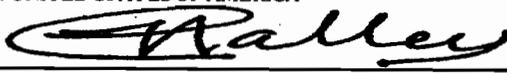


AWARD/CONTRACT		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING DO-C9	PAGE OF PAGES 1 70		
2. CONTRACT (Proc. Inst. Ident.) NO. N68936-08-C-0003		3. EFFECTIVE DATE 25 Feb 2008		4. REQUISITION/PURCHASE REQUEST/PROJECT NO. SEE SCHEDULE			
5. ISSUED BY CDR NAWCWD CODE 210000D ATTN: D. ZAMARRON (760) 939-9658 429 E BOWEN RD - STOP 4015 CHINA LAKE CA 93555-6108		CODE N68936	6. ADMINISTERED BY (If other than Item 5) DCMA SANTA ANA 34 CIVIC CENTER PLAZA ROOM 5001 SANTA ANA CA 92701-4056		CODE S0513A		
7. NAME AND ADDRESS OF CONTRACTOR (No., street, city, county, state and zip code) COSWORTH LLC IAN E. BISCO 3031 FUJITA ST TORRANCE CA 90505-4004			8. DELIVERY [] FOB ORIGIN [X] OTHER (See below)		9. DISCOUNT FOR PROMPT PAYMENT		
			10. SUBMIT INVOICES 2 (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN:		ITEM Section G		
CODE 4RT62	FACILITY CODE		12. PAYMENT WILL BE MADE BY DFAS - COLUMBUS CENTER WEST ENTITLEMENT OPERATIONS PO BOX 182381 COLUMBUS OH 43218-2381		CODE HO0339		
11. SHIP TO/MARK FOR See Schedule		CODE					
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 Schedule				
15A. ITEM NO.	15B. SUPPLIES/ SERVICES	15C. QUANTITY	15D. UNIT	15E. UNIT PRICE	15F. AMOUNT		
SEE SCHEDULE							
15G. TOTAL AMOUNT OF CONTRACT					\$143,000.00		
16. TABLE OF CONTENTS							
(X) SEC.	DESCRIPTION	PAGE(S)	(X) SEC.	DESCRIPTION	PAGE(S)		
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X	B	SUPPLIES OR SERVICES AND PRICES/ COSTS	4 - 5	PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS			
X	C	DESCRIPTION/ SPECS/ WORK STATEMENT	6 - 26	X	J	LIST OF ATTACHMENTS	49 - 70
X	D	PACKAGING AND MARKING	27	PART IV - REPRESENTATIONS AND INSTRUCTIONS			
X	E	INSPECTION AND ACCEPTANCE	28	K	REPRESENTATIONS, CERTIFICATIONS AND OTHER STATEMENTS OF OFFERORS		
X	F	DELIVERIES OR PERFORMANCE	29 - 30		OTHER STATEMENTS OF OFFERORS		
X	G	CONTRACT ADMINISTRATION DATA	31 - 34	L	INSTRS., CONDS., AND NOTICES TO OFFERORS		
X	H	SPECIAL CONTRACT REQUIREMENTS	35 - 38	M	EVALUATION FACTORS FOR AWARD		
CONTRACTING OFFICER WILL COMPLETE ITEM 17 OR 18 AS APPLICABLE							
17. [X] CONTRACTOR'S NEGOTIATED AGREEMENT Contractor is required to sign this document and return _____ 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 AND TITLE OF CONTRACTING OFFICER COLETTE C NALLEY / PROCURING CONTRACTING OFFICER TEL: (760) 939-2983 EMAIL: colette.nalley@navy.mil				
19B. NAME OF CONTRACTOR		19C. DATE SIGNED	20B. UNITED STATES OF AMERICA		20C. DATE SIGNED		
BY _____ (Signature of person authorized to sign)			BY  (Signature of Contracting Officer)		25-Feb-2008		

Section A - Solicitation/Contract Form

CLAUSES INCORPORATED BY FULL TEXT

FOR YOUR INFORMATION:

The following addresses and points of contact are provided:

Contract Specialist:

Name: Debra Zamarron
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DSN: 437-9658
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U.S. Postal Service Mailing Address:

COMMANDER
CODE 210000D (D. Zamarron – 760-939-9658)
NAVAIRWARCENWPNDIV
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CHINA LAKE, CA 93555-6108

Direct Delivery Address (UPS, FedEx, etc):

COMMANDER
CODE 210000D (D. Zamarron)
NAVAIRWARCENWPNDIV
BLDG 982, MAIL STOP 4015
CHINA LAKE, CA 93555-6108

Contracting Officer:

Name: Colette Nalley
Phone: (760) 939- 2983
DSN: 437-2983
FAX: (760) 939-4241
Email address: Colette.Nalley@navy.mil

U.S. Postal Service Mailing Address:

COMMANDER
CODE 210000D (C. Nalley – 760-939-2983)
NAVAIRWARCENWPNDIV
429 E. BOWEN RD. MAIL STOP 4015
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BLDG 982, MAIL STOP 4015
CHINA LAKE, CA 93555-6108

ATTENTION-IMPORTANT MODIFICATION NUMBERING INFORMATION:

Bilateral Modifications issued by the Department of Defense agencies are no longer assigned an official "P0000" number until the contracting officer has released/signed the modification. This change is a result of the Defense Finance and Accounting Service (DFAS) Business Management Modernization Program (BMMP) requirement that modifications are to be released in numerical order without skipping any "P0000" numbers.

To accommodate this change the Standard Procurement System (SPS) now assigns a unique Modification Control Number (MCN) to each modification when it is created. The MCN was established for contractors to track the approved version of the modification. This number, unique to the modification, is included on both the draft modification and the released/signed modification. The MCN can be found in Block 14 of all modifications. The use of the MCNs ensures DFAS only receives modifications in numerical order

Section B - Supplies or Services and Prices

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	<p>PHASE I</p> <p>CPFF</p> <p>The contractor shall provide a conceptual design and key technical risk mitigation plan for the Ultra Endurance, Unmanned Aerial Vehicle (UE-UAV) in accordance with the Section C Statement of Work. THE CONTRACTOR SHALL NOT PROCEED TO ADDITIONAL PHASES WITHOUT THE WRITTEN AUTHORIZATION OF THE CONTRACTING OFFICER.</p> <p>FOB: Destination</p> <p>PURCHASE REQUEST NUMBER: 1300057551</p>	1	Lot		
				ESTIMATED COST	()
				FIXED FEE	
				TOTAL EST COST + FEE	\$143,000.00

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ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
000101	<p>For Navy Accounting Purposes Only</p> <p>CPFF</p> <p>FOB: Destination</p> <p>PURCHASE REQUEST NUMBER: 1300097751</p>		Lot		
				ESTIMATED COST	\$0.00
				FIXED FEE	\$0.00
				TOTAL EST COST + FEE	\$0.00
	ACRN AA				\$143,000.00
	CIN: 130009775100001				

ITEM NO	SUPPLIES/SERVICES	AMOUNT
0002	Contract Data Requirements Listing	NSP

The contractor shall furnish data in accordance with Enclosure (1), DD Form 1423

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003	UE-UAV Heavy Fuel Engine CPFF		Lot		
	PHASES 2 and 3 - TBD via contract modification. The additional phases may require additional CLINS. The contractor shall perform work in accordance with Section C, Statement of Work. THE CONTRACTOR SHALL NOT PROCEED TO ADDITIONAL PHASES WITHOUT THE WRITTEN AUTHORIZATION OF THE CONTRACTING OFFICER.				
	FOB: Destination				

ESTIMATED COST	\$0.00
FIXED FEE	\$0.00
TOTAL EST COST + FEE	\$0.00

Section C - Descriptions and Specifications

**STATEMENT OF WORK
ULTRA ENDURANCE UNMANNED AERIAL VEHICLE (UE-UAV) HEAVY FUEL ENGINE
DEVELOPMENT
CONTRACT N68936-08-C-0003
1/28/08**

SCOPE

The Naval Air Warfare Center Weapons Division have invited proposals for the design, development and supply of a small, light weight, heavy-fuel propulsion unit as a technology demonstrator for Ultra Endurance UAV applications. Specifically the requirement is for an engine of 9bhp with a power to weight ratio of 0.45 hp/lb, capable of running on both jet fuels and automotive diesel.

- Phase 1 4 months
- Phase 2 (TBD) 5 months
- Phase 3 (TBD) 15 months

DETAILED TASK LIST

This section contains a complete list, and brief summary of the intended tasks in a Work Breakdown Structure format. Phase specific tasks are identified as Phase 1, Phase 2 and Phase 3.

1. Installation

1.1. Engage with Nominated Air-Framer

A suitable air frame manufacturer will be nominated by the US Navy in order to facilitate the ultimate approval of the UE-UAV product under consideration. A clinical engine installation having captured and understood all of the technical requirements is paramount to the success of the project.

1.1.1. Establish target air frame for Installation – Phase 1

1.1.2. Define data exchange methods – Phase 1 (CDRL A00F)

Having the ability to transfer 3D CAD data between airframe and engine supplier is crucial to optimising the installation of the engine as is establishing the working practices such as defining units, reference planes etc.

1.2. Capture & Define Installation Requirements – Phase 1

Defining and agreeing to a detailed installation specification during the concept phase is pivotal as it will drive the direction of the program to meet the target goals and objectives. Such a specification will include the following:

- Basic Space Envelope
- C of G Position
- Engine Mount Arrangement: flexibility for other airframes and simplicity for quick engine changes
- Fuel System Layout
- Push or Pull Configuration
- Target Transmitted Vibration Levels.
- Propeller Specification
- Target Noise Levels
- ECU Location

- Cooling airflow
- Environmental Constraints (i.e. suitability for seaboard operation etc)

1.3. Produce Concept Engine Installation Schematic – Phase 1 (A00A)

Having considered the base engine concept and captured the basic installation requirements, it is then possible to produce conceptual installation schematics for the airframe partner to review at the end of the first program phase. These will take the form of outline concept 3D models with associated basic 2D installation drawings.

1.4. Produce Preliminary Engine Installation Models & Drawings (CDRLs A00A and A00F)

As the design process progresses, continued liaison with the airframer is essential.

1.4.1. Regular Review Meetings – Phase 2 (CDRL A002)

Continually review evolving engine design against installation requirements

1.4.2. Produce Preliminary 3D Installation Models & 2D Drawings – Phase 2

1.4.3. Rapid Prototype Model of Engine (Option) – Phase 2

1.5. Produce Detailed Engine Installation Models & Drawings (CDRLs A00A and A00F)

Although the basic architecture will have been established by the end of Phase 2, the installation will be honed as the detail is clarified.

1.5.1. Regular Review Meetings – Phase 3

Regular review meetings will be held, and a systematic approach to ensuring that all parties are working with the latest models and data will be taken.

1.5.2. Produce Detailed 3D Installation Models & 2D Drawings – Phase 3

An example of the AE-1 installation drawing is included in the Appendix for reference.

1.5.3. Rapid Prototype Model of Engine (Option) – Phase 3

1.6. Mock Up for UE-UAV Installation – Phase 3

As early as possible in the program a full size mock up will be made available to the airframer. This mock up may start off as a rapid prototype model, but a program of updating will be followed to ensure that the final mock up engine contains as many 'real' parts as possible.

1.7. Supply Final UE-UAV Unit for Installation

1.7.1. Supply Complete Engine Assembly – Phase 3

A full engine assembly with any ancillary equipment (starters, fuel pumps etc) will be provided to the airframer for final checks.

1.7.2. Cosworth Installation Support – Phase 3

Cosworth will provide an agreed level of on site engineering support to oversee the installation of the engine in the airframe.

1.8. Technical Support – Phase 3

Cosworth will offer technical support throughout the initial testing of the flight prototypes.

2. Base Engine

2.1. Define Basic Concept (CDRLs A00C and A00F)

2.1.1. Shortlist Engine Configurations – Phase 1

A review meeting will be held to identify all the engine configurations that should be investigated in the concept phase. The variables at this stage are the number and arrangement of the cylinders.

2.1.2. Produce 3D CAD models - Phase 1

3D CAD models will be produced of all the engine configurations under consideration. This will identify design constraints, optimum layout for different auxiliary components and also lead to the production of basic component models for use in other analyses, such as finite element stress and the mass estimation.

2.1.3. Stress analysis - Phase 1

Finite element stress analysis is traditionally used for detail design optimisation, but Cosworth makes selective use of the tools throughout the design. At this stage, for example, FE will be used for crankshaft stress and stiffness comparisons since this will be a significant input to the configuration decision and good resolution will be required.

2.1.4. Material Selection

Initial materials selection for main components will be made with support from the Cosworth Materials Department. The key requirements for this project will be specific strength to minimise the engine mass and corrosion resistance for durability in shipboard conditions.

2.1.4.1. Specific Strength – Phase 1

From initial concept, through to detailed design, extensive use of FEA on the major CAD generated components will allow the engine designer to optimize strength for minimum mass. This is a particular area of expertise for Cosworth given our top level racing engine design experience.

2.1.4.2. Corrosion - Seaboard Operation Criteria – Phase 1

This activity will be to capture the corrosion resistance criteria that relate to seaboard operation of aircraft.

2.1.5. Mass Reduction and Comparison - Phase 1

Each configuration will be investigated to see how the mass can be reduced. Cosworth has extensive experience of this work through decades of racing engine programmes. The approach will include:

- Function studies to see where components can be removed or combined with others to save mass
- careful selection of materials to improve specific strength
- understanding structures through experience and finite element techniques to optimise the mass

2.1.6. Assess scalability – Phase 1

The suitability of the different configurations for scaling to different engine powers will be assessed. There will be a strong motivation to scale the engine by changing the number of cylinders, but keeping their geometry unchanged. In this way, future requirements for engines with a different power output could be realised at minimum cost and risk since only the dynamics and durability of some of the parts would need to be revisited. At this stage, the approach would be to complete dynamic and structural analyses on the potential scaled engines to ensure that they are viable.

2.1.7. Understand installation constraints – Phase 1

The installation constraints will be a major input to the concept design. The process for obtaining this information is defined herein.

2.1.8. Define Base Engine Specification - Phase 1

2.2. Preliminary Design (CDRL A008 and A00F)

2.2.1. Produce 3D CAD models – Phase 2

The configuration selected in Phase 1 will be further refined. More detail will be added to lay out the arrangement of the ancillaries, including the generator.

2.2.2. Refine Mass Estimate – Phase 2

The specification of the engine and its auxiliary components, such as the generator, will evolve throughout Phase 2 and the mass estimate will become more reliable. The output of this activity will be a set of mass targets against the preliminary Bill of Materials to hit both the mass and CoG position targets. This will then be used as an input for the Detailed Design activity in Phase 3.

2.2.3. Preliminary stress analysis – Phase 2

2.2.4. Material Selection and Testing

At the end of this activity, the key decisions regarding material choice for components will be made, including any specific coatings or processes that must be deployed to meet the project goals. Any potential material risks and the scope of any testing work for Phase 3 will be defined.

