards such as ISO 9001, or (ii) military, or (iii) commercial, or (iv) national quality standards. (NOTE, however, that quality systems conforming to ISO 9002 or MIL-I-45208 or comparable are NOT acceptable for this contract.) You represent that your performance under this contract will be in accordance with your quality system, which is in compliance with:

( ) ISO 9001
( ) QS 9000
( ) ANSI/ASQ Q9001
(X) Other, specifically: See Section A-1 (b) of this contract document.

(Note: if you check the "Other" block because you intend to use an in-house quality system, or one based on a commercial, national, or international system not identified above, then in addition to identifying your proposed system in the space above, to the right of the word "Other," you must attach a description of this system to your offer in response to the solicitation, so that we can assess its suitability. If you receive a contract award, your proposed system will be required by the contract.)

(c) Certification of compliance for the quality system you identify above, by an independent standards organization or auditor, does not need to be furnished to us under this contract. However, you may attach a copy of such certification with your offer in response to the solicitation, as proof of system compliance.

(d) At any point during contract performance, we have the right to review your quality system to assess its effectiveness in meeting contractual requirements.

***

SECTION F - DELIVERIES OR PERFORMANCE

	Regulatory Cite	Title	Date
F-1	52.247-29	F.O.B. ORIGIN	JUN/1988
F-2	52.247-58	LOADING, BLOCKING, AND BRACING OF FREIGHT CAR SHIPMENTS	APR/1984
F-3	52.247-59	F.O.B. ORIGIN--CARLOAD AND TRUCKLOAD SHIPMENTS	APR/1984
F-4	52.242-15	STOP-WORK ORDER (ALTERNATE I dated APR 1984)	AUG/1989

(a) The Contracting Officer may, at any time, by written order to the Contractor, require the Contractor to stop all, or any part, of the work called for by this contract for a period of 90 days after the order is delivered to the Contractor, and for any further period to which the parties may agree. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order, the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Within a period of 90 days after a stop-work is delivered to the Contractor, or within any extension of that period to which the parties shall have agreed, the Contracting Officer shall either --

(1) Cancel the stop-work order; or

(2) Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.

(b) If a stop-work order issued under this clause is canceled or the period of the order or any extension thereof expires, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if --

(1) The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract; and

(2) The Contractor asserts its right to the adjustment within 30 days after the end of the period of work stoppage; provided, that, if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon the claim submitted at any time before final payment under this contract.

(c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order in arriving at the termination settlement.

(d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

(End of Clause)

F-5	52.227-4002 (TACOM)	DATA (SOFTWARE)	APR/1985

All data deliverable under this contract shall be delivered in accordance with the quantities and schedules as specified on the Contract Data Requirements List (CDRL) DD Form 1423, and shall be delivered F.O.B. Destination to the following address:

Commander
US Army Tank-automotive and Armaments Command
ATTN: (See DD Form 1423, Block 14)
Warren, MI 48397-5000

***

F-6	52.247-4005 (TACOM)	SHIPMENT OF SUPPLIES AND DETENTION OF CARRIERS EQUIPMENT	OCT/1994

(a) Unless otherwise directed, shipment items under this contract in following order of priority:

(1) Government Bill(s) of Lading or US Postal Services;

(2) Commercial Bill(s) of Lading converted to Government Bill(s) of Lading at destination;
(3) Prepaid Commercial Bill(s) of Lading with transportation charges entered as a separate item on the invoice; or
(4) As otherwise instructed when the contract prohibits use of Government funds for transportation costs.

(b) The Contractor will request:

(1) Government Bills of Lading and
(2) Routing and other instructions, including MILSTAMP (Military Standard Transportation and Movement Procedure), as to the methods of shipment to be followed by the Contractor, or
(3) Authorization to ship Commercial Bills of Lading to be converted to Government Bills of Lading at destination from the transportation office, administering DCMC, ten days before the materiel is ready for shipment. The Contractor must prepare and address the forms as directed by the Administrative Contracting Officer (ACO) or

(c) The Contractor and subcontractor(s) must allow prompt and convenient access of carrier's equipment to loading docks or platforms where the contract items supplies will be loaded. Any charges for detention of carrier's equipment shall be for the account of the Contractor, except when the detention is required or caused by the Government.

***

F-7 Delivery Schedule

The estimated period of performance of this contract is thru March 31, 2004.

Delivery of the required Abrams and Crusader unique prototype engines shall be as setforth in Section B and in conjunction with Attachment 3 of this contract.

Delivery of the required Data Items are setforth in the Contract Data Requirements List (CDRLs), Attachment 6, and the contractor's Integrated Master Schedule, C.3.4 of the SOW.

*** END OF NARRATIVE F 001 ***

Name of Offeror or Contractor: HONEYWELL INTERNATIONAL INC.

SECTION G - CONTRACT ADMINISTRATION DATA

LINE ITEM	PRON/ AMS CD	ACRN	OBLG STAT	ACCOUNTING CLASSIFICATION		JOB ORDER NUMBER	ACCOUNTING STATION		OBLIGATED AMOUNT
0001AA	TU0A0F3147 643854.50512	AA	2	21 012040000005R5R11643854525FA	S280170A0F31		W52H09	$	13,592,621.00
0002AA	A106M93147 633005	AB	2	21 02040000005R5R02P6330052516	S2011306M931	0GA931	W56HZV	$	984,316.00
0003AA	TU0A0F3247 643854.50512	AC	2	21 012040000005R5R11643854525FA	S280170A0F32		W52H09	$	613,748.00
							TOTAL	$	15,190,685.00

SERVICE NAME	TOTAL BY ACRN	ACCOUNTING CLASSIFICATION		ACCOUNTING STATION		OBLIGATED AMOUNT
Army	AA	21 012040000005R5R11643854525FA	S280170A0F31	W52H09	$	13,592,621.00
Army	AB	21 02040000005R5R02P6330052516	S2011306M931	W56HZV	$	984,316.00
Army	AC	21 012040000005R5R11643854525FA	S280170A0F32	W52H09	$	613,748.00
				TOTAL	$	15,190,685.00

	Regulatory Cite	Title	Date
G-1	252.201-7000	CONTRACTING OFFICER'S REPRESENTATIVE	DEC/1991

(a) Definition.

Contracting Officer's Representative means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contracting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of the contract.

***

G-2 52.232-4005 (TACOM) INVOICE INFORMATION REQUIREMENT JAN/1988

On each payment request submitted, the Contractor shall identify each affected Contract Line Item Number (CLIN), sub-CLIN, and/or work directive, together with the related dollar amounts. This requirement does not diminish or restrict any other requirement of this contract.

***

SECTION H - SPECIAL CONTRACT REQUIREMENTS

	Regulatory Cite	Title	Date
H-1	252.203-7002	DISPLAY OF DOD HOTLINE POSTER	DEC/1991
H-2	252.204-7000	DISCLOSURE OF INFORMATION	DEC/1991
H-3	252.204-7002	PAYMENT FOR SUBLINE ITEMS NOT SEPARATELY PRICED	DEC/1991
H-4	252.205-7000	PROVISION OF INFORMATION TO COOPERATIVE AGREEMENT HOLDERS	DEC/1991
H-5	252.211-7000	ACQUISITION STREAMLINING	DEC/1991
H-6	252.223-7006	PROHIBITION ON STORAGE AND DISPOSAL OF TOXIC AND HAZARDOUS MATERIALS	APR/1993
H-7	252.225-7001	BUY AMERICAN ACT AND BALANCE OF PAYMENTS PROGRAM	MAR/1998
H-8	252.225-7002	QUALIFYING COUNTRY SOURCES AS SUBCONTRACTORS	DEC/1991
H-9	252.225-7009	DUTY-FREE-ENTRY--QUALIFYING COUNTRY SUPPLIES (END PRODUCTS AND COMPONENTS)	MAR/1998
H-10	252.225-7010	DUTY-FREE ENTRY--ADDITIONAL PROVISIONS	MAR/1998
H-11	252.231-7000	SUPPLEMENTAL COST PRINCIPLES	DEC/1991
H-12	252.234-7001	EARNED VALUE MANAGEMENT SYSTEM	MAR/1998
H-13	252.235-7011	FINAL SCIENTIFIC OR TECHNICAL REPORT	SEP/1999
H-14	252.242-7004	MATERIAL MANAGEMENT AND ACCOUNTING SYSTEM	SEP/1996
H-15	252.246-7000	MATERIAL INSPECTION AND RECEIVING REPORT	DEC/1991
H-16	252.246-7001	WARRANTY OF DATA	DEC/1991
H-17	252.249-7002	NOTIFICATION OF ANTICIPATED CONTRACT TERMINATION OR REDUCTION	DEC/1996
H-18	252.227-7036	DECLARATION OF TECHNICAL DATA CONFORMITY	JAN/1997

(a) All technical data delivered under this contract shall be accompanied by the following written declaration:

The Contractor, _____, hereby declares that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. DAAE07-_____ are complete, accurate, and comply with all requirements of the contract.

