# AWARD/CONTRACT

| | | | |
|---|---|---|---|
| 1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) | | RATING NONE | PAGE 1 OF PAGES 30 |
| 2. CONTRACT (Proc. Inst. Ident.) NO. HR0011-10-C-0126 | 3. EFFECTIVE DATE 23 Sep 2010 | 4. REQUISITION/PURCHASE REQUEST/PROJECT NO. 2278/00 | |

| | | | |
|---|---|---|---|
| 5. ISSUED BY | CODE HR0011 | 6. ADMINISTERED BY (If other than Item 5) | CODE S2206A |
| DARPA<br>CMO<br>ATTN: ROBIN SWATLOSKI<br>3701 N FAIRFAX DR<br>ARLINGTON VA 22203-1714 | | DCMA BOSTON<br>495 SUMMER STREET<br>BOSTON MA 02210-2138 | |

| | | |
|---|---|---|
| 7. NAME AND ADDRESS OF CONTRACTOR (No., street, city, county, state and zip code)<br>QINETIQ NORTH AMERICA OPERATIONS LLC<br>350 SECOND AVE<br>WALTHAM MA 02451-1104 | 8. DELIVERY<br>[ ] FOB ORIGIN [X] OTHER (See below)<br>9. DISCOUNT FOR PROMPT PAYMENT | |
| | 10. SUBMIT INVOICES 2 (4 copies unless otherwise specified) TO THE ADDRESS SHOWN IN: | ITEM Section G |
| CODE 5B2G7 FACILITY CODE | | |

| | | | |
|---|---|---|---|
| 11. SHIP TO/MARK FOR | CODE HR0011 | 12. PAYMENT WILL BE MADE BY | CODE HQ0337 |
| DARPA<br>LARRY STOTTS<br>STRATEGIC TECHNOLOGY OFFICE<br>3701 NORTH FAIRFAX DRIVE<br>ARLINGTON VA 22203-1714 | | DFAS COLUMBUS CENTER<br>NORTH ENTITLEMENT OPERATIONS<br>P.O. BOX 182266<br>COLUMBUS OH 43218-2266 | |

| | |
|---|---|
| 13. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION:<br>[ ] 10 U.S.C. 2304(c)( ) [ ] 41 U.S.C. 253(c)( ) | 14. ACCOUNTING AND APPROPRIATION DATA<br>See Schedule |

| 15A. ITEM NO. | 15B. SUPPLIES/ SERVICES | 15C. QUANTITY | 15D. UNIT | 15E. UNIT PRICE | 15F. AMOUNT |
|---|---|---|---|---|---|
| | SEE SCHEDULE | | | | |
| | | | | 15G. TOTAL AMOUNT OF CONTRACT | $31,753,672.00 |

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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 1 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) [redacted] | 20A. NAME OF CONTRACTING OFFICER<br>Robin M. Swatloski, Contracting Officer<br>TEL: 571-218-4542 EMAIL: Robin.Swatloski@darpa.mil |
| 19B. NAME OF CONTRACTOR [redacted] | 19C. DATE SIGNED 9/22/10 |
| 20B. UNITED STATES OF AMERICA<br>BY [redacted]<br>(Signature of Contracting Officer) | 20C. DATE SIGNED 9/23/2010 |

Previous edition is unusable

STANDARD FORM 26 (REV. 4/2008)
Prescribed by GSA
FAR (48 CFR) 53.214(a)

Section B - Supplies or Services and Prices

| ITEM NO | SUPPLIES/SERVICES | ESTIMATED COST | FIXED FEE | TOTAL EST. COST PLUS FIXED FEE |
|---|---|---|---|---|
| 0001 | | (b)(4) | | $31,753,672.00 |
| | TRITON - Design, Fab & Integration<br>CPFF<br>The contractor shall furnish the necessary personnel, material, facilities and other services as may be required to perform the work in accordance with the contract and Attachment 1, Statement of Work, from contractor's proposal entitled "Tactical Relay Information Network (TRITON) Program" dated 30 APR 2010 and the Program Metrics, Attachment 2. Contractor shall also supply the Deliverables identified in Attachment 3.<br>FOB: Destination<br>AO No. Z278/00 | | | $31,753,672.00 |

| ITEM NO | SUPPLIES/SERVICES | ESTIMATED COST | FIXED FEE | TOTAL EST. COST PLUS FIXED FEE |
|---|---|---|---|---|
| 000101 | | $0.00 | $0.00 | $0.00 |
| | Funding for CLIN 0001<br>CPFF<br>FOB: Destination<br>AO No. Z278/00 | | | $0.00 |
| | ACRN AA | | | $7,100,000.00 |