2.2.4.1. Fatigue Strength – Phase 2

As the material selection list becomes more complete, the Materials Science Department will assess whether the data available from Cosworth's experience and elsewhere is sufficient as the basis for detailed stress analysis.

2.2.4.2. Corrosion Resistance – Phase 2

During Phase 2, an extensive review of materials will take place to ensure the UE-UAV design conforms to all pertinent corrosion resistance criteria. This will be achieved by examining all intended materials and their manufacturing processes for potential corrosion risks. This will include general corrosion, galvanic, pitting, exfoliation, stress corrosion cracking and corrosion fatigue.

2.3. Prototype Component Manufacture – Phase 2

It is likely that some of the work in phase 2 will produce a requirement for prototype parts such as a development head with a different injector detail or different ports in the barrel. This activity is to cover this as yet undefined work

2.4. Detail Design (CDRLs A008, A009, A00B, A00C and A00F)

2.4.1. Produce 3D CAD models and Detail Drawings – Phase 3

The 3D models and 2D drawings will be produced, reviewed and approved in compliance with AS9100. The detail design of all the engine components will be split amongst several engineers and they will also be responsible for ensuring that their parts are kept up to date in a full engine assembly CAD model. This model is essential for ensuring good communication of a rapidly evolving design, both internally within the design team and externally with the airframer. Cosworth maintains a strong link between its Design and Manufacturing groups and so Design for Manufacture is a strength.

2.4.2. Monitor mass – Phase 3

The design engineers will also be responsible for maintaining a live database of the component masses so the overall mass and CofG position can be monitored against the targets.

2.4.3. Material Testing – Phase 3

Cosworth has extensive materials testing facilities. These are routinely used to obtain material properties for use in stress and durability analyses when adequate data is not available. Cosworth also develops its own materials and processes such as heat treatments and coatings. There may also be work to validate that some

materials have corrosion resistance that meets the specification. The scope of this activity will be defined in the Phase 2. Materials Testing will only be carried out to ASTM standards at approved facilities.

2.4.4. Detailed stress analysis – Phase 3

A detailed stress analysis will be carried out for all critical components. This will include:

- Results from thermal modelling where the temperature will have a significant effect (e.g. cylinder head and piston)
- Results from dynamic analysis where it has a significant impact on the stress (e.g. crank)
- Full fatigue analysis where the loading is not straightforward and direct stress analysis is not thought to be sufficient. The crankcase may be an example of this.

2.5. Component Manufacture – Phase 3

2.6. Performance Testing – Phase 3 (CDRLs A009 and A00B)

Preliminary engine testing will include some checks on the base engine, such as the friction power, but most performance testing activities are covered in other WBS elements.

2.7. Durability Testing – Phase 3 (CDRLs A009, A00B and A00C)

The Cosworth approach is that durability testing will start as soon as the engine is running, alongside performance development work. This will mean that the engine performance for the early durability running is not completely representative, but it is still the quickest route to overall engine approval. Cosworth has broad experience of performing representative durability testing, such as defining duty cycles from the speed and load history data that will be supplied. Cosworth's experience of highly loaded and lightweight engines provides confidence that the 100 and 200 hour TBO and TBR objectives will be exceeded.

3.

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4.1. Fuel

4.1.1. Engage with Fuel Partner – Phase 1

4.1.2. Review Specifications for Diesel, JP5 & JP8 fuels – Phase 1

4.1.3. Summarise Key Product Properties Concerns – Phase 1

- Cetane
- Lubricity (Predominantly Pump & Injector Durability)
- Smoke Number (Low visibility important for a UAV)
- Net Heat of Combustion
- Fluid Miscibility & Compatibility. (If some combination of Diesel, JP5 & JP8 in the fuel tank)
- Potential to cause corrosion.
- Susceptibility of damage to seals etc.
- Establish/estimate the expected variation in these properties across for the three fuel types in question and the product range then short list the potential issues that could arise from the extremes of variation of specification
- Cold start-ability (-45degC)

4.1.4. Quantify Property Tolerances – Phase 1

Some of the properties will have a tolerance in the fuel specification, but some, notably the cetane value for jet fuels, are not defined. The approach will be to use the fuel partner's product and market knowledge and statistical methods to define a table to indicate the probable range of the key properties highlighted above.

4.1.5. Supply Baseline Products for Test – Phase 1

- Small quantities of commercially available Diesel, JP5 & JP8 fuels for baseline engine testing and calibration work on existing AE-1 engine at Cosworth.
- Supply specification data for the fuels supplied.

4.1.6. Define fuel test matrix – Phase 2

The test matrix will need to use fuel from the likely extremes of the product specifications to ensure that the test plan is robust. For example high cetane fuels for durability testing and low cetane for start-ability. This will lead to some specific fuels that cannot be purchased off the shelf.

4.1.7. Procure Custom Test Fuels – Phase 2

Pilot blends will be required to get the custom test fuels with the properties identified in the previous task.

4.1.8. Define Test Plan – Phase 2

Design the experiment to maximise the information capture for minimum test time on the AE-1 engine and associated equipment, such as the fuel pump and injectors, with the various custom test fuels. (Note that the tests themselves are included with the products in the Combustion System and Ancillary sections)

4.1.9. Procure Standard Diesel, JP5 & JP8 Fuel – Phase 2

There will be a requirement for standard off the shelf diesel and jet fuels to support development engine testing at Cosworth and the Combustion System Partner.

4.1.10. Procure Custom Test Fuels – Phase 3

There will be a requirement for Cosworth and the Combustion System Partner to have further quantities of the custom fuels for performance development and durability work.

4.2. Oil

4.2.1. Establish Oil Specification Requirements from US Military – Phase 1

4.2.2. Engage with Oil Partner (If required) – Phase 2

4.2.3. Check Compatibility of Existing AE-1 Oil – Phase 2

AE-1 Runs on Conoco CHP 2-Cycle Engine Oil to NMMA TC-W3, TC-WII, TC-W

4.2.4. Define Oils for use in Program – Phase 2

5. Propellers (CDRL A008)

5.1. Engage with chosen propeller manufacturer- Phase 1

Cosworth has experience of working with commercially available propellers and indeed the one selected for the Cosworth diesel UAV engine has a life of several hundred hours. This activity will be a review of available propellers that meet the requirements of this project and the selection of a preferred supplier.

5.2. Define Concept Propeller Specification – Phase 1

Propeller design will be important to this program for several reasons:

- To maximise thrust and efficiency for a given power.
- To minimise mass while maintaining the strength and modal behaviour
- To minimise propeller noise

This activity will define the following parameters for use as inputs to other parts of the project.

- Diameter
- No of Blades
- Material
- Shaft Size
- Inertia

5.3. Define Propeller Specification – Phase 2

The concept propeller definition will need to be further refined to include, for example, details of how it is attached to the crankshaft and how it will engage with the starter. The specification at this stage will also include noise requirements from the signature characterisation described elsewhere.

5.4. Propeller Noise Reduction (CDRLs A009 and A00B)

This activity is included in case the propeller noise needs to be reduced. This will be decided from work covered in the noise section.

5.4.1. Propeller Noise Characterisation – Phase 3

Different designs will be procured and characterised on the Cosworth rig as a function of speed. The outcome from this will be one of the following:

- Selection of a propeller that meets the specification
- Decision that Cosworth needs to specify a custom component
- Decision to reduce the cruise engine speed to satisfy the noise requirements.

5.4.2. Procure Selected Propeller – Phase 3

5.4.3. Check Noise Signature – Phase 3

5.5. Procure Final Spec Propellers – Phase 3

5.6. Final Spec Prop Testing – Testbed – Phase 3

The propeller power absorption will be tested on The UE-UAV engine in the early stages of the test program. Propeller durability will also be tested on the engine.

5.7. Final Spec Propeller Testing – Airframe – Phase 3

Final testing against the program goals and objectives.

6. Ancillary Equipment (CDRL A008)

6.1. Fuel Pump (CDRLs A009 and A00B)

6.1.1. Define Fuel Pump Specification – Phase 1

This will include TBO, TBR, fuel compatibility, target pressure, flow rate, mass, size and approval.

6.1.2. Fuel Pump Review – Phase 1

The Cosworth AE-1 engine uses a commercially available fuel pump. It is expected that the base fuel pump for the UE-UAV engine will also be a COTS item. The objective of this activity will be to review available pumps against the specification and select one for the UE-UAV.

6.1.3. Produce Fuel Pump Design (if required) – Phase 2

6.1.4. Manufacture Fuel Pump (if required) – Phase 3

6.1.5. Test Fuel Pump – Phase 3

One of the Cosworth fuel pump rigs will be modified and examples of the selected pump will be durability tested with JP8, JP5 and diesel fuel to several times the TBR defined in the specification. The fuel pump is vulnerable to the reduced lubricity of Jet fuel, but this may not be an issue given the relatively low life compared to an automotive application. This is supported by the initial running on the Cosworth AE-1 with no issues. If adverse wear issues are encountered, Cosworth would fix them with more exotic materials or coatings drawn from its top end racing programs.

6.2. Oil Pump

6.2.1. Define Oil Pump Specification – Phase 1

This will include TBO, TBR, flow rate, mass, size and approval.

6.2.2. Oil Pump Review – Phase 2

The Cosworth AE-1 engine uses a commercially available oil pump. It is expected that the base fuel pump for the UE-UAV engine will also be a COTS item. The objective of this activity will be to review available pumps against the specification and select one for the UE-UAV. It may be that the pump needs to be modified by Cosworth or that the best option is to design a custom unit.

6.2.3. Produce Oil Pump Design (if required) – Phase 2

6.2.4. Manufacture Oil Pump (if required) – Phase 3

6.2.5. Test Oil Pump – Phase 3

Oil pumps will be tested on Cosworth rigs to several times the TBR as defined in the specification. This is not a high duty component and so this is low risk.

7. Power Generation

7.1. Engage With Power Generation Partner - Phase 1

The generator represents a significant component in this program in terms of mass and packaging requirements will dictate that a custom component is required. Cosworth anticipates links with two universities, Imperial College, London and Oxford University, which specialise in the field of electrical machines with extremely good power to weight ratios.

7.2. Define Specification - Phase 1

There will be a three way meeting between Cosworth, the generator supplier and the airframer to define the specification, to include speed, mass, power output, geometric constraints, thermal issues, opportunities for integration with the engine and interface with the power conditioning equipment.

7.3. Concept Review - Phase 1 (CDRL A00F)

A review using experience and simple models of the possible generator configurations will be carried out to assess the impact on mass and efficiency. Key variables will include:

- Direct drive vs. high speed
- Axial vs. radial flux
- The level of integration possible with the engine.
- Cost vs. benefit analysis for more expensive materials (eg. Cobalt iron vs. steel)
- Determine if a variable air-gap be required.

7.4. Define Concept Specification - Phase 1

The configuration of the generator will be fixed and a concept specified for Phase 2.

7.5. FE Preliminary Modelling - Phase 2 (CDRLs A00C and A00F)

3D FE techniques would be used to model the electrical performance of the generator including losses. This work will lead to prototype designs

7.6. Prototype Design – Phase 2

Mechanical design of the components in the prototype generators

7.7. Prototype Manufacture – Phase 2

7.8. Development Testing - Phase 2 (CDRLs A009 and A00B)

Bench testing to obtain both electrical and thermal characterization of the generators behaviour against the specification.

7.9. Design Optimisation - Phase 3

The results from the bench testing will be used to refine the models and the overall design.

7.10. Production Spec Manufacture – Phase 3

7.11. Production Spec Bench Testing – Phase 3 (CDRLs A009 and A00B)

7.12. Production Spec Engine Testing – Phase 3 (CDRLs A009 and A00B)

The generator will be tested on the engine at the first opportunity to ensure that the vibration and thermal loading do not affect the performance or durability of the generator.

7.13. Production Spec Flight Testing – Phase 3

Final specifications sign off.

8. Engine Management System (EMS) (CDRL A008)

The Cosworth AE-1 engine has a custom made electronic controller. This provides altitude correction and speed control, but the UE-UAV will benefit from a new controller with increased functionality. Pi Research will be responsible for this part of the program and their extensive expertise may yield to other benefits in the integration of engine and airframe electronics.

8.1. Electronics Design Study – Phase 1

This study will examine the requirements for the electronic control of the engine and will concentrate on obtaining the best compromises between weight, complexity, reliability and overall system capability. Pi Research has considerable experience of in-flight data acquisition as well as diesel engine control and so a significant part of this study will be to determine the level of data acquisition and logging that is required. The result of the study will be a Requirement Specification for the engine electronics. It will cover the following aspects of the design:

- Environmental and Power Supply Specification, including temperature, humidity, contaminants, altitude and shock and vibration. We will also determine the detailed specification of the electrical power feed on the UAV and the protection required within the electronics.
- Packaging Requirements
- Engine Control Specification, in conjunction with Cosworth.
- Flight System Interface Specification
- Quality, Reliability and Certification Requirements
- Diagnostics, Data Acquisition and Logging Requirements

8.2. Functional Specification

8.2.1. Define Functional Specification - Phase 2 (CDRL A00D)

During Phase 2 we will work with Cosworth to produce a Function Specification for the electronics to show the outline design of the final electronics and software and to clear any high risk areas of the design. This will include a base level FMEA for the unit.

8.2.2. Support for AE-1 Injector Sensitivity Study – Phase 2

An existing Engine Control Unit will be provided to allow Cosworth to carry out a dyno test of a common rail fuel injection system.

8.3. New Engine Controller Development (CDRLs A009 and A00B)

During Phase 3 a number of prototype engine controllers will be produced for the new engine based on the Requirement and Outline Functional Specifications to enable dyno and flight testing. These are based on the assumptions that the engine requires mechanical fuel injection and that there is no requirement to certify the electronics. Should these assumptions not be valid then the work program will be amended to suit.

8.3.1. Electronics Circuit Design – Bench Model - Phase 3

A bench model PCB will be designed that provides the functionality of the final product but in a form suitable for use on the bench or dyno, and for software development.

8.3.2. Software Design and Coding – Phase 3

Existing software will be modified to run on the bench model to enable dyno testing.

8.3.3. Bench and Dyno Test – Phase 3

Bench models will be tested on the bench and with an engine on the dyno. Any problems found during the testing will be fed back into the design and, if required, the bench models will be updated to remove any problems.

8.3.4. Prototype Electronics Circuit Design – Phase 3

The bench model circuitry will be updated to allow it to be miniaturised. Prototype, production-intent boards will then be produced.

8.3.5. Mechanical Design - Phase 3

A prototype enclosure for the electronics module will be designed, taking into consideration all the environmental, packaging and other requirements.

8.3.6. Software Update – Phase 3

The software will be updated based on the results of the dyno tests to produce the final prototype code.

8.3.7. Final Demonstration – Phase 3

The finished electronics module will be demonstrated on the Cosworth dyno prior to the start of flight testing.