_____ _____

Date Name and Title of Authorized Official

This written certification shall be dated and the certifying official (identified by name and title) shall be duly authorized to bind the Contractor by the certification.

(b) The Contractor shall identify, by name and title, each individual (official) authorized by the Contractor to certify in writing that the technical data are complete, accurate, and comply with all requirements of the contract. The Contractor hereby authorizes direct contact with the authorized individual responsible for certification of technical data. The authorized individual shall be familiar with the Contractor's technical data conformity procedures and their application to the technical data to be certified and delivered.

(c) Technical data delivered under this contract may be subject to reviews by the Government during preparation and prior to acceptance. Technical data are also subject to reviews by the Government subsequent to acceptance. Such reviews may be conducted as a function ancillary to other reviews, such as in-process reviews or configuration audit reviews.

(End of clause)

H-19 252.227-7037 VALIDATION OF RESTRICTIVE MARKINGS ON TECHNICAL DATA SEP/1999

(a) Definitions. The terms used in this clause are defined in the Rights in Technical Data-Noncommercial Items clause of this contract.

(b) Contracts for commercial items--presumption of development at private expense. Under a contract for a commercial item, component, or process, the Department of Defense shall presume that a Contractor's asserted use or release restrictions are justified on the basis that the item, component, or process was developed exclusively at private expense. The Department shall not challenge such assertions unless information the Department provides demonstrates that the item, component, or process was not developed exclusively at private expense.

(c) Justification. The Contractor or subcontractor at any tier is responsible for maintaining records sufficient to justify the validity of its markings that impose restrictions on the Government and others to use, duplicate, or disclose technical data delivered or required to be delivered under the contract or subcontract. Except under contracts for commercial items, the Contractor or subcontractor shall be prepared to furnish to the Contracting Officer a written justification for such restrictive markings in response to a challenge under paragraph (e) of this clause.

(d) Prechallenge request for information.

(1) The Contracting Officer may request the Contractor or subcontractor to furnish a written explanation for any restriction asserted by the Contractor or subcontractor on the right of the United States or others to use technical data. If, upon review of the explanation submitted, the Contracting Officer remains unable to ascertain the basis of the restrictive marking, the Contracting Officer may further request the Contractor or subcontractor tofurnish additional information in the records of, or otherwise in the possession of or reasonably available to, the Contractor or subcontractor to justify the validity of any restrictive marking on technical data delivered or to be delivered under the contract or subcontract (e.g., a statement of facts accompanied with supporting documentation). The Contractor or subcontractor shall submit such written data as requested by the Contracting Officer within the time required or such longer period as may be mutually agreed.

(2) If the Contracting Officer, after reviewing the written data furnished pursuant to paragraph (d)(1) of this clause, or any other available information pertaining to the validity of a restrictive marking, determines that reasonable grounds exist to question the current validity of the marking and that continued adherence to the marking would make impracticable the subsequent competitive acquisition of the item, component, or process to which the technical data relates, the Contracting Officer shall follow the procedures in paragraph (e) of this clause.

(3) If the Contractor or subcontractor fails to respond to the Contracting Officer's request for information under paragraph (d)(1) of this clause, and the Contracting Officer determines that continued adherence to the marking would make impracticable the subsequent competitive acquisition of the item, component, or process to which the technical data relates, the Contracting Officer may challenge the validity of the marking as described in paragraph (e) of this clause.

(e) Challenge.

(1) Notwithstanding any provision of this contract concerning inspection and acceptance, if the Contracting Officer determines that a challenge to the restrictive marking is warranted, the Contracting Officer shall send a written challenge notice to the Contractor or subcontractor asserting the restrictive markings. Such challenge shall-

(i) State the specific grounds for challenging the asserted restriction;

(ii) Require a response within sixty (60) days justifying and providing sufficient evidence as to the current validity of the asserted restriction;

(iii) State that a DoD Contracting Officer's final decision, issued pursuant to paragraph (g) of this clause, sustaining the validity of a restrictive marking identical to the asserted restriction, within the three-year period preceding the challenge, shall serve as justification for the asserted restriction if the validated restriction was asserted by the same Contractor or subcontractor (or any licensee of such Contractor or subcontractor) to which such notice is being provided; and

(iv) State that failure to respond to the challenge notice may result in issuance of a final decision pursuant to paragraph (f) of this clause.

(2) The Contracting Officer shall extend the time for response as appropriate if the Contractor or subcontractor submits a written request showing the need for additional time to prepare a response.

(3) The Contractor's or subcontractor's written response shall be considered a claim within the meaning of the Contract Disputes Act of 1978 (41 U.S.C. 601, et seq.), and shall be certified in the form prescribed at 33.207 of the Federal Acquisition Regulation, regardless of dollar amount.

(4) A Contractor or subcontractor receiving challenges to the same restrictive markings from more than one Contracting Officer shall notify each Contracting Officer of the existence of more than one challenge. The notice shall also state which Contracting Officer initiated the first in time unanswered challenge. The Contracting Officer initiating the first in time unanswered challenge after consultation with the Contractor or subcontractor and the other Contracting Officers, shall formulate and distribute a schedule for responding to each of the challenge notices to all interested parties. The schedule shall afford the Contractor or subcontractor an opportunity to respond to each challenge notice. All parties will be bound by this schedule.

(f) Final decision when Contractor or subcontractor fails to respond. Upon a failure of a Contractor or subcontractor to submit any response to the challenge notice, other than a failure to respond under a contract for commercial items, the Contracting Officer will issue a final decision to the Contractor or subcontractor in accordance with the Disputes clause of this contract pertaining to the validity of the asserted restriction. This final decision shall be issued as soon as possible after the expiration of the time period of paragraph (e)(1)(ii) or (e)(2) of this clause. Following issuance of the final decision, the Contracting Officer will comply with the procedures in paragraphs (g)(2)(ii) through (iv) of this clause.

(g) Final decision when Contractor or subcontractor responds.

(1) If the Contracting Officer determines that the Contractor or subcontractor has justified the validity of the restrictive marking, the Contracting Officer shall issue a final decision to the Contractor or subcontractor sustaining the validity of the restrictive marking, and stating that the Government will continue to be bound by the restrictive marking. This

final decision shall be issued within sixty (60) days after receipt of the Contractor's or subcontractor's response to the challenge notice, or within such longer period that the Contracting Officer has notified the Contractor or subcontractor that the Government will require. The notification of a longer period for issuance of a final decision will be made within sixty (60) days after receipt of the response to the challenge notice.

(2) (i) If the Contracting Officer determines that the validity of the restrictive marking is not justified, the Contracting Officer shall issue a final decision to the Contractor or subcontractor in accordance with the Disputes clause of this contract. Notwithstanding paragraph (e) of the Disputes clause, the final decision shall be issued within sixty (60) days after receipt of the
Contractor's or subcontractor's response to the challenge notice, or within such longer period that the Contracting Officer has notified the Contractor or subcontractor of the longer period that the
Government will require. The notification of a longer period for issuance of a final decision will be made within sixty (60) days after receipt of the response to the challenge notice.

(ii) The Government agrees that it will continue to be bound by the restrictive marking for a period of ninety (90) days from the issuance of the Contracting Officer's final decision under
paragraph (g)(2)(i) of this clause. The Contractor or subcontractor agrees that, if it intends to file suit in the United States Claims Court it will provide a notice of intent to file suit to the Contracting Officer within ninety (90) days from the issuance of the Contracting Officer's final decision under paragraph (g)(2)(i) of this clause. If the Contractor or subcontractor fails to appeal, file suit, or provide a notice of intent to file suit to the Contracting Officer within the ninety (90)-day period, the Government may cancel or ignore the restrictive markings, and the failure of the Contractor or subcontractor to take the required action constitutes agreement with such Government action.