| ITEM NO | SUPPLIES/SERVICES | ESTIMATED COST | FIXED FEE | TOTAL EST. COST PLUS FIXED FEE |
|---|---|---|---|---|
| 0002 | | [redacted] | | $4,583,606.00 |
| OPTION | TRITON Phase 2 - Installation & Checkout<br>CPFF<br>The contractor shall furnish the necessary personnel, material, facilities and other services as may be required to perform the Phase 2 work in accordance with the contract and Attachment 1, Statement of Work, from contractor's proposal entitled "Tactical Relay Information Network (TRITON) Program" dated 30 APR 2010 and the Program Metrics, Attachment 2. Contractor Shall also supply the Deliverables identifed in Attachment 3.<br>FOB: Destination<br>AO No. Z278/00 | | | $4,583,606.00 |

| ITEM NO | SUPPLIES/SERVICES | ESTIMATED COST | FIXED FEE | TOTAL EST. COST PLUS FIXED FEE |
|---|---|---|---|---|
| 0003 | | [redacted] | | $2,298,824.00 |
| OPTION | TRITON Phase 3 - Field Trials & Demos<br>CPFF<br>The contractor shall furnish the necessary personnel, material, facilities and other services as may be required to perform the Phase 3 work in accordance with the contract and Attachment 1, Statement of Work, from contractor's proposal entitled "Tactical Relay Information Network (TRITON) Program" dated 30 APR 2010 and the Program Metrics, Attachment 2. Contractor Shall also supply the Deliverables identifed in Attachment 3.<br>FOB: Destination<br>AO No. Z278/00 | | | $2,298,824.00 |

Section C - Descriptions and Specifications

CLAUSES INCORPORATED BY FULL TEXT

C-1 Scope of Work

(a) The Contractor shall furnish the necessary personnel, materials, facilities, and other services as may be required to perform Contract Line Item (CLIN) 0001, and upon exercise, the Option CLINs , in accordance with the contract and contract attachments attached hereto. The work and services to be performed hereunder shall be subject to the requirements and standards contained in the contractor's proposal entitled "Tactical Relay Information Network (TRITON) Program" dated 30 APR 2010, copies of which are in the possession of both parties.

(b) In the event of an inconsistency between the provisions of this contract and the Contractor's proposal, the inconsistency shall be resolved by giving precedence in the following order: (1) the contract, (2) the attachments to the contract, and then (3) the Contractor's proposal.
(end of clause)

C-2 Reports and Other Deliverables

(a) The Contractor shall submit the following reports and other deliverables in accordance with the delivery schedule set forth in Section F. Reports and other deliverables shall be submitted in writing, as defined in FAR 2.101, or as specified below:

(1) R&D STATUS REPORT (Monthly)*
This brief narrative, not to exceed five pages in length, shall contain the following:

(i) For first report only; the date work actually started.
(ii) Description of progress during the reporting period, supported by reasons for any change in approach reported previously
(iii) Planned activities and milestones for the next reporting period.
(iv) Description of any major items of experimental or special equipment purchased or constructed during the reporting period.
(v) Notification of any changes in key personnel associated with the contract during the reporting period.
(vi) Summary of substantive information derived from noteworthy trips, meetings, and special conferences held in connection with the contract during the reporting period.
(vii) Summary of all problems or areas of concern.
(viii) Related accomplishments since last report.

*NOTE: In accordance with DFARs 252.227-7013(e)(iii), the Contractor (Prime and Subcontractor) shall notify the Government, via the monthly Status Report, of any data deliverables which will be furnished to the Government with less than Unlimited Rights that are in addition to those stipulated at H-16 of the Contract.

(2) Financial Reporting (Monthly)
Summary of QinetiQ and subcontractor program financial status delivered on the 20th day of each month including the following information: (i) Current contract value and period of performance (ii) Funding received to date (iii) Cumulative and monthly reporting at minimum level 2 WBS (but at the appropriate level each month to provide insight to evolving program risks) of the budgeted expenditures for the WBS element, the actual expenditures for the WBS element, the percentage of completion of the WBS element, and the final cost at completion of the WBS element (iv) Discussion of schedule and cost variances along

with plans and progress towards mitigating their impact on overall program performance (v) Delivery of financial reporting will be made only to (a), (b) and (f) addressees in Section F-3.