9. Engine Dynamics (CDRLs A009, A00B and A00D)

Cosworth intends to make use detailed dynamic models of the UE-UAV. For this program, the approach in the early stages is to concentrate on the combustion development of the existing single cylinder AE-1 engine, since this is seen as the main technical challenge. The dynamic models will therefore be critical in mitigating the risk of changing the engine configuration later in the program. To maximise the confidence in the simulation, a model of the existing AE-1 engine will also be produced and validated against measured data on the prop rig and in flight.

9.1. Engine Balance – Phase 1

Simple models of different engine configurations will be built to provide an estimate of the vibration transmitted to the airframe. These will be in inputs to configuration decision.

9.2. Dynamic Model - AE-1

9.2.1. Build Model – Phase 1

Cosworth will use a multi-body dynamics programme to look at the dynamics of the engine and propeller. This software will produce reduced mass and stiffness matrices from finite element models of the components give a dynamic model that captures the response in the frequency range of interest without excessive run times.

9.2.2. Validate AE-1 Model on Prop Rig

9.2.2.1. Instrument Engine – Phase 1

The AE-1 engine will be modified to add torsional wheels and sensors at the front and back of the crankshaft. If required, displacement sensors could also be used to look at any bending modes.

9.2.2.2. Propeller Rig Test – Phase 1

The AE-1 engine will be run on the propeller rig and the torsional vibration measured using Cosworth's torsional logger. This is an extremely high frequency (10Ghz) logger that can post process the signals to provide twist amplitudes and a frequency spectrum of the torsional vibration.

9.2.3. Validate AE-1 Model in Airframe

9.2.3.1. Instrument Engine – Phase 2

The same instrumentation will be used as on the propeller rig.

9.2.3.2. AE-1 Flight Test – Phase 2

The existing AE-1 flight program will be extended to include torsional vibration measurements in the aircraft. For in-vehicle measurements, Cosworth uses a small recorder to log the signals, which can then be processed after the flight.

9.2.4. Refine Model – Phase 2

The predicted and measured test data will be compared to highlight any issues in the model that need to be addressed. For example, the existence of new modes that are not captured in the simulation will indicate that the model has been overly simplified and may need to be extended to include propeller modes.

9.3. Dynamic Model - UE-UAV

9.3.1. Concept Model – Phase 1

The concept for the UE-UAV engine will be built into a torsional model using the latest data from validation of the AE-1. This will then be used to assess likely issues with different configurations (e.g. excessive torsional amplitude at the prop) or design requirements (e.g. crank stiffness increase to get acceptable torsional frequencies)

9.3.2. Preliminary Model – Phase 2

The model will be kept in line with the design as it progresses, but it will also be extended to investigate other design issues such as the secondary motion of the piston and the dynamics of the fuel pump drive.

9.3.3. Validate UE-UAV Model on Prop Rig – Phase 3

The instrumentation and procedure will be as for the AE-1

9.3.4. Validate UE-UAV Model in Airframe – Phase 3

The in flight instrumentation and procedures used for the AE-1 will be repeated on the UE-UAV as soon as it is flight tested.

10. Thermal Management (CDRL A00F)

10.1. Define Specification – Phase 1

The environmental conditions for the engine are defined in the proposal, but there will be more work required to define the thermal specification against which the engine should be validated. Items to consider include:

- Identification of the worst cases for cooling as altitude, temperature and power vary
- Defining a warm up procedure

10.2. Create Thermal Model of AE-1

The procedure for thermal modelling of both water and air-cooled engines is well-established at Cosworth, but it has not yet been applied to the AE-1 engine.

10.2.1. Define External Boundary Conditions – Phase 1

Existing CFD models of the AE-1 will be used to predict the airflow and quantify the heat transfer coefficients on the external surfaces of the engine.

10.2.2. Define Internal Boundary Conditions – Phase 1

The heat transfer coefficients and temperatures in the combustion chamber and inlet and exhaust ports will be based on Cosworth experience to start with, but will be calibrated with measurements from the engine.

10.2.3. Create Finite Element Model – Phase 1

The existing CAD models of the AE-1 will be used to construct a finite element thermal model of the cylinder head and barrel.

10.2.4. Basic Temperature Survey – Phase 1

The thermal model will be checked against existing data and a basic temperature survey of the AE-1 on the dynamometer.

10.3. Validate Thermal Model of AE-1 (CDRL A00C)

The difficulty with thermal modelling of engines is that some of the boundary conditions are extremely difficult to predict or measure accurately. Being able to validate a model of the AE-1 early in the program will be a major factor in mitigating any risk of inadequate cooling on the UE-UAV. The approach is to carry out a basic thermal survey in Phase 1 with more detailed work in Phase 2.

10.3.1. Sensitivity Study – Phase 2

A basic sensitivity study will be carried out on the heat transfer coefficients and temperatures used in the model to see which parameters have the most impact. This will also help to identify the points on the engine that will be the most useful for temperature measurements.

10.3.2. Set Up Instrumentation – Phase 2

The following measurements will be required:

- Cooling air mass flow and temperature
- Head and barrel temperature measurements at various locations to isolate effect of different boundary conditions.
- Piston temperature measurements. The Cosworth Materials Department has characterised the ageing process of the piston alloy with time and temperature and so hardness measurements can be used to work out the temperature distribution throughout the piston.
- Inlet and exhaust gas temperatures

10.3.3. Test AE-1 Engine – Phase 2

The AE-1 engine will be run on Cosworth's dynamometer. The test procedure will include some sensitivity swings to help calibrate the model. Expected parameters are:

- Cooling air temperature and mass flow
- Air inlet temperature
- Engine speed
- Engine load

10.3.4. AE-1 Flight Test – Phase 2

A small logger will be used to make temperature measurements while the engine is in the airframe. Some basic temperature measurements have already happened on the AE-1 as covered elsewhere in the proposal. The relevant parameters will be:

- Air pressure
- Air temperature
- Head and barrel temperatures

10.3.5. Calibrate Thermal Model – Phase 2

The boundary conditions that are known to be inaccurate will then be adjusted to make the model fit the measured head and barrel temperatures under all the different operating conditions from the sensitivity studies. The output of this activity is therefore a tool that can be used with a high degree of confidence on the UE-UAV as its geometry evolves to predict the thermal performance under all operating conditions.

10.4. Build preliminary UE-UAV Thermal Model

The same process as above would then be used on the UE-UAV engine, except that any port and chamber variations would be captured with a 1-D simulation.

10.4.1. Create CFD Model for External Boundary Conditions – Phase 2

10.4.2. Create 1-D Model for Internal Boundary Conditions – Phase 2

A 1-D engine simulation (Cosworth uses GT-Power) of the AE-1 will be created and the predictions of the heat transfer coefficients and temperatures in the combustion chamber and inlet and exhaust ports will be calibrated against the values inferred from the measurements. Therefore the values calculated by the subsequent UE-UAV model can be used with confidence.

10.4.3. Create Finite Element Model – Phase 2

10.4.4. Design Studies – Phase 3

The model will be used to look at design issues. For example, if the bore needs to be limited to a certain value or how baffling can be used to maintain cooling while reducing airflow and hence drag.

10.5. Build Final UE-UAV Thermal Model

A final version of the thermal model will be created so that it is ready to be validated against the UE-UAV engine when it is first run on test.

10.5.1. Create CFD Model for External Boundary Conditions – Phase 3

10.5.2. Create 1-D Model for Internal Boundary Conditions – Phase 3

10.5.3. Create Finite Element Model – Phase 3

10.6. Validate Final UE-UAV Thermal Model

10.6.1. Instrument Engine – Phase 3

10.6.2. Test Engine – Phase 3

10.6.3. Final Model Calibration – Phase 3

Final adjustment of boundary conditions as required to improve model calibration.

10.6.4. Final Check Against Specification – Phase 3

The final calibrated model will be used to check other conditions (e.g. extreme climate testing) before that phase of the engine testing in the program to get an early indication of any issues.

10.7. Thermal Approval – Testbed – Phase 3

The engine will be tested against the specification of extreme conditions defined above. Cosworth requests the use of the facility at the Naval Air Warfare Center at Patuxent River, Maryland. The same instrumentation as above is expected, although the test procedure will need to be defined. This activity will also define the running procedures.

10.8. Thermal Approval - Airframe – Phase 3

The instrumented engine will also be fitted for the first flight of the UE-UAV to ensure that the installation and, in particular, the cooling airflow are as specified. It is anticipated that testing can be done in different climates, but the extremes are unlikely to be reached and so this highlights again the importance of a rigorous modelling and bench testing approach.

11. Noise Signature (CDRLs A009, A00B and A00D)

11.1. Define Specification – Phase 1

The current specification of “inaudible to human hearing from 1,500ft AGL during standard wilderness night time background noise level” needs to be quantified into a sound level that can be measured on the test bench.

11.2. Noise Signature Review – Phase 1

The activity in Phase 1 will be to obtain basic noise data and review existing data to allow a comparison of the AE-1 relative to the supplied noise signature objective.

11.3. Quantify AE-1 Noise Signature

The existing Cosworth AE-1 engine is a good basis for preliminary noise investigations since it is very similar in concept to the proposed UE-UAV engine. This will provide a major risk mitigation for the UE-UAV program.

11.3.1. Measure Noise Level - Airframe - Phase 2

Cosworth is already undertaking noise measurements during the flight tests of its AE-1 engine. Even with the improved noise specification, this will serve as a good cross check of test bed measurements and help quantify any required improvement in noise signature.

11.3.2. Measure Noise Level – Test Bed – Phase 2

Cosworth has equipment to measure both noise amplitude and frequency content. This will be done as a function of speed for four different configurations:

- Engine on prop stand
- Motoring dynamometer alone
- Engine and dynamometer at full, part and no load
- Propeller motored by the dynamometer. This will require a modification to the existing rig.

With these results it will be possible to infer the relative sizes of the different sources of noise: propeller, engine mechanical and engine firing. This will define targets for each of these areas and how the effort is subsequently split. Note that details of propeller work are found in paragraph 5.1 above.

11.4. Exhaust Noise Reduction – AE-1 (CDRL A00C)

11.4.1. Exhaust Noise Specification – Phase 2

The specification for this will come from the noise level measurements on the AE-1. Note that this assumes that the engine firing noise is dominated by the exhaust. If the inlet noise is found to be significant, then a similar program would be required for the inlet.

11.4.2. Muffler Design – Phase 2

Cosworth has already designed and manufactured a lightweight silencer for the AE-1 engine. This was successful in reducing the engine noise by 6dB. If further silencing is required, then Cosworth will use the 1-D engine simulation code GT-Power to tune the muffler for minimum loss of engine power. This software allows the simulation of different muffler designs (including dispersion media, i.e. “wool”) and assesses their impact both on the engine performance and on SPL (sound power level) and its harmonic content. The tool will also be used for doing other sensitivity studies on the engine, such as the effect of peak cylinder pressure or exhaust port area on noise. These predictions will not be absolute, but should provide a fast method of identifying the key sensitivities and some options for engine testing.

11.4.3. Development Muffler Procurement – Phase 2

Cosworth will talk to existing muffler manufacturers about the requirements, but it is expected that due to the requirement for extremely light weight, the manufacturing will be handled by Cosworth.

11.4.4. Muffler Testing – Phase 2

Development mufflers will be tested on the AE-1 engine. Testing will include noise measurements to compare to the specification and also sensitivity studies to help to calibrate the model and identify the key factors for reducing noise (e.g. speed, peak pressure, exhaust port area)

11.5. Engine Mechanical Noise Reduction – AE-1 – Phase 2

It is unlikely that mechanical noise is a significant component of the overall signature. If it needs to be improved, however, then Cosworth has the testing experience and analytical tools for the likely areas such as modal analysis on the main engine structural components or optimisation of the piston skirt profile.

11.6. UE-UAV Muffler Design – Phase 3

The AE-1 muffler design may need to be modified to suit the UE-UAV design. The approach would be as outlined above.

11.7. UE-UAV Muffler Procurement [p3]

11.8. Quantify UE-UAV Noise Signature

11.8.1. Measure Noise Level – Test Bed – Phase 3

The UE-UAV signature level will be measured very early in the test program to identify any issues, but the previous work will provide a high degree of confidence that the engine will meet the specification at this stage.

11.8.2. Measure Engine Power – Test Bed – Phase 3

11.8.3. Measure Noise Level - Airframe - Phase 3

12. Documentation

All documents and records relating to the UE-UAV project will be produced and stored in accordance with the AS9100 guidelines. In addition the project will be established on our SAP ERP system using a work breakdown structure format in line with the one suggested in this proposal, allowing all discrete costs to be monitored and reported.

12.1. Establish Lines of Communication – Phase 1 (CDRL A001)

During first contact with third parties, Cosworth will undertake to establish a list of key personnel, their contact details & roles, and publish appropriate circulation lists for all correspondence and documentation between companies.

12.2. Reports & Presentation Material – Standards (Phase 1) (CDRL A002)

Cosworth has a policy of controlling the way in which all documents are prepared and presented in order to comply with Company policy, Corporate Image & appropriate legislative standards. This ensures that all documents that are received by the Customer relating to all projects are professionally prepared, are unique, and have full traceability.

12.3. Formal Reviews & Reports (CDRL A00C)

Formal reviews and presentations will be required at various stages throughout the project, such as end of phase reviews (for progression to subsequent stages), for progress reporting, financial reporting and for summarising results relating to specific mid phase milestones.

Cosworth shall provide the Customer with all pertinent documentation according to the dates agreed during program review meetings, or as deemed necessary from time to time. The following primary reviews are anticipated at this time.

12.3.1. Contract Review (Phases 1,2 and 3)

- A contract review will be held within 30 days of contract award to agree on the deliverable for the Phase(s) prior to commencement.
- Contract Reviews will be required prior to progression to subsequent phase(s)

12.3.2. Monthly Reviews (CDRL A006)

Monthly progress reports will be provided to summarise the status of the project both in terms of technical progress, and to track the financials. The format will be consistent, and will be emailed to a nominated point of contact(s) as specified in the contract. Note: A Monthly review will be required should it fall in line with an End of Phase Review, or a Quarterly Review.

12.3.3. Quarterly Review (CDRL A002)

Since Phase 1 is 4 months duration, and Phase 2 is 5 months duration, it is anticipated that quarterly reviews will not occur until Phase 3. For such reviews, a Cosworth representative(s) will be in attendance, and is responsible for presenting to the nominated panel(s). The meeting will be summarised, and minutes circulated to all attendees promptly for approval before final distribution is made.

12.3.4. End of Phase Reviews – Phase 1, 2 and 3 (CDRL A004)

For such reviews, a nominated Cosworth representative(s) will be in attendance, and is responsible for presenting to the nominated panel(s). The meeting will be summarized, and minutes circulated to all attendees promptly for approval before final distribution is made. If Phase 3 option is exercised, a final presentation & report providing suggestions for further development opportunities, and ways in which the successful engine might be adapted for use in other applications. An overview of the total program would be provided including key metrics and key performance indicators for the project.

12.3.5. Phase 3 Detailed Design Review (CDRL A002)

This review will be supported by appropriate Cosworth personnel, and if necessary representatives from our technical partners and will provide the Customer with a detailed summary of the design intent and how it expects to meet or exceed the program goals and objectives.