(iii) The Government agrees that it will continue to be bound by the restrictive marking where a notice of intent to file suit in the United States Claims Court is provided to the Contracting Officer within ninety (90) days from the issuance of the final decision under paragraph (g)(2)(i) of this clause. The Government will no longer be bound, and the Contractor or subcontractor agrees that the Government may strike or ignore the restrictive markings, if the Contractor or subcontractor fails to file its suit within one (1) year after issuance of the final decision. Notwithstanding the foregoing, where the head of an agency determines, on a nondelegable basis, that urgent or compelling circumstances will not permit waiting for the filing of a suit in the United States Claims Court, the Contractor or subcontractor agrees that the agency may, following notice to the Contractor or subcontractor, authorize release or disclosure of the technical data. Such agency determination may be made at any time after issuance of the final decision and will not affect the Contractor's or subcontractor's right to damages against the United States where its restrictive markings are ultimately upheld or to pursue other relief, if any, as may be provided by law.

(iv) The Government agrees that it will be bound by the restrictive marking where an appeal or suit is filed pursuant to the Contract Disputes Act until final disposition by an agency Board of Contract Appeals or the United States Claims Court. Notwithstanding the foregoing, where the head of an agency determines, on a nondelegable basis, following notice to the Contractor that urgent or compelling circumstances will not permit awaiting the decision by such Board of Contract Appeals or the United States Claims Court, the Contractor or subcontractor agrees that the agency may authorize release or disclosure of the technical data. Such agency determination may be made at any time after issuance of the final decision and will not affect the Contractor's or subcontractor's right to damages against the United States where its restrictive markings are ultimately upheld or to pursue other relief, if any, as may be provided by law.

(h) Final disposition of appeal or suit.

(1) If the Contractor or subcontractor appeals or files suit and if, upon final disposition of the appeal or suit, the Contracting Officer's decision is sustained-

(i) The restrictive marking on the technical data shall be cancelled, corrected or ignored; and

(ii) If the restrictive marking is found not to be substantially justified, the Contractor or subcontractor, as appropriate, shall be liable to the Government for payment of the cost to the Government of reviewing the restrictive marking and the fees and other expenses (as defined in 28 U.S.C. 2412(d)(2)(A)) incurred by the Government in challenging the marking, unless special circumstances would make such payment unjust.

(2) If the Contractor or subcontractor appeals or files suit and if, upon final disposition of the appeal or suit, the Contracting Officer's decision is not sustained-

(i) The Government shall continue to be bound by the restrictive marking; and

(ii) The Government shall be liable to the Contractor or subcontractor for payment of fees and other expenses (as defined in 28 U.S.C. 2412(d)(2)(A)) incurred by the Contractor or subcontractor in defending the marking, if the challenge by the Government is found not to have been made in good faith.

(i) Duration of right to challenge. The Government may review the validity of any restriction on technical data, delivered

or to be delivered under a contract, asserted by the Contractor or subcontractor. During the period within three (3) years of final payment on a contract or within three (3) years of delivery of the technical data to the Government, whichever is later, the Contracting Officer may review and make a written determination to challenge the restriction. The Government may, however, challenge a restriction on the release, disclosure or use of technical data at any time if such technical data.

(1) Is publicly available;

(2) Has been furnished to the United States without restriction; or

(3) Has been otherwise made available without restriction. Only the Contracting Officer's final decision resolving a formal challenge by sustaining the validity of a restrictive marking constitutes "validation" as addressed in 10 U.S.C. 2321.

(j) Decision not to challenge. A decision by the Government, or a determination by the Contracting Officer, to not challenge the restrictive marking or asserted restriction shall not constitute "validation."

(k) Privity of contract. The Contractor or subcontractor agrees that the Contracting Officer may transact matters under this clause directly with subcontractors at any tier that assert restrictive markings. However, this clause neither creates nor implies privity of contract between the Government and subcontractors.

(l) Flowdown. The Contractor or subcontractor agrees to insert this clause in contractual instruments with its subcontractors or suppliers at any tier requiring the delivery of technical data, except contractual instruments for commercial items or commercial components.

(End of clause)

H-20 252.227-7039 PATENTS -- REPORTING OF SUBJECT INVENTIONS APR/1990

The Contractor shall furnish the Contracting Officer the following:

(a) Interim reports every twelve (12) months (or such longer period as may be specified by the Contracting Officer, see paragraph (e) below) from the date of the contract, listing subject inventions during that period and stating that all subject inventions have been disclosed or that there are no such inventions.

(b) A final report, within three (3) months after completion of the contracted work, listing all subject inventions or stating that there were no such inventions.

(c) Upon request, the filing date, serial number and title, a copy of the patent application and patent number, and issue data for any subject invention for which the Contractor has retained title.

(d) Upon request, the Contractor shall furnish the Government an irrevocable power to inspect and make copies of the patent application file.

(e) The contractor is not required to submit interim patent reports when there are no inventions to report under the contract. The absence of such filing shall be considered the equivalent of filing a negative report.

(End of clause)

H-21 52.204-4005 REQUIRED USE OF ELECTRONIC COMMERCE MAY/2000
(TACOM)

a. All contract awards, modifications and delivery orders issued by TACOM will be issued electronically. The contractor has the option to receive these actions either via the Worldwide Web (WWW) or Electronic Data Interchange (EDI). Many provisions/clauses that appear "by reference", meaning only clause titles and regulation site are listed; their full texts can be found at the website http://farsite.hill.af.mil/

b. In order to be eligible to receive an award under this solicitation, the successful offeror must be registered with the Department of Defense (DOD) Central Contractor Registration (CCR). The CCR registration process may be done electronically at the World Wide Web (WWW) site: http://www.ccr2000.com . (In order to be registered to use EDI, you must use the long form for registration. Certification information, including information on the EDI 838 TPP, must be furnished to the Contracting Officer within 60 calendar days after contract award to complete networking requirements within the Government.)

c. Worldwide Web Distribution. The contractor will receive an electronic Notice of the Award, Modification, or Delivery Order via e-mail. If you choose the WWW option, you must download the file from the appropriate TACOM webpage:

Warren: http://contracting.tacom.army.mil/awards_official.htm
Rock Island: http://aais.ria.army.mil/AAIS/AWDINFO/index.htm
Picatinny: http://procnet.pica.army.mil/Contracts/Index.htm
Red River Army Depot: http://www.redriver.army.mil/contracting/Awards
Anniston Army Depot: http://www.anadprocnet.army.mil

d. Electronic Data Interchange. If you choose to receive contract awards, modifications and delivery orders through EDI, they will be delivered electronically via the Federal Acquisition Network (FACNET). Federal Standard Version 3050 of Standard X12 from the American National Standards Institute (ANSI) will be used as the format for these electronic transactions.

1. You must complete the EDI 838 Trading Partner Profile, and must agree (i) to subcontract with a DoD certified VAN or Value Added Service (VAS) provider, or (ii) to become DoD certified as a Value Added Network (VAN). The EDI 838 Training Partner Profile is contained in the basic CCR registration form and includes portions of the registration form which are titled "Optional".

2. You must select a VAN from the official DoD approved list. DoD Certified VANs are listed at http://www.acq.osd.mil/ec/ecip/index.htm . If your VAN is later removed from the official list, or if you voluntarily drop your initially selected VAN, then you must switch to a VAN that remains on the official DoD approved list. You must maintain an active account on a DoD approved VAN for the entire duration of the contract, beginning no later than the 60th day after award.

e. Additional information can be obtained by sending a message to: acqcenweb@tacom.army.mil or by calling (810) 574-7059.