(3) FINAL REPORT
This report shall document the results of the complete effort and should be delivered at the completion of the contract. If the Government chooses to exercise the options under this contract, the due date for the final report is extended accordingly. Title pages shall include a disclaimer worded substantially as follows:

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

The Final Technical Report summary shall include:

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

(4) All Reports
(a) Reports delivered by the Contractor in the performance of the contract shall be considered "Technical Data" as defined in Section I contract clauses entitled "Rights in Technical Data – Noncommercial Items" and "Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation."

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

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

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

> Sponsored by
> Defense Advanced Research Projects Agency
> Strategic Technology Office (STO)
> Program: "Tactical Relay Information Network (TRITON)"
> ARPA Order No. Z278/00, Program Code: 0X20
> Issued by DARPA/CMO under Contract No. HR0011-10-C-0126

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

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

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

(5) ADDITIONAL DATA DELIVERABLES

The Contractor shall also deliver those items listed in the Contract Attachment (1) - Statement of Work and Attachment (3), Deliverables, as applicable. The Contractor shall adhere to the schedule, as applicable, in the Statement of Work. Briefing materials (hard and softcopy) for all briefings given to the Government shall be provided in the Contractor's format.

**Note to contractor:** In accordance with the applicable Data Rights clauses(s), all proprietary information within the data deliverables shall be clearly identified/marked as such for each such occurrence (use of footnotes, or similar forms of reference, for purposes of such identification is encouraged).

(end of clause)

C-3 Classified Deliverables

The Contractor shall follow the security guidance provided and the contract's DoD Contract Security Classification DD Form 254 (Attachment No. 4) when preparing and submitting classified deliverables.
(end of clause)

Section D - Packaging and Marking

## CLAUSES INCORPORATED BY FULL TEXT

D-1 Packaging and Marking

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

Section E - Inspection and Acceptance

## INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at destination by the Contracting Officer's Representative identified herein at Section G. Use of DD Form 250 is required for submission of the Final Report.

## 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 2008 |

Section F - Deliveries or Performance

## DELIVERY INFORMATION

| CLIN | DELIVERY DATE | QUANTITY | SHIP TO ADDRESS | UIC |
|---|---|---|---|---|
| 0001 | 14 mths. ADC | | DARPA<br>LARRY STOTTS<br>STRATEGIC TECHNOLOGY OFFICE<br>3701 NORTH FAIRFAX DRIVE<br>ARLINGTON VA 22203-1714<br>571-218-4346<br>FOB: Destination | HR0011 |
| 000101 | 14 mths. ADC | | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | HR0011 |
| 0002 | 7 mths. ADC | | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | HR0011 |
| 0003 | 5 mths. ADC | | (SAME AS PREVIOUS LOCATION)<br>FOB: Destination | HR0011 |

CLAUSES INCORPORATED BY REFERENCE

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

CLAUSES INCORPORATED BY FULL TEXT

F-1 Term of Contract

(a) The term of the contract commences on the effective date of the contract and continues for fourteen (14) months unless the government exercises Option 1 or Option 2 set forth below.

(b) The period of performance for Option 1, as set forth in CLINs 0002, shall be from the effective date of the option exercise and continue through seven (7) months thereafter; provided that the final date by which the government may exercise Option 1 is thirty (30) days prior to the end of the contract.

(c) The period of performance for Option 2, as set forth in CLINs 0003, shall be from the effective date of the option exercise and continue through five (5) months thereafter; provided that the final date by which the government may exercise Option 2 is thirty (30) days prior to the end of of the contract.
(end of clause)

F-2 Reports and Other Deliverables

Delivery of all reports and other deliverables shall be made to the addressees specified in Attachment 3, Deliverables.
(end of clause)

F-3 Report Distribution

(a) DARPA/STO
Attn: Dr. Larry Stotts
3701 North Fairfax Drive
Arlington, VA 22203-1714
Email: Larry.Stotts@darpa.mil
(one copy each report)

(b) SPAWAR Systems Center - Pacific
Attn: Peter Poirier, Contracting Officer's Representative
53560 Hull Street, Code 55430
San Diego, CA 92152-5001
Phone: (619) 553-6144
Fax: (619) 553-2521
Email: peter.poirier@navy.mil
(one copy each report)

(c) DARPA/STO
Attn: ADPM – STO
3701 North Fairfax Drive
Arlington, VA 22203-1714
Phone: (703) 696-5277
Fax: (703) 807-0968
Email: adpm-sto@darpa.mil
(one copy each report)