12.3.6. Phase 3 Test Readiness/Test Result Review (CDRL A002)

This review is likely to be held at the nominated air framers headquarters following successful installation of the full mock-up prototype engine. Cosworth shall be responsible for organizing, presenting and collating all data presented, including distribution.

12.3.7. UE-UAV Build Manual – Phase 3 (CDRL A003)

A detailed build manual will be produced for the UE-UAV. This is essential for ensuring consistent build quality, to be provided in contractor format.

12.3.8. UE-UAV Operation Manual – Phase 3 (CDRL A00E)

A detailed manual will be produced specifying the procedures and data, required to fit, start and operate the engine.

12.3.9 Heavy Fuel Engine Total Ownership Cost – Phase 3 (CDRL A005)

An estimate of Total Ownership Cost {(purchase + Operational [excluding fuel] + maintenance costs)in \$ (USD) per run hour} will be prepared and provided.

13.0 Management

The contractor shall provide necessary facilities and resources for execution of this project. The contractor shall provide overall management, cost control and reporting including overall management of the project and any associated subcontracts. The contractor shall provide for the proper protection, handling and storage of classified materials. Appropriate cost controls shall be maintained to ensure the works is done in a cost-effective manner, and cost over-runs are avoided. The contractor shall submit timely invoices for work performed. An overview of technical progress and any significant problems encountered will be presented in the monthly review (See 12.3.4 above). Expected expenditures in accordance with the program plan and actual expenditures shall be reported in the quarterly report along with an overview of technical achievements, any problems encountered, their resolution and an over view of work to be

accomplished in the next quarter. The contractor shall be responsible for participating in a kick-off review within 30 days of contract award to present overall program plans and coordinate schedules with the customer. Contractor management shall be responsible for the timely and complete submittal of all data deliverables under the program. (CDRLs A002 and A007)

CLAUSES INCORPORATED BY FULL TEXT

**5252.211-9509 INCORPORATION OF THE CONTRACTOR'S TECHNICAL PROPOSAL
(NAVAIR)(OCT 2005)**

The Contractor's Technical Proposal Number Cosworth ISS 01 dated (undated) and any amendments/addendums thereof, is incorporated herein by reference, unless otherwise specified, with the same force and effect as if set forth in full text. Nothing in the Contractor's proposal shall constitute a waiver of any of the provisions of the contract, including the Statement(s) of Work and Specification. For purposes of FAR Clause 52.215-8, "Order of Precedence", the Contractor's technical proposal shall be considered a "Specification."

Section D - Packaging and Marking

CLAUSES INCORPORATED BY FULL TEXT

5252.247-9507 PACKAGING AND MARKING OF REPORTS (NAVAIR) (OCT 2005)

(a) All unclassified data shall be prepared for shipment in accordance with best commercial practice. Classified reports, data and documentation, if any, shall be prepared for shipment in accordance with the National Industry Security Program Operating Manual, DoD 5220.22-M.

(b) The contractor shall prominently display on the cover of each report the following information:

- (1) Name and business address of contractor.
- (2) Contract Number/Delivery/Task order number.
- (3) Contract/Delivery/Task order dollar amount.
- (4) Whether the contract was competitively or non-competitively awarded.
- (5) Name of sponsoring individual.
- (6) Name and address of requiring activity.

5252.247-9514 TECHNICAL DATA PACKING INSTRUCTIONS (NAVAIR) (SEP 1999)

Technical Data and Information shall be packed and packaged for domestic shipment in accordance with best commercial practices. The package or envelope should be clearly marked with any special markings specified in this contract (or delivery/task order), e.g., Contract Number, CLIN, Device No., and document title must be on the outside of the package. Classified reports, data and documentation, if applicable, shall be prepared for shipment in accordance with Defense Industrial Manual for Safeguarding Classified Information, DoD 5220.22M.

Section E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

CLIN	INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
0001	Destination	Government	Destination	Government
000101	N/A	N/A	N/A	Government
0002	Destination	Government	Destination	Government
0003	Destination	Government	Destination	Government

CLAUSES INCORPORATED BY REFERENCE

52.246-8	Inspection Of Research And Development Cost Reimbursement	MAY 2001
252.246-7000	Material Inspection And Receiving Report	MAR 2003

CLAUSES INCORPORATED BY FULL TEXT

5252.246-9514 INSPECTION AND ACCEPTANCE OF TECHNICAL DATA AND INFORMATION (NAVAIR) (FEB 1995)

Inspection and acceptance of technical data and information will be performed by the Procuring Contracting Officer (PCO) or his duly authorized representative. Inspection of technical data and information will be performed by ensuring successful completion of the requirements set forth in the DD Form 1423, Contract Data Requirements List (CDRL) and incorporation/resolution of Government review comments on the data items. Acceptance will be evidenced by execution of an unconditional DD Form 250, Material Inspection and Receiving Report, as appropriate, and/or upon receipt of a second endorsement acceptance by the PCO on the attachment to this contract entitled DD Form 1423, Contracts Data Requirements List. The attached form will not be used for high cost data such as drawings, specifications, and technical manuals.

Section F - Deliveries or Performance

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
0001	4 months after date of contract award	1 Lot	Larry John (See Section G) FOB: Destination	
000101	N/A	N/A	N/A FOB: Destination	
0002	TBD via contract modification	N/A	N/A FOB: Destination	
0003	TBD via contract modification	N/A	N/A FOB: Destination	

CLAUSES INCORPORATED BY REFERENCE

52.242-15 Alt 1	Stop-Work Order (Aug 1989) - Alternate I	APR 1984
52.242-17	Government Delay Of Work	APR 1984
52.247-34	F.O.B. Destination	NOV 1991

CLAUSES INCORPORATED BY FULL TEXT**5252.211-9507 PERIOD OF PERFORMANCE (MAR 1999)**

(a) The contract shall commence on date of contract award and shall continue for a period of 4 months. However, the period of performance may be extended in accordance with the phase provisions contained herein.

5252.247-9505 TECHNICAL DATA AND INFORMATION (NAVAIR) (FEB 1995)

Technical Data and Information shall be delivered in accordance with the requirements of the Contract Data Requirements List, DD Form 1423, Exhibit A attached hereto, and the following:

(a) The contractor shall concurrently deliver technical data and information per DD Form 1423, Blocks 12 and 13 (date of first/subsequent submission) to all activities listed in Block 14 of the DD Form 1423 (distribution and addresses) for each item. Complete addresses for the abbreviations in Block 14 are shown in paragraph (g) below. Additionally, the technical data shall be delivered to the following cognizant codes, who are listed in Block 6 of the DD Form 1423.

(b) Partial delivery of data is not acceptable unless specifically authorized on the DD Form 1423, or unless approved in writing by the PCO.

(c) The Government review period provided on the DD Form 1423 for each item commences upon receipt of all required data by the technical activity designated in Block 6.

(d) A copy of all other correspondence addressed to the Contracting Officer relating to data item requirements (i.e., status of delivery) shall also be provided to the codes reflected above and the technical activity responsible for the data item per Block 6, if not one of the activities listed above.

(e) The PCO reserves the right to issue unilateral modifications to change the destination codes and addresses for all technical data and information at no additional cost to the Government.

(f) Unless otherwise specified in writing, rejected data items shall be resubmitted within thirty (30) days after receipt of notice of rejection.

(g) DD 1423, Block 14, mailing address:

Contract Specialist:

Commander, Code 210000D – D. Zamarron
NAVAIRWARCENWPNDIV
429 E. Bowen RD, Mail Stop 4015
China Lake, CA 93555-6108

Technical Point of Contact

Commander, Code 476100D– L. John
NAVAIRWARCENWPNDIV
China Lake, CA 93555-6108

Section G - Contract Administration Data

ACCOUNTING AND APPROPRIATION DATA

AA: 97X4930 NH2C 252 77777 0 050120 2F 000000

COST CODE: WC028PR00391

AMOUNT: \$143,000.00

CIN 130009775100001: \$143,000.00

CLAUSES INCORPORATED BY FULL TEXT

5252.201-9500 GOVERNMENT POINTS OF CONTACT (NAVAIR)(OCT 2005)

(a) The Technical Point of Contact (TPOC) for this contract is Mr. Larry John at (760) 939-8202.

(b) The TPOC will provide technical direction and discussion, as relating, but not limited to the specification and/or statement of work, and will monitor the progress and quality of contractor performance.

(c) The TPOC is not an Administrative Contracting Officer and does not have authority to take any action, either directly or indirectly, that would change the pricing, quantity, quality, place of performance, delivery schedule, or any other terms and conditions of the contract (or delivery/task order), or to direct the accomplishment of effort which goes beyond the scope of the statement of work in the contract (or delivery/task order). When, in the opinion of the contractor, the TPOC requests any of the aforementioned changes, the contractor shall promptly notify the Contracting Officer (or ordering officer, for delivery/task orders) in writing. If the contractor believes or interprets any action by the TPOC to be a change to the contract, the contractor will promptly notify the Contracting Officer in writing. Any failure by the contractor to notify the Contracting Officer in writing of any changes is an admission that the contractor is working at its own risk on a voluntary basis. No action shall be taken by the contractor under such direction until the Contracting Officer (or ordering officer) has issued a modification to the contract (or delivery/task order) concerning the subject change(s) or has otherwise resolved the issue.

5252.201-9502 CONTRACTOR'S AUTHORIZED CONTRACT COORDINATOR AND TECHNICAL LIAISON (NAVAIR)(OCT 2005)

(a) The contractor shall state below the name and telephone numbers of the contractor's employees responsible for coordination of contract functions/liaison with the Contracting Officer and/or Contract administrator, and providing technical assistance as required regarding product specifications, functionality, etc.

CONTRACT COORDINATOR:

NAME: Ian Bisco

PHONE (BUS): 310-534-1390 X303

PHONE (AFTER HOURS): 310-910-0780

ALTERNATE:

NAME: Bruce Wood

PHONE (BUS): 44 1604 598366

PHONE (AFTER HOURS): 44 7714 148260

(b) The contractor shall notify the Contracting Officer and/or Contract Administrator in advance, in writing, of any changes in the above listed personnel.

5252.204-9503 EXPEDITING CONTRACT CLOSEOUT (NAVAIR) (JAN 2007)

(a) As part of the negotiated fixed price or total estimated amount of this contract, both the Government and the Contractor have agreed to waive any entitlement that otherwise might accrue to either party in any residual dollar amount of \$1,000 or less at the time of final contract closeout. The term "residual dollar amount" shall include all money that would otherwise be owed to either party at the end of the contract, except that, amounts connected in any way with taxation, allegations of fraud and/or antitrust violations shall be excluded. For purposes of determining residual dollar amounts, offsets of money owed by one party against money that would otherwise be paid by that party might be considered to the extent permitted by law.

(b) This agreement to waive entitlement to residual dollar amounts has been considered by both parties. It is agreed that the administrative costs for either party associated with collecting such small dollar amounts could exceed the amount to be recovered.

5252.232-9504 SPECIAL PAY INSTRUCTIONS FOR PAYING OFFICE (NAVAIR) (MAY 2006)

(a) Invoices submitted for payment, which do not contain contract line item number (CLIN) (or subline item number (SLIN), if any) and the accounting classification references number (ACRN) information, will be returned for correction.

(b) The disbursement of funds will be by the CLIN/SLIN/ACRN designation.

(c) If progress payments are authorized, payments will be made against the unliquidated balance of all applicable CLINs/SLINs.

5252.232-9510 PAYMENT OF FIXED FEE (NAVAIR) (OCT 2005)

(a) The fixed fee, as specified in Section B of this contract, subject to any adjustment required by other provisions of this contract, will be paid in installments. The fixed fee will be paid not more frequently than monthly based on the allowable cost. The amount of each such installment shall be in the same ratio to the total fixed fee as the related provisional payment on account of allowable cost is to the total estimated cost of the contract. Payment shall be made in accordance with FAR Clauses 52.216-7, "Allowable Cost and Payment", and 52.216-8, "Fixed Fee".

(b) In the event of termination of the work in accordance with the FAR Clause 52.232-22, "Limitation of Funds", the fixed fee shall be redetermined by mutual agreement equitably to reflect the reduction of the work performed. The amount by which such fixed fee is less than or exceeds payments previously made on account of fee, shall be paid to (or repaid by) the contractor.

(c) The balance of the fixed fee shall be payable in accordance with other clauses of this contract.

5252.232-9511 NOTICE OF REQUIREMENTS FOR PROMPT PAYMENT (NAVAIR) (MAR 2006)

The Government anticipates that this contract will be distributed to Defense Finance and Accounting Service (DFAS) by the DOD Electronic Document Access (EDA) system. DFAS is responsible for payment of contractor invoices.

(a) In accordance with FAR Clause 52.232-33 "Payment By Electronic Funds Transfer--Central Contractor Registration", the contractor is responsible for providing updated information to the Central Contractor Register (CCR) database. Additionally, the contractor is responsible for maintaining its active status in the CCR database.

(b) If the DUNS, CAGE code, TIN or address set forth in the contract do not match the information in the CCR, then DFAS will return invoices without payment. Therefore, it is imperative that the contractor ensure the DUNS, CAGE code, TIN and contractor address on the contract are accurate and in compliance with the CCR database. Additionally, any changes/updates made to the CCR database should be communicated to the Contracting Officer for the purpose of modifying the contract to reflect the new data.

5252.232-9513 INVOICING AND PAYMENT (WAWF) INSTRUCTIONS (DEC 2007)

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

(1) The vendor shall have their cage code activated by calling 866-618-5988. Once activated, the vendor shall self-register at the web site <https://wawf.eb.mil>. Vendor training is available on the Internet at <http://www.wawftraining.com>. Additional support can be obtained by calling the NAVY WAWF Assistance Line: 1-800-559-WAWF (9293).

(2) WAWF Vendor "Quick Reference" Guides are located at the following web site: <http://www.acquisition.navy.mil/navyaos/content/view/full/3521>.

(3) Select the invoice type within WAWF as specified below. Back up documentation (such as timesheets, etc.) can be included and attached to the invoice in WAWF. Attachments created in any Microsoft Office product are attachable to the invoice in WAWF. Total limit for the size of files per invoice is 5 megabytes.

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

WAWF Invoice Type:	If the Paying Office (see below) is N50120 : -- Select Combo for Fixed Price Supplies and Services. -- Select Cost Voucher for all Cost or T&M contracts or CLINs. For ALL OTHER Paying Offices: -- Select 2-in-1 for FFP Services Only. -- Select Combo for Supplies, or Supplies AND FFP Services. -- Select Cost Voucher for all Cost or T&M contracts or CLINs. If none of the above apply, please call 1-800-559-WAWF (9293).
Issuing Office DODAAC	N68936
Admin Office DODAAC:	S0513A
Inspector DODAAC (usually only used when Inspector & Acceptor are different people):	
Ship To DODAAC (for Combo), Service Acceptor DODAAC (for 2 in 1), Service Approver DODAAC (Cost Voucher)	N68936
DCAA Office DODAAC (Used on Cost Voucher's only):	S0513A
Paying Office DODAAC:	HQ0339

(c) Contractors approved by DCAA for direct billing will not process vouchers through DCAA, but may submit directly to DFAS. Final voucher submission will be approved by the ACO.