(end of clause)

H-22 52.216-4008 STATUS OF FUNDS ON COST REIMBURSEMENT CONTRACTS/CLINS JUN/1989
(TACOM)

(a) The Contractor shall review the funding as it relates to work performed on the cost-reimbursement Contract Line Item Numbers (CLINs) under this contract and shall provide to the Procuring Contracting Officer (PCO) a written determination of what, if any, funds are excess to requirements (leaving a reasonable amount for final overhead rate negotiations and other reasonably predicted requirements) and are available for deobligation. This review shall be coordinated with the Administrative Contracting Officer (ACO), and the written determination shall be accomplished within 120 days of completion of performance under the CLIN. The report shall be prepared in terms of dollars available per Purchase Request Order Number (PRON), unless requested otherwise by the PCO.

(b) This report may be requested in writing by the PCO on additional occasions during the course of performance of work on cost-reimbursable CLINs contained in this contract. On such occasions, the written report shall be provided to the PCO within 14 days of Contractor receipt of the written request.

(End of clause)

H-23 52.246-4026 LOCAL ADDRESSES FOR DD FORM 250 APR/2000
(TACOM)

(a) The contractor must provide a copy of each Material Inspection and Receiving Report (DD 250) pertaining to this contract, to the addresses given below, using either of the following methods, which are listed in descending order of preference:

(1) Our first preference is for you to use electronic mail (e-mail), using the following e-mail address:

DD250@tacom.army.mil

(2) Our second preference is for you to use data facsimile (datafax) transmission, using this fax number:

(810) 574-7788 and use "DD250 mailbox" in the "to:" block of your fax cover or header sheet; and

(b) These copies meet the requirements for the Purchasing Office copy and the Army Inventory Control Manager copy listed in tables 1 and 2 of DFARS Appendix F.

(c) Submit each DD 250 separately.

[end of clause]

H.24 Design To Unit Rollaway Cost (DTURC) and Design to Operating and Support Cost (DTOSC)

The control of production unit costs of the engine and the operation and support cost of the engine (after fielding) are of paramount importance in achieving program objectives . Cost is a key design parameter and needs to be addressed on a continual basis during this common engine development contract. The goal is to achieve a balance between production costs and operating and support costs in order to obtain the lowest overall life cycle costs.

The objective of this contract is to develop an engine that will power the Abrams Tank and Crusader and meet the System Specifications. During the common engine development effort, the contractor shall continually strive to reduce the production unit costs of the engine and the operation and support cost of the engine after fielding. The DTURC goal for the first production lot is $790,655. for Abrams and $620,575. for Crusader. The DTURC goal for the entire estimated production buy of 3,600 engines (2,845 Abrams and 755 Crusaders) is $608,808. for Abrams and $579,843. for Crusader. The DTURC includes the contractor's recurring hardware production costs. Cost elements should include; labor, material, purchased parts, subcontract cost, burden, G&A, and profit. The DTURC is based on approximately 400 engines per year for Abrams and 140 engines per year for Crusader. The DTURC is in fiscal year 2003 dollars and uses the Office of Management and Budget (OMB) inflation guidance for Weapon Track Combat Vehicles (WTCV) dated 03 Jan 2000. The DTURC needs to track with the first production lot.

The DTOSC goal for Abrams is $41. per hour based on (see notes) and $23. per hour based on (see notes) for Crusader, and includes repair parts costs and petroleum oil and lubricants. The DTOSC is based on Amendment 5 O&S cost assumptions LV100 A & B kits, average through 2030, spares, repairables and POL. AWCF based on % of spare cost, excludes special causes.

The DTOSC is in fiscal year 2003 dollars and uses the OMB inflation guidance for Operations and Maintenance (OMA), dated 03 Jan 2000.

A DTURC and DTOSC report will be provided by the contractor on a quarterly basis. The cost report will be a means by which the Government will track and evaluate the contractor's progress toward achieving their DTURC and DTOSC goals. The contractor will document the rational for any variances from the goals and will take actions to rectify any variances not beneficial to the Government. The award fee in H-25.2.2-1 will be tied to how well the contractor demonstrates their progress towards and the achievement of the DTURC and the DTOSC goals. Final determination of the achievement of the DTURC goal will be made with the submission of the contractor's first production proposal. Development test results will be used to evaluate the achievement of the DTOSC.

Nothing herein shall be construed as obligating the government to award any production contract.

H-25 AWARD FEE PROVISION

1. General Instructions
(a) The award fee provisions contained herein, and the administration of these provisions by the Government are not subject to the Dispute Clause of this contract.

(b) An Award Fee Review Board (AFRB) will be appointed to evaluate performance and determine the amount of award fee earned. Such evaluation board will consist of technical experts from the Abrams and Crusader Program Management office, possible User Representative participation and the Contracting Officer. The evaluation performed by the Board and the resulting award fee amount shall be reviewed and approved by the Fee Determining Official (FDO) 30 days after the end of the review period.

(c) It is the intent of the Government to conduct an evaluation to determine the amount of any award fee earned, on a semi-annual basis in accordance with the review periods listed below. The Procuring Contracting Officer (PCO) intends to provide the contractor the award fee criteria for each period prior to the start of the review period. To achieve the maximum impact of the award fee pool, the contractor will be given an opportunity to assess that criteria and its priority or importance and provide input to the Government for consideration. In the event that mutual agreement is unobtainable, the Government retains the right to unilaterally adopt the criteria to be used during that review period. The Government reserves the right to unilaterally change the award fee evaluation criteria, period duration, distribution of remaining award fee dollars, and other matters covered in this plan, by written notice from the PCO to the contractor prior to the start of any review period. Changes to the plan for the current period will be subject to mutual agreement between the Government and the contractor.

H-25.1 REVIEW PERIODS

Review Period	Percentage Applied	Award Amount Available
#1 Award - 30 Nov 2000	10%	10% X Award Fee $1,517,007.
#2 01 Dec 00 - 31 May 2001	15%	15% X Award Fee $2,275,511.
#3 01 Jun 01 - 30 Nov 2001	15%	15% X Award Fee $2,275,511.
#4 01 Dec 01 - 31 May 2002	20%	20% X Award Fee $3,034,015.
#5 01 Jun 02 - 30 Nov 2002	20%	20% X Award Fee $3,034,015.
#6 01 Dec 02 - Completion	20%	20% X Award Fee $3,034,015.

(a) Unearned award fee from one period may be rolled forward to the immediate following period against specific areas of emphasis at the discretion of the Government. The areas of emphasis will be specifically included in the determination of the award fee criteria. The criteria of H.26.1 (d) additionally apply to any and all roll over award fee amounts.

(b) At such time as the FDO should determine, a summary of the Government's evaluation of the contractor's performance for a given period utilizing the evaluation criteria contained herein, may be released and discussed with the contractor. The contractor may request, and the Government will provide, a formal debriefing on the AFRB's findings.

(c) The contractor may present a presentation (similar to IPR format) formally to the AFRB and other Government participants, which shall not exceed 120 minutes in length. If determined appropriate by the Contractor and/or the Government, this presentation shall include both the Contractor's and Government's perspective on performance during the evaluation period. The contractor may submit proposed criteria, through the PCO, within the area of emphasis, as well as other plan changes for the next period of performance.

(d) When it is determined that an award fee is applicable, any such amount shall be incorporated by contract modification. No award fee will be paid for any award fee review period in which the contractor receives an overall rating of marginal based on a weighted average of the four objectives, i.e. less than 30%.

(e) Nothing in this clause H.26 shall affect the payment of the base fee (3%). The Government shall make payments on account of the base fee equal to 3% of the amount of each invoice submitted by the Contractor and payable pursuant to the contract clause entitled "ALLOWABLE COST AND PAYMENT" (apr/1998) FAR 52.216-7.

H-25.2 AWARD FEE AREAS OF EMPHASIS AND CRITERIA

H-25.2.1 Program Objectives and Relative Weights:

Objective	Relative Weight
1. DTURC and DTOSC	30% of Award Fee
2. Crusader Weight	30% of Award Fee
3. Development Contract Cost Control and Management utilizing the Earned Value Management System	20% of Award Fee
4. Commonality	20% of Award Fee

H-25.2.2 Criteria for Critical Contract Requirements:

1. DTURC and DTOSC - 30% of Award Fee

The contractor shall implement Cost as an Independent Variable (CAIV) in managing/minimizing development, production, operating and support costs. The contractor shall manage to the DTURC and DTOSC throughout development by tracking its progress against the goals and planned activities for achieving these goals. DTURC and DTOSC are key design parameters, which need to be addressed on a continual basis throughout the contract. The goal for Abrams is to achieve a significant net savings in Operating and Support Costs over the current AGT 1500 engine.