(d) DARPA/Research Services
3701 North Fairfax Drive
Arlington, VA 22203-1714
Email: ResearchServices@darpa.mil
(one copy of the Final Technical Report)

(e) Defense Technical Information Center

(1) Email: TR@dtic.mil
(one electronic copy of the Final Technical Report, if unclassified)

OR

(2) Attn: DTIC-BCS
8725 John J. Kingman Road, Suite 0944
Fort Belvoir, VA 22060-0944
(two hard copies of the Final Technical Report if unclassified)

(f) DARPA/CMO
Attn: Robin Swatloski, Contracting Officer
3701 North Fairfax Drive

Arlington, VA 22203-1714
Phone: (571) 218-4542
Fax: (703) 741-7801
Email: Robin.Swatloski@darpa.mil
(one copy each report)

Note 1: In accordance with Section C-3, the above distribution instruction is for **UNCLASSIFIED** deliverables only. See Section C-3 for distribution instruction for classified deliverables.

Note 2: For the Final Technical Report(s), the contractor must also comply with the distribution requirements of DFARS 252.235-7011, as applicable.
(end of clause)

F-4 Notice Regarding Late Delivery

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

Section G - Contract Administration Data

## ACCOUNTING AND APPROPRIATION DATA

AA: 9700400 1320 Z278 P0X20 2525 DPAC 0 5505 S12136 63766E
AMOUNT: $7,100,000.00
CIN 00000000000000000000000000000000: $7,100,000.00

## CLAUSES INCORPORATED BY FULL TEXT

G-1 Procuring Office Representative

The Procuring Office Representative is Robin Swatloski, DARPA/CMO, 3701 North Fairfax Drive, Arlington, VA 22203-1714, telephone: 571-218-4542, e-mail: Robin.Swatloski@darpa.mil.
(end of clause)

G-2 Electronic Submission of Payment Requests

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

(1) Vendors that have never used WAWF shall follow the directions in the WAWF Vendor Getting Started Guide available at the following website: http://www.dfas.mil/contractorpay/electroniccommerce/wideareaworkflow.html. This website also contains links for Vendor training and practice. Additional support can be obtained by calling WAWF Customer Service at 866-618-5988.

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

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

| WAWF Invoice Type: | Cost Voucher |
|---|---|
| Issuing Office DoDAAC | HR0011 |
| Admin Offfice DoDAAC | S2206A |
| Service Approver DoDAAC | S2206A |
| DCAA Office DoDAAC | HAA621 |
| Paying Office DoDAAC | HQ0337 |

(c) Cost Vouchers from Contractors approved by DCAA for direct billing will be directly routed to DFAS. Cost Vouchers from Contractors not approved for direct billing will be routed to DCAA for approval before the Cost Voucher is routed to DFAS. All Final Cost Voucher submissions will be routed to the Service Approver for approval. The DCAA office for this award is:

DCAA Northern New England Branch Office - 02161
DoDAAC: HAA621

110 Hartwell Avenue, Suite 320
Lexington, MA 02421-3124

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

| Name | E-mail | Phone | Role |
|---|---|---|---|
| Peter Poirier | peter.poirier@navy.mil | 619-553-6144 | COR |
| Robin Swatloski | Robin.Swatloski@darpa.mil | 571-218-4542 | Contracting Officer |

(end of clause)

G-3 Delegation of Authority for Contract Administration

Ann M. Fleming, ACO, DCMA Boston, 495 Summer Street, Boston, MA 02210-2138, email: Ann.Fleming@dcma.mil , phone: 617-753-4164, is hereby designated as the Contracting Officer's authorized representative for administering this contract in accordance with current directives.
(end of clause)

G-4 Contracting Officer's Representative (COR)

(a) Performance of work under this contract shall be subject to the technical direction of Peter Poirier, SPAWAR Systems Center – Pacific, Code 55430, 53560 Hull Street, San Diego, CA 92152-5001, telephone (619) 553-6144, e-mail: peter.poirier@navy.mil . Such technical direction includes those instructions to the Contractor necessary to accomplish the Statement of Work. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The COR does not have the authority to alter the Contractor's obligations or to change the specifications of the contract.