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

Name	Email	Phone	Role
Larry John	Larry.John@navy.mil	760 939-8202	Technical POC
Debra Zamarron	Debra.Zamarron@navy.mil	760 939-9658	Contract Specialist

5252.242-9511 CONTRACT ADMINISTRATION DATA (NAVAIR)(MAR 2007)

(a) Contract Administration Office.

(1) Contract administration functions (see FAR 42.302 and DFARS 242.302) are assigned to: S0513A.

See the ADMINISTERED BY Block on the face page of the contract or modification.

(2) Contract administration functions withheld, additional contract administration functions assigned, or special instructions (see FAR 42.202) are: DAR42.302 (a) 3-4, 23,26,28,41-48, 52,58059, 62-64 and 70

(b) Inquiries regarding payment should be referred to: MyInvoice at <http://www.dod.mil/dfas/contractorpay/myinvoice.html>.

G-TXT-01 ATTENTION! E-MAIL ADDRESS REQUIRED FOR DISTRIBUTION (APR 2002)

All Naval Air Warfare Center Weapons Division Contracts/ Purchase Orders and other related documents are now distributed by electronic mail.

Please provide the e-mail address to which distribution of contracts/purchase orders should be made.

E-Mail Address:ian.bisco@cosworth.com.

G-TXT-13 COURTESY COPY OF INVOICE/VOUCHER (APR 2002)

A courtesy copy of each invoice/voucher processed for payment will be sent to:

- | | |
|--------------------------|---------------------------------|
| 1. COMMANDER | 2. COMMANDER |
| CODE J26000D | CODE 210000D (Attn D. Zamarron) |
| NAVAIRWARCENWPNDIV | NAVAIRWARCENWPNDIV |
| 1 ADMINISTRATION CIRCLE | 1 ADMINISTRATION CIRCLE |
| CHINA LAKE CA 93555-6100 | CHINA LAKE CA 93555-6100 |

Section H - Special Contract Requirements

CLAUSES INCORPORATED BY REFERENCE

252.204-7000 Disclosure Of Information

DEC 1991

CLAUSES INCORPORATED BY FULL TEXT

5252.210-9501 AVAILABILITY OF UNIQUE DATA ITEM DESCRIPTIONS (UDIDs) AND DATA ITEM DESCRIPTIONS (DIDs) (NAVAIR) (OCT 2005)

Access Procedures for Acquisition Management System and Data Requirements Control List (AMSDL), DoD 5010.12-L, and DIDs listed therein. The AMSDL and all DIDs and UDIDs listed therein are available online via the Acquisition Streamlining and Standardization Information System located at <http://assist.daps.dla.mil>. To access these documents, select the Quick Search link on the site home page.

5252.211-9502 GOVERNMENT INSTALLATION WORK SCHEDULE (NAVAIR)(OCT 2005) - ALT I (OCT 2005)

(a) The Holidays applicable to this contract are: New Year's Day, Martin Luther King's Birthday, President's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, and Christmas Day.

(b) In the event that the contractor is prevented from performance as the result of an Executive Order or an administrative leave determination that applies to the using activity, such time may be charged to the contract as a direct cost provided such charges are consistent with the contractor's accounting practices. In the event that any of the above holidays occur on a Saturday or Sunday, or Compressed Work Schedule Alternate Friday, then such holiday shall be observed as they are by the assigned Government employees at the using activity.

(c) The Naval Air Warfare Center Weapons Division works a 4/5/9 work schedule. Therefore alternate Fridays are not a part of the normal workweek for work performed on-site at a Naval Air Warfare Center Weapons Division site. The majority of the Government offices are closed on alternate Fridays.

(d) No deviation in the normal workweek will be permitted without express advance approval by the designated Contracting Officer with coordination of the using departments.

5252.227-9501 INVENTION DISCLOSURES AND REPORTS (NAVAIR) (MAY 1998)

(a) In accordance with the requirements of the Patent Rights clause of this contract, the contractor shall submit "Report of Inventions and Subcontracts" (DD Form 882) along with written disclosure of inventions to the designated Contract Administrator.

(b) The Contract Administrator will forward such reports and disclosures directly to the appropriate Patent Counsel, designated below, for review and recommendations, after which the reports will be returned to the Contract Administrator.

Name and address of Patent Counsel:
Office of Counsel, Code K00000D
Naval Air Warfare Center Weapons Division
1 Administration Circle, Stop 1009
China Lake, California 93555-6100

(c) The above designated Patent Counsel will represent the Procurement Contracting Officer with regard to invention reporting matters arising under this contract.

- (d) A copy of each report and disclosure shall be forwarded to the Procuring Contracting Officer.
- (e) The contractor shall furnish the Contracting Officer a final report within three (3) months after completion of the contracted work listing all subject inventions or certifying that there were no such inventions, and listing all subcontracts at any tier containing a patent rights clause or certifying that there were no such subcontracts.

5252.227-9507 NOTICE REGARDING THE DISSEMINATION OF EXPORT-CONTROLLED TECHNICAL DATA (NAVAIR) (OCT 2005)

- (a) Export of information contained herein, which includes release to foreign nationals within the United States, without first obtaining approval or license from the Department of State for items controlled by the International Traffic in Arms Regulations (ITARs), or the Department of Commerce for items controlled by the Export Administration Regulations (EAR), may constitute a violation of law.
- (b) For violation of export laws, the contractor, its employees, officials or agents are subject to:
 - (1) Imprisonment and/or imposition of criminal fines; and
 - (2) Suspension or debarment from future Government contracting actions.
- (c) The Government shall not be liable for any unauthorized use or release of export-controlled information, technical data or specifications in this contract.
- (d) The contractor shall include the provisions or paragraphs (a) through (c) above in any subcontracts awarded under this contract.

5252.232-9509 REIMBURSEMENT OF TRAVEL, PER DIEM, AND SPECIAL MATERIAL COSTS (NAVAIR)(OCT 2006)

- (a) Area of Travel. Performance under this contract may require travel by contractor personnel. If travel, domestic or overseas, is required, the contractor is responsible for making all necessary arrangements for its personnel. These include but are not limited to: medical examinations, immunizations, passports/visas/etc., and security clearances. All contractor personnel required to perform work on any U.S. Navy vessel shall obtain boarding authorization from the Commanding Officer of the vessel before boarding.
- (b) Travel Policy. The Government will reimburse the contractor for allowable travel costs incurred by the contractor in performance of the contract in accordance with FAR Subpart 31.2. Travel required for tasks assigned under this contract shall be governed in accordance with: Federal Travel Regulations, prescribed by the General Services Administration for travel in the conterminous 48 United States, (hereinafter the FTR); Joint Travel Regulation, Volume 2, DoD Civilian Personnel, Appendix A, prescribed by the Department of Defense, for travel in Alaska, Hawaii, The Commonwealth of Puerto Rico, and territories and possessions of the United States (hereinafter JTR); and Standardized Regulations (Government Civilians, Foreign Areas), Section 925, "Maximum Travel Per Diem Allowances for Foreign Areas," prescribed by the Department of State, for travel in areas not covered in the FTR or JTR (hereinafter the SR).
- (c) Travel. Travel and subsistence are authorized for travel beyond a fifty-mile radius of the contractor's office whenever a task assignment requires work to be accomplished at a temporary alternate worksite. No travel or subsistence shall be charged for work performed within a fifty-mile radius of the contractor's office. The contractor shall not be paid for travel or subsistence for contractor personnel who reside in the metropolitan area in which the tasks are being performed. Travel performed for personal convenience, in conjunction with personal recreation, or daily travel to and from work at the contractor's facility will not be reimbursed.
 - (1) For travel costs other than described in paragraph (c) above, the contractor shall be paid on the basis of actual amount paid to the extent that such travel is necessary for the performance of services under the contract and is authorized by the COR in writing.
 - (2) When transportation by privately owned conveyance is authorized, the contractor shall be paid on a mileage basis not to exceed the applicable Government transportation rate as contained in the FTR, JTR or SR. Authorization for the use of privately owned conveyance shall be indicated in the basic contract. Distances traveled

between points shall be shown on invoices as listed in standard highway mileage guides. Reimbursement will not exceed the mileage shown in the standard highway mileage guides.

(3) The contractor agrees, in the performance of necessary travel, to use the lowest cost mode commensurate with the requirements of the mission as set forth in the basic contract and in accordance with good traffic management principles. When it is necessary to use air or rail travel, the contractor agrees to use coach, tourist class, or similar accommodations to the extent consistent with the successful and economical accomplishment of the mission for which the travel is being performed.

(4) The contractor's invoices shall include receipts or other evidence substantiating actual costs incurred for authorized travel. In no event will such payments exceed the rates of common carriers.

(d) Vehicle and/or Truck Rentals. The contractor shall be reimbursed for actual rental/lease of special vehicles and/or trucks (i.e., of a type not normally used by the contractor in the conduct of its business) only if authorized in the basic contract or upon approval by the COR. Reimbursement of such rental shall be made based on actual amounts paid by the contractor. Use of rental/lease costs of vehicles and/or trucks that are of a type normally used by the contractor in the conduct of its business are not subject to reimbursement.

(e) Car Rental. The contractor shall be reimbursed for car rental, exclusive of mileage charges, as authorized in the basic contract or upon approval by the COR, when the services are required to be performed beyond the normal commuting distance from the contractor's facilities. Car rental for a team on TDY at one site will be allowed for a minimum of four (4) persons per car, provided that such number or greater comprise the TDY team.

(f) Per Diem. The contractor shall not be paid for per diem for contractor personnel who reside in the metropolitan areas in which the tasks are being performed. Per Diem shall not be paid on services performed within a fifty-mile radius of the contractor's home office or the contractor's local office. Per Diem is authorized for contractor personnel beyond a fifty-mile radius of the contractor's home or local offices whenever a task assigned requires work to be done at a temporary alternate worksite. Per Diem shall be paid to the contractor only to the extent that overnight stay is necessary and authorized under this contract. The authorized per diem rate shall be the same as the prevailing per diem in the worksite locality. These rates will be based on rates contained in the FTR, JTR or SR. The applicable rate is authorized at a flat seventy-five (75%) percent on the day of departure from contractor's home or local office, and on the day of return. Reimbursement to the contractor for per diem shall be limited to actual payments to per diem defined herein. The contractor shall provide actual payments of per diem defined herein. The contractor shall provide supporting documentation for per diem expenses as evidence of actual payment.

(g) Shipboard Stays. Whenever work assignments require temporary duty aboard a Government ship, the contractor will be reimbursed at the per diem rates identified in paragraph C8101.2C or C81181.3B(6) of the Department of Defense Joint Travel Regulations, Volume II.

(h) Special Material. "Special material" includes only the costs of material, supplies, or services which is peculiar to the ordered data and which is not suitable for use in the course of the contractor's normal business. It shall be furnished pursuant to specific authorization approved by the COR. The contractor will be required to support all material costs claimed by its costs less any applicable discounts. "Special materials" include, but are not limited to, graphic reproduction expenses, or technical illustrative or design requirements needing special processing.

5252.232-9516 ALLOTMENT OF FUNDS - INCREMENTALLY FUNDED COST-REIMBURSEMENT CONTRACT OTHER THAN COST-SHARING CONTRACT (JUL 1985)

For the purposes of paragraph (b) of the "Limitation of Funds" clause of this contract-

- (a) the amount available for payment and allotted to this incrementally funded contract is \$143,000
- (b) the items covered by such amount are Item(s) CLIN 0001 and 0002, and
- (c) the period of performance for which it is estimated the allotted amount will cover is 4 months.

5252.243-9504 AUTHORIZED CHANGES ONLY BY THE CONTRACTING OFFICER (NAVAIR) (JAN 1992)

(a) Except as specified in paragraph (b) below, no order, statement, or conduct of Government personnel who visit the contractor's facilities or in any other manner communicates with contractor personnel during the performance of this contract shall constitute a change under the "Changes" clause of this contract.

(b) The contractor shall not comply with any order, direction or request of Government personnel unless it is issued in writing and signed by the Contracting Officer, or is pursuant to specific authority otherwise included as a part of this contract.

(c) The Contracting Officer is the only person authorized to approve changes in any of the requirements of this contract and notwithstanding provisions contained elsewhere in this contract, the said authority remains solely the Contracting Officer's. In the event the contractor effects any change at the direction of any person other than the Contracting Officer, the change will be considered to have been made without authority and no adjustment will be made in the contract price to cover any increase in charges incurred as a result thereof. The address and telephone number of the Contracting Officer is: Colette Nalley, NAWCWD, Code 210000D, 429 E. Bowen RD, Mail Stop 4015, China Lake, CA 93555-6108.