Exceptional: 71-100%

The Contractor has clearly demonstrated a commitment to achieving the established goals. Specific and tangible results have emanated from its management processes. There are numerous examples where design and management decisions have been significantly influenced by the desire to achieve the goals. The contractor has demonstrated that it is tracking with its goals and planned activities to achieve the goals. There are no examples where significant decisions have been made without due consideration of the importance these goals.

Satisfactory: 30-70%

The Contractor has demonstrated a commitment to achieving the established goals. To some degree, tangible results have emanated from its management processes. While there are some specific examples where design and management decisions have been significantly influenced by the desire to achieve the goals, the majority of the results are somewhat intangible. There are some examples that the contractor is tracking with its goals and planned activities to achieve the goals, but overall, the results are inconclusive. There are few, if any, examples where significant decisions have been made without due consideration of the importance of these goals.

Marginal: 0-29%

The Contractor has a commitment to achieving the established goals but this has not yet been demonstrated by tangible results. There are few specific examples where design and management decisions have been significantly influenced by the desire to achieve the goals. Reported and observed results are nearly all intangible (i.e., theoretical, indefinite or vague). There are some examples that the contractor is tracking with its goals and planned activities and may achieve the goals, but overall, the results are immaterial. There are few examples where significant decisions have been made without due consideration of the importance of these goals.

2. Crusader Weight - 30% of Award Fee

This singularly is crucial to the Crusader program. The maximum permissible weight for an engine must not exceed the threshold of 2,529 lbs, however it must be stressed that the desired design goal is 2,460 lbs. It is preferential to have a fielded vehicle with a weight below any initial estimates. The ability to devise and implement weight reductions and the objective weight estimate will form the basis of the award fee.

Exceptional: 71-100%

A design to achieve less than the desired weight goal of 2,460 lbs is developed, while maintaining a favorable balance between cost, schedule and performance. The data submitted clearly indicates that a weight less than the desired weight goal will be achieved.

Satisfactory: 30-70%

A design to achieve the desired weight of 2,460 lbs is developed, while maintaining a favorable balance between cost, schedule and performance. The data submitted clearly indicates that the desired weight will be achieved and evidence indicates progress towards achieving less than the desired weight goal exists.

Marginal: 0-29%

A design to achieve the threshold weight of 2,529 lbs is developed, while maintaining a favorable balance between cost, schedule and performance. The data submitted clearly indicates that the threshold weight will be achieved and evidence indicates progress towards achieving the desired weight goal exists.

3. Development Contract Cost Control and Management utilizing the Earned Value Management System (EVMS) - 20% of Award Fee

The EVMS shall be used as a tool to control the development cost, schedule and manage the effort. A Performance Measurement Baseline (PMB) will be used in conjunction with the EVMS. EVMS will be used to identify key program drivers to include providing an explanation as to the extent/cause of any problem areas. PMB will focus on detailed activity relationships, resourcing and its ability to accurately show the status of the program. Assessing earned value status will consist of determining whether BCWP accurately reflects work accomplished relative to the performance metrics inherent to the PMB. In addition, the timeliness and effectiveness corrective actions will be assessed, The EVMS should provide information indicating if the contract is on schedule and within the planned cost.

Exceptional: 71-100%

The contract is at or ahead of schedule and under planned cost for the work performed based on the information provided by the EVMS. There are no examples where significant management decisions have been made without due consideration of the impact on cost and schedule. BCWP accurately reflects performance according to metrics.

Satisfactory: 30-70%

The contract is on schedule and at planned cost for the work performed based on the information provided by the EVMS. There are few, if any, examples where significant management decisions have been made without due consideration of the impact on cost and schedule. BCWP reflects performance according to the metrics with minimal problems developing adequate metrics for work packages identified during planning.

Marginal: 0-29%

The contract is behind schedule and over planned cost for the work performed based on the information provided by the EVMS. BCWP reflects performance below the metric. Corrective actions are being implemented, with minimal assessment for timeliness and/or effectiveness. As detailed planning takes place, adequate metrics used for measuring performance are generally being developed.

4. Commonality - 20% of Award Fee

This is especially crucial to the Abrams Crusader Common Engine (ACCE) program. The Army is seeking a new Abrams Tank propulsion system and a Crusader Artillery System power pack that employ, at a minimum, a common engine. Although, commonality in manufacturing offers desirable economies, the primary goal of commonality is to reduce maintenance and support burdens of our Soldiers in the field and to reduce integration risk. It is desired that the Common Engine provides maximum benefit to the solider in the field and the ability to achieve the desired commonality will be the basis of the award fee.

Exceptional: 71-100%

An exceptional rating is based upon the extent to which: (1) the contractor maintains the agreed upon design for a common Engine "B-Kit" that is completely interchangeable with Abrams and Crusader and capable of being installed and operated in both vehicles and (2) the data submitted clearly indicates progress towards a substantial reduction in the size and quantity of items in the agreed upon unique "Abrams and Crusader A-Kits- (attaching or interfacing hardware)". Any additional items that move from the A-kit to the B-Kit will result in a significant reduction in maintenance and support burdens of the Soldiers in the field and reduce integration risk

Satisfactory: 30-70%

A satisfactory rating is based upon the extent to which: (1) the contractor maintains the agreed upon design for a common Engine "B-Kit" that is completely interchangeable with Abrams and Crusader and capable of being installed and operated in both vehicles and (2) the data submitted clearly indicates progress towards reducing the size and quantity of items in the agreed upon unique "Abrams and Crusader A-Kits- (attaching or interfacing hardware)". Any additional items that move from the A-kit to the B-Kit will result in some reduction in maintenance and support burdens of the Soldiers in the field and reduce integration risk

Marginal: 0-29%

A marginal rating is based upon the extent to which the contractor maintains the agreed upon design for a common Engine "B-Kit" that is completely interchangeable with Abrams and Crusader and capable of being installed and operated in both vehicles using a unique "Abrams and Crusader A-Kits- (attaching or interfacing hardware)".

*** END OF NARRATIVE H 001 ***

H-26 Option For Abrams Integration Work - Clin 0004AA

The Government hereby reserves the right to increase the scope of work (SOW) of this contract to include conducting a power pack test specification in Clin 0004 and setforth in Attachment 3 of this contract. The price of this option is setforth in Clin 0004AA. The option maybe exercised at anytime, but in any event not later than 450 days after award.

Prior to the expiration of the original option period identified above, the Government may seek a bilateral extension of the option period for an additional period not to exceed 90 days from the expiration date of the original option period.

*** END OF NARRATIVE H 002 ***

SECTION I - CONTRACT CLAUSES

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 address: http://farsite.hill.af.mil/

(End of clause)