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

(1) Constitutes additional work outside the scope of work;

(2) Constitutes a change as defined in Section I contract clause entitled "Changes";

(3) In any manner causes an increase or decrease in the total estimated cost or the time required for contract performance;

(4) Changes any of the stated terms, conditions, or specifications of the contract; or

(5) Is contrary to the provisions of the attached Appointment as Contracting Officer's Representative (COR) (see Attachment 5).
(end of clause)

G-5 Payment Instructions for Multiple Accounting Classification Citations

If there is more than one ACRN within a contract line item, the payment office will make payment using the oldest fiscal year appropriations first, exhausting all funds in the previous fiscal year before disbursing from the next fiscal year. In the event there is more than one ACRN associated with the same fiscal year, the payment amount shall be disbursed from each ACRN within a fiscal year in the same proportion as the amount of funding obligated for each ACRN within the fiscal year.
(end of clause)

G-6 Incremental Funding

This contract shall be subject to incremental funding with $7,100,000.00 presently made available for performance under this contract. It is estimated that the funds presently available are sufficient to permit the Contractor's performance through November 30, 2010. Except in accordance with the Section I clause FAR 52.232-22, "Limitation of Funds," no legal liability of the part of the Government for payment of any money in excess of $7,100,000.00 shall arise unless and until additional funds are made available by the Contracting Officer through a modification to this contract.
(end of clause)

G-7 Payment of Cost and Fee

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

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

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

Section H - Special Contract Requirements

CLAUSES INCORPORATED BY FULL TEXT

H-1 Contracting Officer

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

H-2 Type of Contract

This is a Cost Plus Fixed Fee (CPFF) completion contract.
(end of clause)

H-3 Public Release or Dissemination of Information

(a) At this time, DARPA expects the work performed under this contract will **NOT** be fundamental research, and it is, therefore, subject to the following publication restrictions:

There shall be no dissemination or publication, except within and between the Contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval, which will be communicated to the Contractor by email through the DARPA Public Relations Center (PRC) ) at PRC@darpa.mil. All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the Contractor. These restrictions must be flowed down to all subcontractors. Any publications shall incorporate an Acknowledgement of Support and Disclaimer in accordance with DFARs 252.235-7010.

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

H-4 Key Personnel

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

(1)

| Name | Title |
|---|---|
| [redacted] | |

(2) Personnel identified in the proposal as key individuals to be assigned for participation in the performance of the contract;

(3) Personnel whose resumes were submitted with the proposal; or

(4) Individuals who are designated as key personnel by agreement of the Government and the Contractor during negotiations.

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

H-5 Restrictions on Printing

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

H-6 Contractor Representations and Certifications

The Contractor's Representations and Certifications dated 21 SEP 2010 are incorporated herein by reference.
(end of clause)

H-7 Insurance Schedule

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

H-8 Travel

(a) Reimbursement for travel-related expenses shall be in accordance with the Contractor's approved travel policy. The Federal Travel Regulations, Joint Travel Regulations (JTR), and Standardized Regulations as stated in

FAR 31.205-46 will be used as a guide in determining reasonableness of per diem costs. Costs for travel shall be allowable subject to the provisions of FAR 31.205-46.

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

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

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

(d) All foreign travel shall be authorized and approved in advance, in writing, by the Contracting Officer. Request for such travel must be submitted to the Contracting Officer at least forty-five (45) days in advance of traveler's anticipated departure date, and shall include traveler's itinerary of United States Flag Air Carriers.
(end of clause)

H-9 Metric System

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

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

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

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

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

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

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

H-10 Consent to Subcontract

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

| NAME | TOTAL AMOUNT |
|---|---|
| (b)(4) | As Proposed |
| | As Proposed |
| | As Proposed |
| | As Proposed |
| | As Proposed |
| | As Proposed |

(b) Approval must be obtained from the Administrative Contracting Officer to increase the use or number of subcontractors from the level established in subparagraph (a).
(end of clause)

H-11 Small Business Subcontracting Plan and Goals

The Contractor's Small Business Subcontracting Plan, dated 26 MAR 2010, is incorporated herein and made a part of this contract by reference.
(end of clause)

H-12 Government Furnished Property/Facilities and Services

(a) In accordance with the Section I contract clause entitled "Government Property", the following property, facilities and/or services shall be provided for use in the performance of this contract.

| Need Date | QTY | PROPERTY NOMENCLATURE | DELIVERY TO |
|---|---|---|---|

SEE ATTACHMENT 6 FOR LISTING OF GFE.
(end of clause)

H-13 Contractor-Acquired Property (Special Test Equipment)

(a) The Contractor is authorized to acquire the following items of special test equipment which are needed to accomplish this contract:

| Items To Be Acquired | Estimated Cost |
|---|---|
| NONE AUTHORIZED AS OF THE EFFECTIVE DATE OF THIS CONTRACT. | |
| | Total Cost: |

(b) The costs incurred by the Contractor in acquiring the special test equipment listed in paragraph (a) above shall be considered allowable costs under the contract provided that the total net amount of the special test equipment does not exceed $_____. The Contractor shall have no obligation to acquire special test equipment and the Government shall have no obligation to reimburse any amount for special test equipment in excess of the amount set forth above unless the contract is amended to increase this amount.