Section I - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-6	Restrictions On Subcontractor Sales To The Government	SEP 2006
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-11	Certification And Disclosure Regarding Payments To Influence Certain Federal Transactions	SEP 2007
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	SEP 2007
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.204-7	Central Contractor Registration	JUL 2006
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	SEP 2006
52.215-2	Audit and Records--Negotiation	JUN 1999
52.215-8	Order of Precedence--Uniform Contract Format	OCT 1997
52.215-10	Price Reduction for Defective Cost or Pricing Data	OCT 1997
52.215-12	Subcontractor Cost or Pricing Data	OCT 1997
52.215-14	Integrity of Unit Prices	OCT 1997
52.215-15	Pension Adjustments and Asset Reversions	OCT 2004
52.215-17	Waiver of Facilities Capital Cost of Money	OCT 1997
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits (PRB) Other than Pensions	JUL 2005
52.215-19	Notification of Ownership Changes	OCT 1997
52.215-20	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data	OCT 1997
52.215-21	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data--Modifications	OCT 1997
52.216-8	Fixed Fee	MAR 1997
52.219-4	Notice of Price Evaluation Preference for HUBZone Small Business Concerns	JUL 2005
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.219-9	Small Business Subcontracting Plan	SEP 2007
52.219-16	Liquidated Damages-Subcontracting Plan	JAN 1999
52.222-20	Walsh-Healey Public Contracts Act	DEC 1996
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	MAR 2007
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	SEP 2006
52.222-39	Notification of Employee Rights Concerning Payment of Union Dues or Fees	DEC 2004
52.223-6	Drug-Free Workplace	MAY 2001
52.223-14	Toxic Chemical Release Reporting	AUG 2003

52.225-13	Restrictions on Certain Foreign Purchases	FEB 2006
52.227-1 Alt I	Authorization And Consent (Jul 1995) - Alternate I	APR 1984
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	AUG 1996
52.227-11	Patent Rights--Retention By The Contractor (Short Form)	JUN 1997
52.227-13	Patent Rights--Acquisition By The Government	JAN 1997
52.228-7	Insurance--Liability To Third Persons	MAR 1996
52.229-8	Taxes--Foreign Cost-Reimbursement Contracts	MAR 1990
52.230-6	Administration of Cost Accounting Standards	APR 2005
52.232-17	Interest	JUN 1996
52.232-20	Limitation Of Cost	APR 1984
52.232-22	Limitation Of Funds	APR 1984
52.232-23	Assignment Of Claims	JAN 1986
52.232-25	Prompt Payment	OCT 2003
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3 Alt I	Protest After Award (Aug 1996) - Alternate I	JUN 1985
52.233-4	Applicable Law for Breach of Contract Claim	OCT 2004
52.242-1	Notice of Intent to Disallow Costs	APR 1984
52.242-3	Penalties for Unallowable Costs	MAY 2001
52.242-4	Certification of Final Indirect Costs	JAN 1997
52.242-13	Bankruptcy	JUL 1995
52.242-15 Alt I	Stop-Work Order (Aug 1989) - Alternate I	APR 1984
52.243-2 Alt V	Changes--Cost-Reimbursement (Aug 1987) - Alternate V	APR 1984
52.244-5	Competition In Subcontracting	DEC 1996
52.244-6	Subcontracts for Commercial Items	MAR 2007
52.245-1	Government Property	JUN 2007
52.245-9	Use And Charges	JUN 2007
52.246-9	Inspection Of Research And Development (Short Form)	APR 1984
52.247-17	Charges	APR 1984
52.249-6	Termination (Cost Reimbursement)	MAY 2004
52.249-14	Excusable Delays	APR 1984
52.253-1	Computer Generated Forms	JAN 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2004
252.204-7000	Disclosure Of Information	DEC 1991
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.204-7004 Alt A	Central Contractor Registration (52.204-7) Alternate A	SEP 2007
252.204-7006	Billing Instructions	OCT 2005
252.205-7000	Provision Of Information To Cooperative Agreement Holders	DEC 1991
252.209-7001	Disclosure of Ownership or Control by the Government of a Terrorist Country	OCT 2006
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	DEC 2006
252.215-7000	Pricing Adjustments	DEC 1991
252.215-7002	Cost Estimating System Requirements	DEC 2006
252.219-7003	Small Business Subcontracting Plan (DOD Contracts)	APR 2007
252.222-7006	Combating Trafficking in Persons	OCT 2006
252.223-7004	Drug Free Work Force	SEP 1988
252.225-7002	Qualifying Country Sources As Subcontractors	APR 2003
252.225-7006	Quarterly Reporting of Actual Contract Performance Outside the United States	MAY 2007
252.225-7012	Preference For Certain Domestic Commodities	JAN 2007

252.225-7016	Restriction On Acquisition Of Ball and Roller Bearings	MAR 2006
252.225-7031	Secondary Arab Boycott Of Israel	JUN 2005
252.226-7001	Utilization of Indian Organizations and Indian-Owned Economic Enterprises, and Native Hawaiian Small Business Concerns	SEP 2004
252.227-7016	Rights in Bid or Proposal Information	JUN 1995
252.227-7019	Validation of Asserted Restrictions--Computer Software	JUN 1995
252.227-7024	Notice and Approval of Restricted Designs	APR 1984
252.227-7028	Technical Data or Computer Software Previously Delivered to the Government	JUN 1995
252.227-7034	Patents--Subcontracts	APR 1984
252.227-7037	Validation of Restrictive Markings on Technical Data	SEP 1999
252.227-7039	Patents--Reporting Of Subject Inventions	APR 1990
252.232-7003	Electronic Submission of Payment Requests	MAR 2007
252.232-7010	Levies on Contract Payments	DEC 2006
252.235-7011	Final Scientific or Technical Report	NOV 2004
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.244-7000	Subcontracts for Commercial Items and Commercial Components (DoD Contracts)	JAN 2007
252.247-7023	Transportation of Supplies by Sea	MAY 2002

CLAUSES INCORPORATED BY FULL TEXT

52.216-7 ALLOWABLE COST AND PAYMENT (DEC 2002)

(a) Invoicing.

(1) The Government will make payments to the Contractor when requested as work progresses, but (except for small business concerns) not more often than once every 2 weeks, in amounts determined to be allowable by the Contracting Officer in accordance with Federal Acquisition Regulation (FAR) Subpart 31.2 in effect on the date of this contract and the terms of this contract. The Contractor may submit to an authorized representative of the Contracting Officer, in such form and reasonable detail as the representative may require, an invoice or voucher supported by a statement of the claimed allowable cost for performing this contract.

(2) Contract financing payments are not subject to the interest penalty provisions of the Prompt Payment Act. Interim payments made prior to the final payment under the contract are contract financing payments, except interim payments if this contract contains Alternate I to the clause at 52.232-25.

(3) The designated payment office will make interim payments for contract financing on the 30th day after the designated billing office receives a proper payment request. In the event that the Government requires an audit or other review of a specific payment request to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the specified due date.

(b) Reimbursing costs.

(1) For the purpose of reimbursing allowable costs (except as provided in subparagraph (b)(2) of this section, with respect to pension, deferred profit sharing, and employee stock ownership plan contributions), the term "costs" includes only --

(i) Those recorded costs that, at the time of the request for reimbursement, the Contractor has paid by cash, check, or other form of actual payment for items or services purchased directly for the contract;

(ii) When the Contractor is not delinquent in paying costs of contract performance in the ordinary course of business, costs incurred, but not necessarily paid, for --

(A) Supplies and services purchased directly for the contract and associated financing payments to subcontractors, provided payments determined due will be made-

(1) In accordance with the terms and conditions of a subcontract or invoice; and

(2) Ordinarily within 30 days of the submission of the Contractor's payment request to the Government;

(B) Materials issued from the Contractor's inventory and placed in the production process for use on the contract;

- (C) Direct labor;
 - (D) Direct travel;
 - (E) Other direct in-house costs; and
 - (F) Properly allocable and allowable indirect costs, as shown in the records maintained by the Contractor for purposes of obtaining reimbursement under Government contracts; and
- (iii) The amount of financing payments that have been paid by cash, check or other form of payment to subcontractors.
- (2) Accrued costs of Contractor contributions under employee pension plans shall be excluded until actually paid unless-
- (i) The Contractor's practice is to make contributions to the retirement fund quarterly or more frequently; and
 - (ii) The contribution does not remain unpaid 30 days after the end of the applicable quarter or shorter payment period (any contribution remaining unpaid shall be excluded from the Contractor's indirect costs for payment purposes).
- (3) Notwithstanding the audit and adjustment of invoices or vouchers under paragraph (g) of this clause, allowable indirect costs under this contract shall be obtained by applying indirect cost rates established in accordance with paragraph (d) of this clause.
- (4) Any statements in specifications or other documents incorporated in this contract by reference designating performance of services or furnishing of materials at the Contractor's expense or at no cost to the Government shall be disregarded for purposes of cost-reimbursement under this clause.
- (c) Small business concerns. A small business concern may receive more frequent payments than every 2 weeks
 - (d) Final indirect cost rates.
 - (1) Final annual indirect cost rates and the appropriate bases shall be established in accordance with Subpart 42.7 of the Federal Acquisition Regulation (FAR) in effect for the period covered by the indirect cost rate proposal.
 - (2)(i) The Contractor shall submit an adequate final indirect cost rate proposal to the Contracting Officer (or cognizant Federal agency official) and auditor within the 6-month period following the expiration of each of its fiscal years. Reasonable extensions, for exceptional circumstances only, may be requested in writing by the Contractor and granted in writing by the Contracting Officer. The Contractor shall support its proposal with adequate supporting data.
 - (ii) The proposed rates shall be based on the Contractor's actual cost experience for that period. The appropriate Government representative and the Contractor shall establish the final indirect cost rates as promptly as practical after receipt of the Contractor's proposal.
 - (3) The Contractor and the appropriate Government representative shall execute a written understanding setting forth the final indirect cost rates. The understanding shall specify
 - (i) the agreed-upon final annual indirect cost rates,
 - (ii) the bases to which the rates apply,
 - (iii) the periods for which the rates apply,
 - (iv) any specific indirect cost items treated as direct costs in the settlement, and
 - (v) the affected contract and/or subcontract, identifying any with advance agreements or special terms and the applicable rates.
 The understanding shall not change any monetary ceiling, contract obligation, or specific cost allowance or disallowance provided for in this contract. The understanding is incorporated into this contract upon execution.
 - (4) Failure by the parties to agree on a final annual indirect cost rate shall be a dispute within the meaning of the Disputes clause.
 - (5) Within 120 days (or longer period if approved in writing by the Contracting Officer) after settlement of the final annual indirect cost rates for all years of a physically complete contract, Contractor shall submit a completion invoice or voucher to reflect the settled amounts and rates.
 - (6)(i) If the Contractor fails to submit a completion invoice or voucher within the time specified in paragraph (d)(5) of this clause, the Contracting Officer may--
 - (A) Determine the amounts due to the Contractor under the contract; and
 - (B) Record this determination in a unilateral modification to the contract.
 (ii) This determination constitutes the final decision of the Contracting Officer in accordance with the Disputes clause.

(e) Billing rates. Until final annual indirect cost rates are established for any period, the Government shall reimburse the Contractor at billing rates established by the Contracting Officer or by an authorized representative (the cognizant auditor), subject to adjustment when the final rates are established. These billing rates --

(1) Shall be the anticipated final rates; and

(2) May be prospectively or retroactively revised by mutual agreement, at either party's request, to prevent substantial overpayment or underpayment.

(f) Quick-closeout procedures. Quick-closeout procedures are applicable when the conditions in FAR 42.708(a) are satisfied.

(g) Audit. At any time or times before final payment, the Contracting Officer may have the Contractor's invoices or vouchers and statements of cost audited. Any payment may be --

(1) Reduced by amounts found by the Contracting Officer not to constitute allowable costs; or

(2) Adjusted for prior overpayments or underpayments.

(h) Final payment.

(1) Upon approval of a completion invoice or voucher submitted by the Contractor in accordance with paragraph (d)(5) of this clause, and upon the Contractor's compliance with all terms of this contract, the Government shall promptly pay any balance of allowable costs and that part of the fee (if any) not previously paid.

(2) The Contractor shall pay to the Government any refunds, rebates, credits, or other amounts (including interest, if any) accruing to or received by the Contractor or any assignee under this contract, to the extent that those amounts are properly allocable to costs for which the Contractor has been reimbursed by the Government. Reasonable expenses incurred by the Contractor for securing refunds, rebates, credits, or other amounts shall be allowable costs if approved by the Contracting Officer. Before final payment under this contract, the Contractor and each assignee whose assignment is in effect at the time of final payment shall execute and deliver --

(i) An assignment to the Government, in form and substance satisfactory to the Contracting Officer, of refunds, rebates, credits, or other amounts (including interest, if any) properly allocable to costs for which the Contractor has been reimbursed by the Government under this contract; and

(ii) A release discharging the Government, its officers, agents, and employees from all liabilities, obligations, and claims arising out of or under this contract, except --

(A) Specified claims stated in exact amounts, or in estimated amounts when the exact amounts are not known;

(B) Claims (including reasonable incidental expenses) based upon liabilities of the Contractor to third parties arising out of the performance of this contract; provided, that the claims are not known to the Contractor on the date of the execution of the release, and that the Contractor gives notice of the claims in writing to the Contracting Officer within 6 years following the release date or notice of final payment date, whichever is earlier; and

(C) Claims for reimbursement of costs, including reasonable incidental expenses, incurred by the Contractor under the patent clauses of this contract, excluding, however, any expenses arising from the Contractor's indemnification of the Government against patent liability.

52.219-28 POST-AWARD SMALL BUSINESS PROGRAM REREPRESENTATION (JUN 2007)

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

Long-term contract means a contract of more than five years in duration, including options. However, the term does not include contracts that exceed five years in duration because the period of performance has been extended for a cumulative period not to exceed six months under the clause at 52.217-8, Option to Extend Services, or other appropriate authority.

Small business concern means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR part 121 and the size standard in paragraph (c) of this clause.

(b) If the Contractor represented that it was a small business concern prior to award of this contract, the Contractor shall rerepresent its size status according to paragraph (e) of this clause or, if applicable, paragraph (g) of this clause, upon the occurrence of any of the following:

(1) Within 30 days after execution of a novation agreement or within 30 days after modification of the contract to include this clause, if the novation agreement was executed prior to inclusion of this clause in the contract.

(2) Within 30 days after a merger or acquisition that does not require a novation or within 30 days after modification of the contract to include this clause, if the merger or acquisition occurred prior to inclusion of this clause in the contract.

(3) For long-term contracts--

(i) Within 60 to 120 days prior to the end of the fifth year of the contract; and

(ii) Within 60 to 120 days prior to the exercise date specified in the contract for any option thereafter.

(c) The Contractor shall rerepresent its size status in accordance with the size standard in effect at the time of this rerepresentation that corresponds to the North American Industry Classification System (NAICS) code assigned to this contract. The small business size standard corresponding to this NAICS code can be found at <http://www.sba.gov/services/contractingopportunities/sizestandardsttopics/>

(d) The small business size standard for a Contractor providing a product which it does not manufacture itself, for a contract other than a construction or service contract, is 500 employees.

(e) Except as provided in paragraph (g) of this clause, the Contractor shall make the rerepresentation required by paragraph (b) of this clause by validating or updating all its representations in the Online Representations and Certifications Application and its data in the Central Contractor Registration, as necessary, to ensure they reflect current status. The Contractor shall notify the contracting office by e-mail, or otherwise in writing, that the data have been validated or updated, and provide the date of the validation or update.

(f) If the Contractor represented that it was other than a small business concern prior to award of this contract, the Contractor may, but is not required to, take the actions required by paragraphs (e) or (g) of this clause.

(g) If the Contractor does not have representations and certifications in ORCA, or does not have a representation in ORCA for the NAICS code applicable to this contract, the Contractor is required to complete the following rerepresentation and submit it to the contracting office, along with the contract number and the date on which the rerepresentation was completed:

The Contractor represents that it [] is, X is not a small business concern under NAICS Code 541712 assigned to contract number N68936-08-C-0003.

52.222-2 PAYMENT FOR OVERTIME PREMIUMS (JUL 1990)

(a) The use of overtime is authorized under this contract if the overtime premium cost does not exceed \$0 or the overtime premium is paid for work --

(1) Necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdowns of production equipment, or occasional production bottlenecks of a sporadic nature;

(2) By indirect-labor employees such as those performing duties in connection with administration, protection, transportation, maintenance, standby plant protection, operation of utilities, or accounting;

(3) To perform tests, industrial processes, laboratory procedures, loading or unloading of transportation conveyances, and operations in flight or afloat that are continuous in nature and cannot reasonably be interrupted or completed otherwise; or

(4) That will result in lower overall costs to the Government.