	Regulatory Cite	Title	Date
I-1	52.202-1	DEFINITIONS	OCT/1995
I-2	52.203-3	GRATUITIES	APR/1984
I-3	52.203-5	COVENANT AGAINST CONTINGENT FEES	APR/1984
I-4	52.203-6	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT	JUL/1995
I-5	52.203-7	ANTI-KICKBACK PROCEDURES	JUL/1995
I-6	52.203-8	CANCELLATION, RESCISSION AND RECOVERY OF FUNDS FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-7	52.203-10	PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY	JAN/1997
I-8	52.203-12	LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS	JUN/1997
I-9	52.204-2	SECURITY REQUIREMENTS	AUG/1996
I-10	52.204-4	PRINTING/COPYING DOUBLE-SIDED ON RECYCLED PAPER	AUG/2000
I-11	52.209-6	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT	JUL/1995
I-12	52.211-5	MATERIAL REQUIREMENTS	OCT/1997
I-13	52.211-15	DEFENSE PRIORITY AND ALLOCATION REQUIREMENTS	SEP/1990
I-14	52.215-2	AUDIT AND RECORDS - NEGOTIATIONS	JUN/1999
I-15	52.215-8	ORDER OF PRECEDENCE--UNIFORM CONTRACT FORMAT	OCT/1997
I-16	52.215-9	CHANGES OR ADDITIONS TO MAKE-OR-BUY PROGRAM (ALTERNATE II (1997 OCT))	OCT/1997
I-17	52.215-11	PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA--MODIFICATIONS	OCT/1997
I-18	52.215-13	SUBCONTRACTOR COST OR PRICING DATA -- MODIFICATIONS	OCT/1997
I-19	52.215-14	INTEGRITY OF UNIT PRICES	OCT/1997
I-20	52.215-15	PENSION ADJUSTMENTS AND ASSET REVERSIONS	DEC/1998
I-21	52.215-18	REVERSION OR ADJUSTMENT OF PLANS FOR POSTRETIREMENT BENEFITS (PRB) OTHER THAN PENSIONS	OCT/1997
I-22	52.215-19	NOTIFICATION OF OWNERSHIP CHANGES	OCT/1997
I-23	52.216-7	ALLOWABLE COST AND PAYMENT	APR/1998
I-24	52.219-8	UTILIZATION OF SMALL BUSINESS CONCERNS	OCT/1999
I-25	52.219-9	SMALL BUSINESS SUBCONTRACTING PLAN	OCT/1999
I-26	52.219-16	LIQUIDATED DAMAGES - SUBCONTRACTING PLAN	JAN/1999
I-27	52.222-1	NOTICE TO THE GOVERNMENT OF LABOR DISPUTES	FEB/1997
I-28	52.222-20	WALSH-HEALEY PUBLIC CONTRACTS ACT	DEC/1996
I-29	52.222-21	PROHIBITION OF SEGREGATED FACILITIES	FEB/1999
I-30	52.222-26	EQUAL OPPORTUNITY	FEB/1999
I-31	52.222-35	AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA	APR/1998
I-32	52.222-36	AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES	JUN/1998
I-33	52.222-37	EMPLOYMENT REPORTS ON DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA	JAN/1999
I-34	52.223-3	HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA	JAN/1997
I-35	52.223-5	POLLUTION PREVENTION AND RIGHT-TO-KNOW INFORMATION	APR/1998
I-36	52.223-6	DRUG FREE WORKPLACE	JAN/1997
I-37	52.223-14	TOXIC CHEMICAL RELEASE REPORTING	OCT/1996
I-38	52.225-8	DUTY-FREE ENTRY	FEB/2000
I-39	52.225-13	RESTRICTIONS ON CERTAIN FOREIGN PURCHASES	JUL/2000
I-40	52.226-1	UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES	FEB/2000
I-41	52.227-1	AUTHORIZATION AND CONSENT (ALTERNATE I dated April 1984)	JUL/1995
I-42	52.227-2	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT	AUG/1996
I-43	52.227-10	FILING OF PATENT APPLICATIONS--CLASSIFIED SUBJECT MATTER	APR/1984
I-44	52.227-12	PATENT RIGHTS--RETENTION BY THE CONTRACTOR (LONG FORM)	JAN/1997
I-45	52.228-7	INSURANCE--LIABILITY TO THIRD PERSONS	MAR/1996
I-46	52.230-2	COST ACCOUNTING STANDARDS	APR/1998
I-47	52.230-4	CONSISTENCY IN COST ACCOUNTING PRACTICES	AUG/1992
I-48	52.230-6	ADMINISTRATION OF COST ACCOUNTING STANDARDS	NOV/1999
I-49	52.232-9	LIMITATION ON WITHHOLDING OF PAYMENTS	APR/1984
I-50	52.232-17	INTEREST	JUN/1996
I-51	52.232-22	LIMITATION OF FUNDS	APR/1984

	Regulatory Cite	Title	Date
I-52	52.232-23	ASSIGNMENT OF CLAIMS	JAN/1986
I-53	52.232-25	PROMPT PAYMENT	JUN/1997
I-54	52.232-33	PAYMENT BY ELECTRONIC FUNDS TRANSFER--CENTRAL CONTRACTOR REGISTRATION	MAY/1999
I-55	52.233-1	DISPUTES	DEC/1998
I-56	52.233-3	PROTEST AFTER AWARD -- (ALTERNATE I, dated JUN 1985)	AUG/1996
I-57	52.242-1	NOTICE OF INTENT TO DISALLOW COSTS	APR/1984
I-58	52.242-3	PENALTIES FOR UNALLOWABLE COSTS	OCT/1995
I-59	52.242-4	CERTIFICATION OF INDIRECT COSTS	JAN/1997
I-60	52.242-10	F.O.B. ORIGIN--GOVERNMENT BILLS OF LADING OR PREPAID POSTAGE	APR/1984
I-61	52.242-12	REPORT OF SHIPMENT (REPSHIP)	JUL/1995
I-62	52.242-13	BANKRUPTCY	JUL/1995
I-63	52.243-2	CHANGES--COST-REIMBURSEMENT (ALTERNATE V (APR 1984))	AUG/1987
I-64	52.243-7	NOTIFICATION OF CHANGES	APR/1984
I-65	52.244-2	SUBCONTRACTS (ALT I--AUG 1998)	AUG/1998
I-66	52.244-5	COMPETITION IN SUBCONTRACTING	DEC/1996
I-67	52.245-5	GOVERNMENT PROPERTY (COST-REIMBURSEMENT, TIME-AND-MATERIAL, OR LABOR-HOUR CONTRACTS) (Deviation, per DAR Tracking Number 99-00008, 13 July 99)	JAN/1986
I-68	52.245-19	GOVERNMENT PROPERTY FURNISHED AS-IS	APR/1984
I-69	52.246-23	LIMITATION OF LIABILITY	FEB/1997
I-70	52.246-24	LIMITATION OF LIABILITY--HIGH-VALUE ITEMS	FEB/1997
I-71	52.247-1	COMMERCIAL BILL OF LADING NOTATIONS the notation set forth in paragraph (a) of the clause applies in this contract.` The agency name in line one of the notation shall read:US ARMY TANK-AUTOMOTIVE & ARMAMENTS COMMAND	APR/1984
I-72	52.249-6	TERMINATION (COST-REIMBURSEMENT)	SEP/1996
I-73	52.249-14	EXCUSABLE DELAYS	APR/1984
I-74	52.253-1	COMPUTER GENERATED FORMS	JAN/1991
I-75	252.203-7001	PROHIBITION ON PERSONS CONVICTED OF FRAUD OR OTHER DEFENSE CONTRACT-RELATED FELONIES	MAR/1999
I-76	252.204-7003	CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT	APR/1992
I-77	252.204-7005	ORAL ATTESTATION OF SECURITY RESPONSIBILITIES	AUG/1999
I-78	252.209-7000	ACQUISITION FROM SUBCONTRACTORS SUBJECT TO ON-SITE INSPECTION UNDER THE INTERMEDIATE-RANGE NUCLEAR FORCES (INF) TREATY	NOV/1995
I-79	252.209-7004	SUBCONTRACTING WITH FIRMS THAT ARE OWNED OR CONTROLLED BY THE GOVERNMENT OF A TERRORIST COUNTRY per DoD interim rule, Federal Register 27 Mar 98	MAR/1998
I-80	252.211-7005	SUBSTITUTIONS FOR MILITARY OR FEDERAL SPECIFICATIONS AND STANDARDS	MAR/1999
I-81	252.215-7000	PRICING ADJUSTMENTS	DEC/1991
I-82	252.219-7003	SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED SMALL BUSINESS SUBCONTRACTING PLAN (DOD CONTRACTS)	APR/1996
I-83	252.223-7004	DRUG-FREE WORK FORCE	SEP/1988
I-84	252.225-7016	RESTRICTION ON ACQUISITION OF BALL AND ROLLER BEARINGS	AUG/1998
I-85	252.225-7017	PROHIBITION ON AWARD TO COMPANIES OWNED BY THE PEOPLE'S REPUBLIC OF CHINA	FEB/2000
I-86	252.225-7022	RESTRICTION ON ACQUISITION OF POLYACRYLONITRILE (PAN) CARBON FIBER	JUN/1997
I-87	252.225-7025	RESTRICTION ON ACQUISITION OF FORGINGS	JUN/1997
I-88	252.225-7026	REPORTING OF CONTRACT PERFORMANCE OUTSIDE THE UNITED STATES	MAR/1998
I-89	252.225-7031	SECONDARY ARAB BOYCOTT OF ISRAEL	JUN/1992
I-90	252.227-7013	RIGHTS IN TECHNICAL DATA --NONCOMMERCIAL ITEMS	NOV/1995
I-91	252.227-7014	RIGHTS IN NONCOMMERCIAL COMPUTER SOFTWARE AND NONCOMMERCIAL COMPUTER SOFTWARE DOCUMENTATION	JUN/1995
I-92	252.227-7016	RIGHTS IN BID OR PROPOSAL INFORMATION	JUN/1995
I-93	252.227-7017	IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS	JUN/1995
I-94	252.227-7019	VALIDATION OF ASSERTED RESTRICTIONS--COMPUTER SOFTWARE	JUN/1995
I-95	252.227-7025	LIMITATIONS ON THE USE OR DISCLOSURE OF GOVERNMENT-FURNISHED INFORMATION MARKED WITH RESTRICTIVE LEGENDS	JUN/1995
I-96	252.227-7026	DEFERRED DELIVERY OF TECHNICAL DATA OR COMPUTER SOFTWARE	APR/1988
I-97	252.227-7027	DEFERRED ORDERING OF TECHNICAL DATA OR COMPUTER SOFTWARE	APR/1988
I-98	252.227-7030	TECHNICAL DATA--WITHHOLDING OF PAYMENT	OCT/1988
I-99	252.242-7000	POSTAWARD CONFERENCE	DEC/1991

	Regulatory Cite	Title	Date
I-100	252.242-7003	APPLICATION FOR U.S. GOVERNMENT SHIPPING DOCUMENTATION/INSTRUCTIONS	DEC/1991
I-101	252.244-7000	SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (DoD CONTRACTS)	FEB/1997
I-102	252.245-7001	REPORTS OF GOVERNMENT PROPERTY	MAY/1994
I-103	52.219-4	NOTICE OF PRICE EVALUATION FOR HUBZONE SMALL BUSINESS CONCERNS	JAN/1999

(a) Definition. HUBZone small business concern, as used in this clause, means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

(b) Evaluation preference.

(1) Offers will be evaluated by adding a factor of 10 percent to the price of all offers, except-

(i) Offers from HUBZone small business concerns that have not waived the evaluation preference;

(ii) Otherwise successful offers from small business concerns;

(iii) Otherwise successful offers of eligible products under the Trade Agreements Act when the dollar threshold for application of the Act is exceeded (see 25.402 of the Federal Acquisition Regulation (FAR)); and

(iv) Otherwise successful offers where application of the factor would be inconsistent with a Memorandum of Understanding or other international agreement with a foreign government.

(2) The factor of 10 percent shall be applied on a line item basis or to any group of items on which award may be made. Other evaluation factors described in the solicitation shall be applied before application of the factor.

(3) A concern that is both a HUBZone small business concern and a small disadvantaged business concern will receive the benefit of both the HUBZone small business price evaluation preference and the small disadvantaged business price evaluation adjustment (see FAR clause 52.219-23). Each applicable price evaluation preference or adjustment shall be calculated independently against an offeror's base offer. These individual preference amounts shall be added together to arrive at the total evaluated price for that offer.

(c) Waiver of evaluation preference. A HUBZone small business concern may elect to waive the evaluation preference, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply if the offeror has waived the evaluation preference.

Offer elects to waive the evaluation preference.

(d) Agreement. A HUBZone small business concern agrees that in the performance of the contract, in the case of a contract for

(1) Services (except construction), at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern or employees of other HUBZone small business concerns;

(2) Supplies (other than procurement from a nonmanufacturer of such supplies), at least 50 percent of the cost of manufacturing, excluding the cost of materials, will be performed by the concern or other HUBZone small business concerns;

(3) General construction, at least 15 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns; or

(4) Construction by special trade contractors, at least 25 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns.

(e) A HUBZone joint venture agrees that in the performance of the contract, the applicable percentage specified in paragraph (d) of this clause will be performed by the HUBZone small business participant or participants;

(f) A HUBZone small business concern nonmanufacturer agrees to furnish in performing this contract only end items manufactured or produced by HUBZone small business manufacturer concerns. This paragraph does not apply in connection with construction or service contracts.

(End of clause)

I-104 52.223-11 OZONE-DEPLETING SUBSTANCES JUN/1996

(a) Definition

Ozone-depleting substance, as used in this clause, means any substance designated as Class I by the Environmental Protection Agency (EPA) (40 CFR Part 82), including but not limited to chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or any substance designated as Class II by EPA (40 CFR Part 82), including but not limited to hydrochlorofluorocarbons.

(b) The Contractor shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j(b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:

WARNING: Contains (or manufactured with, if applicable) _____ * _____, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.

*The Contractor shall insert the name of the substance(s).

(End of clause)

I-105 52.234-1 INDUSTRIAL RESOURCES DEVELOPED UNDER DEFENSE PRODUCTION ACT TITLE III DEC/1994

(a) Definitions. Title III industrial resource means materials, services, processes, or manufacturing equipment (including the processes, technologies, and ancillary services for the use of such equipment) established or maintained under the authority of Title III, Defense Production Act (50 U.S.C. App. 2091-2093). Title III project contractor means a contractor that has received assistance for the development or manufacture of an industrial resource under 50 U.S.C. App. 2091-2093, Defense Production Act.

(b) The Contractor shall refer any request from a Title III project contractor for testing and qualification of a Title III industrial resource to the Contracting Officer.

(c) Upon direction of the Contracting Officer, the Contractor shall test Title III industrial resources for qualification. The Contractor shall provide the test results to the Defense Production Act Office, Title III Program, located at Wright Patterson Air Force Base, Ohio 45433-7739.

(d) When the Contracting Officer modifies the contract to direct testing pursuant to this clause, the Government will provide the Title III industrial resource to be tested and will make an equitable adjustment in the contract for the costs of testing and qualification of the Title III industrial resource.

(e) The Contractor agrees to insert the substance of this clause, including paragraph (e), in every subcontract issued in performance of this contract.

(End of clause)

I-106 52.244-6 SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS OCT/1998

(a) Definitions.

"Commercial item," as used in this clause, has the meaning contained in the clause at 52.202-1, Definitions.

"Subcontract," as used in this clause, includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c) Notwithstanding any other clause of this contract, the Contractor is not required to include any FAR provision or clause, other than those listed below to the extent they are applicable and as may be required to establish the reasonableness of prices under Part 15, in a subcontract at any tier for commercial items or commercial components:

(1) 52.222-26, Equal Opportunity (E.O.11246);

(2) 52.222-35, Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C.4212(a));

(3) 52.222-36, Affirmative Action for Workers with Disabilities (29 U.S.C.793); and

(4) 52.247-64, Preference for Privately Owned U.S.-Flagged Commercial Vessels (46 U.S.C.1241) (flow down not required for subcontracts awarded beginning May 1, 1996).

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

(End of clause)

I-107 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 DoD FAR Supplement (DFARS) (48 CFR 2) clause with an authorized deviation is indicated by the addition of (DEVIATION) after the name of the regulation.

(End of clause)

I-108 252.204-7004 REQUIRED CENTRAL CONTRACTOR REGISTRATION SEP/1999

(a) Definitions. As used in this clause--

(1) Central Contractor Registration (CCR) database means the primary DoD repository for contractor information required for the conduct of business with DoD.

(2) Data Universal Numbering System (DUNS) number means the 9-digit number assigned by Dun and Bradstreet Information Services to identify unique business entities.

(3) Data Universal Numbering System +4 (DUNS+4) number means the DUNS number assigned by Dun and Bradstreet plus a 4-digit suffix that may be assigned by a parent (controlling) business concern. This 4-digit suffix may be assigned at the discretion of the parent business concern for such purposes as identifying subunits or affiliates of the parent business concern.

(4) Registered in the CCR database means that all mandatory information, including the DUNS number or the DUNS+4 number, if applicable, and the corresponding Commercial and Government Entity (CAGE) code, is in the CCR database; the DUNS number and the CAGE code
have been validated; and all edits have been successfully completed.

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee must be registered in the CCR database prior to award, during performance, and through final payment of any contract resulting from this solicitation, except for awards to foreign vendors for work to be performed outside the United States.

(2) The offeror shall provide its DUNS or, if applicable, its DUNS+4 number with its offer, which will be used by the Contracting Officer to verify that the offeror is registered in the CCR database.