(b) Any request for estimated overtime premiums that exceeds the amount specified above shall include all estimated overtime for contract completion and shall--

(1) Identify the work unit; e.g., department or section in which the requested overtime will be used, together with present workload, staffing, and other data of the affected unit sufficient to permit the Contracting Officer to evaluate the necessity for the overtime;

(2) Demonstrate the effect that denial of the request will have on the contract delivery or performance schedule;

(3) Identify the extent to which approval of overtime would affect the performance or payments in connection with other Government contracts, together with identification of each affected contract; and

(4) Provide reasons why the required work cannot be performed by using multishift operations or by employing additional personnel.

(f) Unless the consent or approval specifically provides otherwise, neither consent by the Contracting Officer to any subcontract nor approval of the Contractor's purchasing system shall constitute a determination--

- (1) Of the acceptability of any subcontract terms or conditions;
- (2) Of the allowability of any cost under this contract; or
- (3) To relieve the Contractor of any responsibility for performing this contract.

(g) No subcontract or modification thereof placed under this contract shall provide for payment on a cost-plus-a-percentage-of- cost basis, and any fee payable under cost-reimbursement type subcontracts shall not exceed the fee limitations in FAR 15.404- 4(c)(4)(i).

(h) The Contractor shall give the Contracting Officer immediate written notice of any action or suit filed and prompt notice of any claim made against the Contractor by any subcontractor or vendor that, in the opinion of the Contractor, may result in litigation related in any way to this contract, with respect to which the Contractor may be entitled to reimbursement from the Government.

(i) The Government reserves the right to review the Contractor's purchasing system as set forth in FAR Subpart 44.3.

(j) Paragraphs (c) and (e) of this clause do not apply to the following subcontracts, which were evaluated during negotiations:

Phase 1 - Pi Research

Phase 2 – To be determined

Phase 3 – To be determined.

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

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

252.227-7017 IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS (JUN 1995)

(a) The terms used in this provision are defined in the following clause or clauses contained in this solicitation--

(1) If a successful offeror will be required to deliver technical data, the Rights in Technical Data--Noncommercial Items clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.

(2) If a successful offeror will not be required to deliver technical data, the Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.

(b) The identification and assertion requirements in this provision apply only to technical data, including computer software documentation, or computer software to be delivered with other than unlimited rights. For contracts to be awarded under the Small Business Innovative Research Program, the notification and identification requirements do not apply to technical data or computer software that will be generated under the resulting contract. Notification and identification is not required for restrictions based solely on copyright.

(c) Offers submitted in response to this solicitation shall identify, to the extent known at the time an offer is submitted to the Government, the technical data or computer software that the Offeror, its subcontractors or

52.244-2 SUBCONTRACTS (JUN 2007)

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

“Approved purchasing system” means a Contractor's purchasing system that has been reviewed and approved in accordance with Part 44 of the Federal Acquisition Regulation (FAR).

“Consent to subcontract” means the Contracting Officer's written consent for the Contractor to enter into a particular subcontract.

“Subcontract” means any contract, as defined in FAR Subpart 2.1, entered into by a subcontractor to furnish supplies or services for performance of the prime contract or a subcontract. It includes, but is not limited to, purchase orders, and changes and modifications to purchase orders.

(b) When this clause is included in a fixed-price type contract, consent to subcontract is required only on unpriced contract actions (including unpriced modifications or unpriced delivery orders), and only if required in accordance with paragraph (c) or (d) of this clause.

(c) If the Contractor does not have an approved purchasing system, consent to subcontract is required for any subcontract that--

(1) Is of the cost-reimbursement, time-and-materials, or labor- hour type; or

(2) Is fixed-price and exceeds--

(i) For a contract awarded by the Department of Defense, the Coast Guard, or the National Aeronautics and Space Administration, the greater of the simplified acquisition threshold or 5 percent of the total estimated cost of the contract; or

(ii) For a contract awarded by a civilian agency other than the Coast Guard and the National Aeronautics and Space Administration, either the simplified acquisition threshold or 5 percent of the total estimated cost of the contract.

(d) If the Contractor has an approved purchasing system, the Contractor nevertheless shall obtain the Contracting Officer's written consent before placing the following subcontracts:

(e)(1) The Contractor shall notify the Contracting Officer reasonably in advance of placing any subcontract or modification thereof for which consent is required under paragraph (b), (c), or (d) of this clause, including the following information:

(i) A description of the supplies or services to be subcontracted.

(ii) Identification of the type of subcontract to be used.

(iii) Identification of the proposed subcontractor.

(iv) The proposed subcontract price.

(v) The subcontractor's current, complete, and accurate cost or pricing data and Certificate of Current Cost or Pricing Data, if required by other contract provisions.

(vi) The subcontractor's Disclosure Statement or Certificate relating to Cost Accounting Standards when such data are required by other provisions of this contract.

(vii) A negotiation memorandum reflecting--

(A) The principal elements of the subcontract price negotiations;

(B) The most significant considerations controlling establishment of initial or revised prices;

(C) The reason cost or pricing data were or were not required;

(D) The extent, if any, to which the Contractor did not rely on the subcontractor's cost or pricing data in determining the price objective and in negotiating the final price;

(E) The extent to which it was recognized in the negotiation that the subcontractor's cost or pricing data were not accurate, complete, or current; the action taken by the Contractor and the subcontractor; and the effect of any such defective data on the total price negotiated;

(F) The reasons for any significant difference between the Contractor's price objective and the price negotiated; and

(G) A complete explanation of the incentive fee or profit plan when incentives are used. The explanation shall identify each critical performance element, management decisions used to quantify each incentive element, reasons for the incentives, and a summary of all trade-off possibilities considered.

(2) The Contractor is not required to notify the Contracting Officer in advance of entering into any subcontract for which consent is not required under paragraph (b), (c), or (d) of this clause.

suppliers, or potential subcontractors or suppliers, assert should be furnished to the Government with restrictions on use, release, or disclosure.

(d) The Offeror's assertions, including the assertions of its subcontractors or suppliers or potential subcontractors or suppliers, shall be submitted as an attachment to its offer in the following format, dated and signed by an official authorized to contractually obligate the Offeror:

Identification and Assertion of Restrictions on the Government's Use, Release, or Disclosure of Technical Data or Computer Software.

The Offeror asserts for itself, or the persons identified below, that the Government's rights to use, release, or disclose the following technical data or computer software should be restricted:

Technical Data or Computer Software to be Furnished With Restrictions*	Basis for Rights Assertion** (LIST)*****	Asserted Name of Person Asserting Category*** (LIST)	Restrictions**** (LIST)
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* For technical data (other than computer software documentation) pertaining to items, components, or processes developed at private expense, identify both the deliverable technical data and each such item, component, or process. For computer software or computer software documentation identify the software or documentation.

** Generally, development at private expense, either exclusively or partially, is the only basis for asserting restrictions. For technical data, other than computer software documentation, development refers to development of the item, component, or process to which the data pertain. The Government's rights in computer software documentation generally may not be restricted. For computer software, development refers to the software. Indicate whether development was accomplished exclusively or partially at private expense. If development was not accomplished at private expense, or for computer software documentation, enter the specific basis for asserting restrictions.

*** Enter asserted rights category (e.g., government purpose license rights from a prior contract, rights in SBIR data generated under another contract, limited, restricted, or government purpose rights under this or a prior contract, or specially negotiated licenses).

**** Corporation, individual, or other person, as appropriate.

***** Enter "none" when all data or software will be submitted without restrictions.

Date _____

Printed Name and Title _____

Signature _____

(End of identification and assertion)

(e) An offeror's failure to submit, complete, or sign the notification and identification required by paragraph (d) of this provision with its offer may render the offer ineligible for award.

(f) If the Offeror is awarded a contract, the assertions identified in paragraph (d) of this provision shall be listed in an attachment to that contract. Upon request by the Contracting Officer, the Offeror shall provide sufficient information to enable the Contracting Officer to evaluate any listed assertion.

252.235-7010 ACKNOWLEDGMENT OF SUPPORT AND DISCLAIMER (MAY 1995)

(a) The Contractor shall include an acknowledgment of the Government's support in the publication of any material based on or developed under this contract, stated in the following terms: This material is based upon work supported by the Naval Air Warfare Center Weapons Division, China Lake, CA under Contract No. N68936-08-C-0003.

(b) All material, except scientific articles or papers published in scientific journals, must, in addition to any notices or disclaimers by the Contractor, also contain the following disclaimer: Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Naval Air Warfare Center Weapons Division, China Lake, CA.

5252.204-9504 DISCLOSURE OF CONTRACT INFORMATION (JAN 2007)

(a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information (e.g., announcement of contract award), regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless the Contracting Officer has given prior written approval.

(b) Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the release. The Contractor shall submit its request to the Contracting Officer at least ten (10) days before the proposed date for release.

(c) The Contractor agrees to include a similar requirement in each subcontract under this contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.

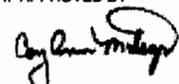
Section J - List of Documents, Exhibits and Other Attachments

EXHIBITS

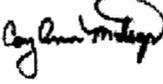
Section J - List of Documents, Exhibits and Other Attachments

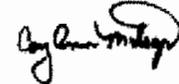
Exhibit/Attachment Table of Contents

<u>DOCUMENT TYPE</u>	<u>DESCRIPTION</u>	<u>PAGES</u>	<u>DATE</u>
Exhibit A	Contract Data Requirements Listing	15	01/23/08
Attachment (1)	DFARS Clause 252.227-7013, Rights in Technical Data - Non-Commercial Items (Nov 1995)	5	06/04/07

CONTRACT DATA REQUIREMENTS LIST (1 Data Item)					Form Approved OMB No. 0704-0188						
Public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA. 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for Contract/PR No. listed in Block E.											
A. CONTRACT LINE ITEM NO.		B. EXHIBIT		C. CATEGORY: TDP TM OTHER: MISC							
D. SYSTEM/ITEM UE-UAV HEAVY FUEL ENGINE DEVELOPMENT			E. CONTRACT/PR NO. N68936-08-C-0003		F. CONTRACTOR Cosworth						
1. DATA ITEM NO. A005		2. TITLE OF DATA ITEM TECHNICAL REPORT - STUDY/SERVICES			3. SUBTITLE Total Cost of Ownership						
4. AUTHORITY (Data Acquisition Document No.) DI-MISC-80508B			5. CONTRACT REFERENCE SOW, Para 12.3.9		6. REQUIRING OFFICE NAVAIRWD CODE 476100D						
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED SEE BLK 16	10. FREQUENCY ASREQ	12. DATE OF FIRST SUBMISSION SEE BLK 16	14. DISTRIBUTION							
8. APP CODE A		11. AS OF DATE N/A	13. DATE OF SUBSEQUENT SUBMISSION SEE BLK 16	a. ADDRESSEE		b. COPIES					
Block 16 Remarks						Final					
						Reg Repro					
				Code 476100D		0 1 0					
				Code 210000D		LTR ONLY					
<p>Block 4: May be in contractor format as long as DID is used for guidance.</p> <p>Block 9: DISTRIBUTION STATEMENT D. Distribution authorized to the Department of Defense and U.S. DoD contractors only; Critical Technology; 16 January 2008. Other request shall be referred to NAWCWD, Code 476100D, 1 Administration Circle, China Lake, CA 93555-6100</p> <p>Block 12 & 13: Shall be submitted at NLT 15 DA completion of task.</p> <p>Block 14: Shall be submitted in an electronic format agreed upon by both Government and contractor prior to 1st submittal.</p>											
								15. TOTAL		0 1 0	
G. PREPARED BY Naval Air Warfare Center, Weapons Division, China Lake, CA 93555-6100			H. DATE 080116	I. APPROVED BY  DRRB Chairperson		J. DATE 080116					

CONTRACT DATA REQUIREMENTS LIST <i>(1 Data Item)</i>					Form Approved OMB No. 0704-0188					
<small>Public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA. 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for Contract/PR No. listed in Block E.</small>										
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D. SYSTEM/ITEM UE-UAV HEAVY FUEL ENGINE DEVELOPMENT			E. CONTRACT/PR NO. N68936-08-C-0003		F. CONTRACTOR Cosworth					
1. DATA ITEM NO. A006	2. TITLE OF DATA ITEM CONTRACTOR'S PROGRESS, STATUS AND MANAGEMENT REPORT			3. SUBTITLE						
4. AUTHORITY (Data Acquisition Document No.) DI-MGMT-80227			5. CONTRACT REFERENCE SOW Para 12.3.2		6. REQUIRING OFFICE NAVAIRWD CODE 476100D					
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED SEE BLK	10. FREQUENCY MTHLY	12. DATE OF FIRST SUBMISSION 45 DAC		14. DISTRIBUTION					
8. APP CODE N/A	16	11. AS OF DATE EOM	13. DATE OF SUBSEQUENT SUBMISSION EOM +10		a. ADDRESSEE					
Block 16 Remarks Block 4: May be in contractor format as long as DID is used for guidance. Block 9: DISTRIBUTION STATEMENT D. Distribution authorized to the Department of Defense and U.S. DoD contractors only; Critical Technology; 16 January 2008. Other request shall be referred to NAWCWD, Code 476100D, 1 Administration Circle, China Lake, CA 93555-6100. Block 14: Shall be delivered in an electronic agreed upon by both Government and Contractor prior to 1st submittal. <u>lawrence.john@navy.mil</u> – Code 476100D <u>debra.zamarron@navy.mil</u> – Code 210000D					b. COPIES		Final			
					Code 476100D		0	1	0	
					Code 210000D		0	1	0	
					15. TOTAL					
G. PREPARED BY Naval Air Warfare Center, Weapons Division, China Lake, CA 93555-6100			H. DATE 080123	I. APPROVED BY DRRB Chairperson		J. DATE 080123				

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D. SYSTEM/ITEM UE-UAV HEAVY FUEL ENGINE DEVELOPMENT			E. CONTRACT/PR NO. N68936-08-C-0003		F. CONTRACTOR Cosworth			
1. DATA ITEM NO. A008		2. TITLE OF DATA ITEM TECHNICAL REPORT - STUDY/SERVICES			3. SUBTITLE Performance Analysis			
4. AUTHORITY (Data Acquisition Document No.) DI-MISC-80508B			5. CONTRACT REFERENCE SOW Para 2.2, 2.4, 3.7, 3.12, 5.0, 6.0, 8.0		6. REQUIRING OFFICE NAVAIRWD CODE 476100D			
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED SEE BLK 16	10. FREQUENCY ASREQ	12. DATE OF FIRST SUBMISSION SEE BLK 16	14. DISTRIBUTION				
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				Code 210000D		LTR	ONLY	
				15. TOTAL		0	1	0
G. PREPARED BY Naval Air Warfare Center, Weapons Division, China Lake, CA 93555-6100			H. DATE 080123	I. APPROVED BY  DRRB Chairperson			J. DATE 080123	

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1. DATA ITEM NO. A00D	2. TITLE OF DATA ITEM TECHNICAL REPORT - STUDY/SERVICES			3. SUBTITLE Risk Reduction Plan			
4. AUTHORITY (Data Acquisition Document No.) DI-MISC-80508B		5. CONTRACT REFERENCE SOW Para 8.2.1, 9.0, 11.0		6. REQUIRING OFFICE NAVAIRWD CODE 476100D			
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED SEE BLK 16	10. FREQUENCY ASREQ	12. DATE OF FIRST SUBMISSION SEE BLK 16	14. DISTRIBUTION			
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G. PREPARED BY Naval Air Warfare Center, Weapons Division, China Lake, CA 93555-6100		H. DATE 080123	I. APPROVED BY  DRRB Chairperson		J. DATE 080123		

CONTRACT DATA REQUIREMENTS LIST (1 Data Item)						Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA, 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for Contract/PR No. listed in Block E.							
A. CONTRACT LINE ITEM NO.		B. EXHIBIT		C. CATEGORY: TDP TM OTHER: IPSC			
D. SYSTEM/ITEM UE-UAV HEAVY FUEL ENGINE DEVELOPMENT			E. CONTRACT/PR NO. N68936-08-C-0003		F. CONTRACTOR Cosworth		
1. DATA ITEM NO. A00F	2. TITLE OF DATA ITEM COMPUTER SOFTWARE PRODUCT				3. SUBTITLE CAD Models and Modeling Data		
4. AUTHORITY (Data Acquisition Document No.) DI-IPSC-81488			5. CONTRACT REFERENCE SOW Para 1.1.2, 1.4, 1.5, 2.1, 2.2, 2.4, 7.3, 7.5, 10.0.			6. REQUIRING OFFICE NAVAIRWD CODE 476100D	
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED SEE BLK 16	10. FREQUENCY ASREQ	12. DATE OF FIRST SUBMISSION SEE BLK 16	14. DISTRIBUTION			
8. APP CODE A		11. AS OF DATE N/A	13. DATE OF SUBSEQUENT SUBMISSION SEE BLK 16	a. ADDRESSEE		b. COPIES	
<p>Block 16 Remarks</p> <p>Block 4: May be in contractor format as long as DID is used for guidance.</p> <p>Block 9: DISTRIBUTION STATEMENT D. Distribution authorized to the Department of Defense and U.S. DoD contractors only; Critical Technology; 16 January 2008. Other request shall be referred to NAWCWD, Code 476100D, 1 Administration Circle, China Lake, CA 93555-6100.</p> <p>Block 12 & 13: Models shall be submitted when first used. Data shall be submitted 15 days after collection.</p> <p>Block 14: Shall be delivered in an electronic agreed upon by both Government and Contractor prior to 1st submittal.</p>							
				Code 476100D 0 1 0		Code 210000D LTR ONLY	
				15. TOTAL		0 1 0	
G. PREPARED BY Naval Air Warfare Center, Weapons Division, China Lake, CA 93555-6100			H. DATE 080123	I. APPROVED BY DRRB Chairperson		J. DATE 080123	

Reference : DFARS Clause 252.227-7013 Rights in Technical Data--Noncommercial Items.

RIGHTS IN TECHNICAL DATA--NONCOMMERCIAL ITEMS (NOV 1995)

(a) *Definitions.* As used in this clause:

- (1) "Computer data base" means a collection of data recorded in a form capable of being processed by a computer. The term does not include computer software.
- (2) "Computer program" means a set of instructions, rules, or routines recorded in a form that is capable of causing a computer to perform a specific operation or series of operations.
- (3) "Computer software" means computer programs, source code, source code listings, object code listings, design details, algorithms, processes, flow charts, formulae and related material that would enable the software to be reproduced, recreated, or recompiled. Computer software does not include computer data bases or computer software documentation.
- (4) "Computer software documentation" means owner's manuals, user's manuals, installation instructions, operating instructions, and other similar items, regardless of storage medium, that explain the capabilities of the computer software or provide instructions for using the software.
- (5) "Detailed manufacturing or process data" means technical data that describe the steps, sequences, and conditions of manufacturing, processing or assembly used by the manufacturer to produce an item or component or to perform a process.
- (6) "Developed" means that an item, component, or process exists and is workable. Thus, the item or component must have been constructed or the process practiced. Workability is generally established when the item, component, or process has been analyzed or tested sufficiently to demonstrate to reasonable people skilled in the applicable art that there is a high probability that it will operate as intended. Whether, how much, and what type of analysis or testing is required to establish workability depends on the nature of the item, component, or process, and the state of the art. To be considered "developed," the item, component, or process need not be at the stage where it could be offered for sale or sold on the commercial market, nor must the item, component, or process be actually reduced to practice within the meaning of Title 35 of the United States Code.
- (7) "Developed exclusively at private expense" means development was accomplished entirely with costs charged to indirect cost pools, costs not allocated to a government contract, or any combination thereof.
 - (i) Private expense determinations should be made at the lowest practicable level.
 - (ii) Under fixed-price contracts, when total costs are greater than the firm-fixed-price or ceiling price of the contract, the additional development costs necessary to complete development shall not be considered when determining whether development was at government, private, or mixed expense.
- (8) "Developed exclusively with government funds" means development was not accomplished exclusively or partially at private expense.
- (9) "Developed with mixed funding" means development was accomplished partially with costs charged to indirect cost pools and/or costs not allocated to a government contract, and partially with costs charged directly to a government contract.
- (10) "Form, fit, and function data" means technical data that describes the required overall physical, functional, and performance characteristics (along with the qualification requirements, if applicable) of an item, component, or process to the extent necessary to permit identification of physically and functionally interchangeable items.
- (11) "Government purpose" means any activity in which the United States Government is a party, including cooperative agreements with international or multi-national defense organizations, or sales or transfers by the United States Government to foreign governments or international organizations. Government purposes include competitive procurement, but do not include the

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rights to use, modify, reproduce, release, perform, display, or disclose technical data for commercial purposes or authorize others to do so.

(12) "Government purpose rights" means the rights to—

- (i) Use, modify, reproduce, release, perform, display, or disclose technical data within the Government without restriction; and
- (ii) Release or disclose technical data outside the Government and authorize persons to whom release or disclosure has been made to use, modify, reproduce, release, perform, display, or disclose that data for United States government purposes.

(13) "Limited rights" means the rights to use, modify, reproduce, release, perform, display, or disclose technical data, in whole or in part, within the Government. The Government may not, without the written permission of the party asserting limited rights, release or disclose the technical data outside the Government, use the technical data for manufacture, or authorize the technical data to be used by another party, except that the Government may reproduce, release or disclose such data or authorize the use or reproduction of the data by persons outside the Government if reproduction, release, disclosure, or use is—

- (i) Necessary for emergency repair and overhaul; or
- (ii) A release or disclosure of technical data (other than detailed manufacturing or process data) to, or use of such data by, a foreign government that is in the interest of the Government and is required for evaluational or informational purposes;
- (iii) Subject to a prohibition on the further reproduction, release, disclosure, or use of the technical data; and
- (iv) The contractor or subcontractor asserting the restriction is notified of such reproduction, release, disclosure, or use.

(14) "Technical data" means recorded information, regardless of the form or method of the recording, of a scientific or technical nature (including computer software documentation). The term does not include computer software or data incidental to contract administration, such as financial and/or management information.

(15) "Unlimited rights" means rights to use, modify, reproduce, perform, display, release, or disclose technical data in whole or in part, in any manner, and for any purpose whatsoever, and to have or authorize others to do so.

(b) *Rights in technical data.* The Contractor grants or shall obtain for the Government the following royalty free, world-wide, nonexclusive, irrevocable license rights in technical data other than computer software documentation (see the Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation clause of this contract for rights in computer software documentation):

(1) Unlimited rights. The Government shall have unlimited rights in technical data that are—

- (i) Data pertaining to an item, component, or process which has been or will be developed exclusively with Government funds; (ii) Studies, analyses, test data, or similar data produced for this contract, when the study, analysis, test, or similar work was specified as an element of performance;
- (iii) Created exclusively with Government funds in the performance of a contract that does not require the development, manufacture, construction, or production of items, components, or processes;
- (iv) Form, fit, and function data;
- (v) Necessary for installation, operation, maintenance, or training purposes (other than detailed manufacturing or process data);
- (vi) Corrections or changes to technical data furnished to the Contractor by the Government;
- (vii) Otherwise publicly available or have been released or disclosed by the Contractor or subcontractor without restrictions on further use, release or disclosure, other than a release or disclosure resulting from the sale, transfer, or other assignment of interest in

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the technical data to another party or the sale or transfer of some or all of a business entity or its assets to another party;

(viii) Data in which the Government has obtained unlimited rights under another Government contract or as a result of negotiations; or

(ix) Data furnished to the Government, under this or any other Government contract or subcontract thereunder, with—

(A) Government purpose license rights or limited rights and the restrictive condition(s) has/have expired; or

(B) Government purpose rights and the Contractor's exclusive right to use such data for commercial purposes has expired.

(2) Government purpose rights.

(i) The Government shall have government purpose rights for a five-year period, or such other period as may be negotiated, in technical data—

(A) That pertain to items, components, or processes developed with mixed funding except when the Government is entitled to unlimited rights in such data as provided in paragraphs (b)(ii) and (b)(iv) through (b)(ix) of this clause; or

(B) Created with mixed funding in the performance of a contract that does not require the development, manufacture, construction, or production of items, components, or processes.

(ii) The five-year period, or such other period as may have been negotiated, shall commence upon execution of the contract, subcontract, letter contract (or similar contractual instrument), contract modification, or option exercise that required development of the items, components, or processes or creation of the data described in paragraph (b)(2)(i)(B) of this clause. Upon expiration of the five-year or other negotiated period, the Government shall have unlimited rights in the technical data.

(iii) The Government shall not release or disclose technical data in which it has government purpose rights unless—

(A) Prior to release or disclosure, the intended recipient is subject to the non-disclosure agreement at 227.7103-7 of the Defense Federal Acquisition Regulation Supplement (DFARS); or

(B) The recipient is a Government contractor receiving access to the data for performance of a Government contract that contains the clause at DFARS 252.227-7025, Limitations on the Use or Disclosure of Government-Furnished Information Marked with Restrictive Legends.

(iv) The Contractor has the exclusive right, including the right to license others, to use technical data in which the Government has obtained government purpose rights under this contract for any commercial purpose during the time period specified in the government purpose rights legend prescribed in paragraph (f)(2) of this clause.

(3) Limited rights.

(i) Except as provided in paragraphs (b)(1)(ii) and (b)(1)(iv) through (b)(1)(ix) of this clause, the Government shall have limited rights in technical data—

(A) Pertaining to items, components, or processes developed exclusively at private expense and marked with the limited rights legend prescribed in paragraph (f) of this clause; or

(B) Created exclusively at private expense in the performance of a contract that does not require the development, manufacture, construction, or production of items, components, or processes.

(ii) The Government shall require a recipient of limited rights data for emergency repair or overhaul to destroy the data and all copies in its possession promptly following completion of the emergency repair/overhaul and to notify the Contractor that the data have been destroyed.

(iii) The Contractor, its subcontractors, and suppliers are not required to provide the Government additional rights to use, modify, reproduce, release, perform, display, or disclose technical data furnished to the Government with limited rights. However, if the Government desires to obtain additional rights in technical data in which it has limited rights, the Contractor agrees to promptly enter into negotiations with the Contracting Officer to determine whether there are acceptable terms for transferring such rights. All technical data in which the Contractor has granted the Government additional rights shall be listed or described in a license agreement made part of the contract. The license shall enumerate the additional rights granted the Government in such data.

(4) Specifically negotiated license rights. The standard license rights granted to the Government under paragraphs (b)(1) through (b)(3) of this clause, including the period during which the Government shall have government purpose rights in technical data, may be modified by mutual agreement to provide such rights as the parties consider appropriate but shall not provide the Government lesser rights than are enumerated in paragraph (a)(13) of this clause. Any rights so negotiated shall be identified in a license agreement made part of this contract.

(5) Prior government rights. Technical data that will be delivered, furnished, or otherwise provided to the Government under this contract, in which the Government has previously obtained rights shall be delivered, furnished, or provided with the pre-existing rights, unless—

- (i) The parties have agreed otherwise; or
- (ii) Any restrictions on the Government's rights to use, modify, reproduce, release, perform, display, or disclose the data have expired or no longer apply.

(6) Release from liability. The Contractor agrees to release the Government from liability for any release or disclosure of technical data made in accordance with paragraph (a)(13) or (b)(2)(iii) of this clause, in accordance with the terms of a license negotiated under paragraph (b)(4) of this clause, or by others to whom the recipient has released or disclosed the data and to seek relief solely from the party who has improperly used, modified, reproduced, released, performed, displayed, or disclosed Contractor data marked with restrictive legends.

(c) Contractor rights in technical data. All rights not granted to the Government are retained by the Contractor.

(d) Third party copyrighted data. The Contractor shall not, without the written approval of the Contracting Officer, incorporate any copyrighted data in the technical data to be delivered under this contract unless the Contractor is the copyright owner or has obtained for the Government the license rights necessary to perfect a license or licenses in the deliverable data of the appropriate scope set forth in paragraph (b) of this clause, and has affixed a statement of the license or licenses obtained on behalf of the Government and other persons to the data transmittal document.

(e) Identification and delivery of data to be furnished with restrictions on use, release, or disclosure.

- (1) This paragraph does not apply to restrictions based solely on copyright.
- (2) Except as provided in paragraph (e)(3) of this clause, technical data that the Contractor asserts should be furnished to the Government with restrictions on use, release, or disclosure are identified in an attachment to this contract (the Attachment). The Contractor shall not deliver any data with restrictive markings unless the data are listed on the Attachment.
- (3) In addition to the assertions made in the Attachment, other assertions may be identified after award when based on new information or inadvertent omissions unless the inadvertent omissions would have materially affected the source selection decision. Such identification and assertion shall be submitted to the Contracting Officer as soon as practicable prior to the scheduled date for delivery of the data, in the following format, and signed by an official authorized to contractually obligate the Contractor:

Identification and Assertion of Restrictions on the Government's Use, Release,
or Disclosure of Technical Data.

The Contractor asserts for itself, or the persons identified below, that the Government's rights to use, release, or disclose the following technical data should be restricted—

Technical Data to be Furnished	Basis for Assertion**	Asserted Rights Category***	Name of Person Asserting Restrictions****
Cosworth AE-1 UAV Engine Design (Assembly No AE8010)	Development exclusively at private expense	Limited Rights	Cosworth Ltd

*If the assertion is applicable to items, components, or processes developed at private expense, identify both the data and each such item, component, or process.

Generally, the development of an item, component, or process at private expense, either exclusively or partially, is the only basis for asserting restrictions on the Government's rights to use, release, or disclose technical data pertaining to such items, components, or processes. Indicate whether development was exclusively or partially at private expense. If development was not at private expense, enter the specific reason for asserting that the Government's rights should be restricted. *Enter asserted rights category (e.g., government purpose license rights from a prior contract, rights in SBIR data generated under another contract, limited or government purpose rights under this or a prior contract, or specifically negotiated licenses).

****Corporation, individual, or other person, as appropriate.

Date

JUNE 4th 2007

Printed Name and Title

IAN E BUSCO

VICE PRESIDENT

Signature



(End of identification and assertion)