(3) Lack of registration in the CCR database will make an offeror ineligible for award.

(4) DoD has established a goal of registering an applicant in the CCR database within 48 hours after receipt of a complete and accurate application via the Internet. However, registration of an applicant submitting an application through a method other than the Internet may take up to 30 days. Therefore, offerors that are not registered should consider applying for registration immediately upon receipt of this solicitation.

(c) The Contractor is responsible for the accuracy and completeness of the data within the CCR, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the CCR database after the initial registration, the Contractor is required to confirm on an annual basis that its information in the CCR database is accurate and complete.

(d) Offerors and contractors may obtain information on registration and annual confirmation requirements by calling 1-888-227-2423, or via the Internet at http://www.ccr2000.com .

(End of clause)

I-109 252.247-7023 TRANSPORTATION OF SUPPLIES BY SEA NOV/1995

(a) Definitions.

As used in this clause--

(1) Components means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor.

(2) Department of Defense (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

(3) Foreign flag vessel means any vessel that is not a U.S.-flag vessel.

(4) Ocean transportation means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.

(5) Subcontractor means a supplier, materialman, distributor, or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract. However, effective May 1, 1996, the term does not include a supplier, materialman, distributor, or vendor of commercial items or commercial components.

(6) Supplies means all property, except land and interests in land, that is clearly identifiable for eventual use by or owned by the DoD at the time of transportation by sea.

(i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.

(ii) Supplies includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and components of the foregoing.

(7) U.S.-flag vessel means a vessel of the United States or belonging to the United States, including any vessel registered or having national status under the laws of the United States.

(b) The Contractor shall employ U.S.-flag vessels in the transportation by sea of any supplies to be furnished in the performance of this contract. The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that--

(1) U.S.-flag vessels are not available for timely shipment;
(2) The freight charges are inordinately excessive or unreasonable; or
(3) Freight charges are higher than charges to private persons for transportation of like goods.

(c) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum--

(1) Type, weight, and cube of cargo;
(2) Required shipping date;
(3) Special handling and discharge requirements;
(4) Loading and discharge points;
(5) Name of shipper and consignee;
(6) Prime contract number; and
(7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.

(d) The Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information--

(1) Prime contract number;
(2) Name of vessel;
(3) Vessel flag of registry;
(4) Date of loading;
(5) Port of loading;
(6) Port of final discharge;
(7) Description of commodity;
(8) Gross weight in pounds and cubic feet if available;

(9) Total ocean freight in U.S. dollars; and
(10) Name of the steamship company.

(e) The Contractor agrees to provide with its final invoice under this contract a representation that to the best of its knowledge and belief--

(1) No ocean transportation was used in the performance of this contract;
(2) Ocean transportation was used and only U.S.-flag vessels were used for all ocean shipments under the contract;
(3) Ocean transportation was used, and the Contractor had the written consent of the Contracting Officer for all non-U.S.-flag ocean transportation; or
(4) Ocean transportation was used and some or all of the shipments were made on non-U.S.-flag vessels without the written consent of the Contracting Officer. The Contractor shall describe these shipments in the following format:

ITEM DESCRIPTION	CONTRACT LINE ITEMS	QUANTITY	TOTAL

(f) If the final invoice does not include the required representation, the Government will reject and return it to the Contractor as an improper invoice for the purposes of the Prompt Payment clause of this contract. In the event there has been unauthorized use of non-U.S.-flag vessels in the performance of this contract, the Contracting Officer is entitled to equitably adjust the contract, based on the unauthorized use.

(g) The Contractor shall include this clause, including this paragraph (g) in all subcontracts under this contract, which exceed the small purchase limitation of section 13.000 of the Federal Acquisition Regulation.

(End of clause)

I-110 252.247-7024 NOTIFICATION OF TRANSPORTATION OF SUPPLIES BY SEA NOV/1995

(a) The Contractor has indicated by the response to the solicitation provision, Representation of Extent of Transportation by Sea, that it did not anticipate transporting by sea any supplies. If however, after the award of this contract, the Contractor learns that supplies, as defined in the Transportation of Supplies by Sea clause of this contract, will be transported by sea, the Contractor--

(1) Shall notify the Contracting Officer of that fact; and

(2) Hereby agrees to comply with all the terms and conditions of the Transportation of Supplies by Sea clause of this contract.

(b) The Contractor shall include this clause, including this paragraph (b), revised as necessary to reflect the relationship of the contracting parties, in all subcontracts hereunder, except (effective May 1, 1996) subcontracts for the acquisition of commercial items or components.

(End of clause)

I-111 252.248-7000 PREPARATION OF VALUE ENGINEERING CHANGE PROPOSALS MAY/1994

Prepare Value Engineering Change Proposals, for submission pursuant to the VALUE ENGINEERING clause of this contract, in the format prescribed by the version of MIL-STD-973 in effect on the date of contract award.

(end of clause)

I-112 52.204-4009 (TACOM) MANDATORY USE OF CONTRACTOR TO GOVERNMENT ELECTRONIC COMMUNICATION JUN/1999

(a) All references in the contract to the submission of written documentation shall mean electronic submission. All electronic submissions shall be in the formats and media described in the "Electronic Quotations/Offers/Bids Required in Response to this Request for Quotations/Proposals/Bids" clause elsewhere in this document (see Section K for commercial acquisitions, Section L for RFPs, and Section I for RFQs.)

(b) This shall include all written unclassified communications between the Government and the Contractor except contract awards and contract modifications which shall be posted on the internet. Return receipt shall be used if a commercial application is available. Classified information shall be handled in full accordance with the appropriate security requirements.

(c) In order to be contractually binding, all Government communications requiring a Contracting Officer signature must be sent from the Contracting Officer's e-mail address. The Contractor shall designate the personnel with signature authority who can contractually bind the contractor. All binding contractor communication shall be sent from this contractor e-mail

address(es).

(d) Upon award, the Contractor shall provide the Contracting Officer with a list of e-mail addresses for all administrative and technical personnel assigned to this contract.

(e) Unless exempted by the Procuring Contracting Officer in writing, all unclassified written communication after contract award shall be transmitted electronically.

(End of clause)

SECTION J - LIST OF ATTACHMENTS

List of Addenda	Title	Date	Number of Pages	Transmitted By
Attachment 001	COMMON ENGINE SPECIFICATION, ATTACH 1, ENC A			
Attachment 002	ABRAMS A-KIT SPECIFICATION, ATTACH 1, ENC B			
Attachment 003	CRUSADER A-KIT SPECIFICATION, ATTACH 1, ENC C			
Attachment 004	RESERVED			
Attachment 005	ABRAMS M1A2 SEP SYSTEM SPECIFICATION (SEE ANNEX A1), ATTACH 1, ENC E			
Attachment 006	ABRAMS M1A1 SYSTEM SPECIFICATION (SEE ANNEX A1), ATTACH 1, ENC F			
Attachment 007	CRUSADER POWER PACK SPECIFICATION, ATTACH 1, ENC G			
Attachment 008	B-KIT INTERFACE CONTROL DOCUMENT (CLIN 0001), ATTACH 2, ENC A			
Attachment 009	ENGINE EXTERIOR DIMENSIONS, ATTACH 2, ENC B			
Attachment 010	ABRAMS A-KIT LIST OF COMPONENTS, ATTACH 2, ENC C			
Attachment 011	CRUSADER A-KIT LIST OF COMPONENTS, ATTACH 2, ENC D			
Attachment 012	RESERVED			
Attachment 013	PROGRAM MILESTONE AND TEST SCHEDULE, ATTACH 3			ELECTRONIC IMAGE
Attachment 014	NATO STANDARD LABORATORY TEST (1000 HOUR TEST), ATTACH 4			ELECTRONIC IMAGE
Attachment 015	LIST OF DIAGNOSTICS/PROGNOSTIC SENSORS, ATTACH 5			ELECTRONIC IMAGE
Attachment 016	CONTRACT DATA REQUIREMENTS LIST (CDRLS), ATTACH 6			ELECTRONIC IMAGE
Attachment 017	LIST OF GOVERNMENT FURNISHED MATERIAL, ATTACH 7			ELECTRONIC IMAGE