(c) The special test equipment listed above shall be considered Government Property and shall be subject to the provisions of FAR 52.245-1, incorporated by reference in Section I.

(d) The Contractor shall not use Contractor-acquired property listed above for work other than that performed pursuant to this contract unless so authorized in writing by the Contracting Officer.
(end of clause)

H-14 Contractor-Acquired Property (Special Tooling)

(a) The Contractor is authorized to acquire the following items of special tooling which are needed to accomplish this contract:

| Items To Be Acquired | Estimated Cost |
|---|---|
| NONE AUTHORIZED AS OF THE EFFECTIVE DATE OF THIS CONTRACT. | |
| | Total Cost: |

(b) The costs incurred by the Contractor in acquiring the special tooling listed in paragraph (a) above shall be considered allowable costs under the contract provided that the total net amount of the special tooling does not exceed $____. The Contractor shall have no obligation to acquire special tooling and the Government shall have no obligation to reimburse any amount for special tooling in excess of the amount set forth above unless the contract is amended to increase this amount.

(c) The special tooling listed above shall be considered Government Property and shall be subject to the provisions of FAR 52.245-1, incorporated by reference in Section I.

(d) The Contractor shall not use Contractor-acquired property listed above for work other than that performed pursuant to this contract unless so authorized in writing by the Contracting Officer.
(end of clause)

H-15 Contractor Acquired Property (IT)

(a) Performance of this contract will require use of the information technology (IT) resources listed below, acquisition of which (or equivalent) is hereby authorized:

| ITEM | TOTAL AMOUNT |
|---|---|
| NONE AUTHORIZED AS OF THE EFFECTIVE DATE OF THIS CONTRACT. | |

(b) The costs incurred by the Contractor in acquiring the IT listed in paragraph (1.) above shall be considered allowable costs under the contract provided that the total net amount of the IT does not exceed $_____. The Contractor shall have no obligation to acquire IT and the Government shall have no obligation to reimburse any amount for IT in excess of the amount set forth above unless the contract is modified to increase this amount.

(c) The IT resources listed above shall be considered Government Property and shall be subject to the provisions of FAR 52.245-1, incorporated in Section I.

(d) The Contractor shall not use Contractor acquired property listed above for work other than that performed pursuant to this contract unless so authorized in writing by the Contracting Officer.

(end of clause)

H-16 Proprietary Technical Data and Computer Software

Any deliverable technical data or computer software developed or generated at private expense and considered to be proprietary by the Contractor or subcontractors shall be delivered in accordance with DFARS 252.227-7013 and 252.227-7014. A list of such data and/or software is incorporated into the contract as Attachment No. 7.
(end of clause)

H-17 Consultants

(a) The contractor is authorized to use the following consultants to the extent indicated:

| Name | Subject Matter Expert | Company | Total Amount |
|---|---|---|---|
| (b)(4) | | | As proposed |
| | | | As proposed |
| | | | As proposed |
| | | | As proposed |
| | | | As proposed |
| | | | As proposed |

(b) Approval must be obtained from the Administrative Contracting Officer to increase the use of consultants from the level estimated in subparagraph (a).
(end of clause)

H-18 Contractor Code of Business Ethics

The "agency Office of the Inspector General" referenced in FAR clause 52.203-13, "Contractor Code of Business Ethics" (DEC 2008) contained in Section I of this Contract, shall be the Department of Defense Office of the Inspector General (DoD OIG). Contact information is as follows:

Office of the Inspector General
United States Department of Defense
Investigative Policy and Oversight
Contract Disclosure Program
400 Army Navy Drive, Suite 1037
Arlington, VA 22202-4704
Toll Free Telephone: 866-429-8011
(end of clause)

H-19 Invention Disclosure and Reports

All written communications required for invention disclosures and reports shall be submitted to the Administrative Contracting Officer (ACO). All unclassified required reporting shall be accomplished using the i-Edison.gov reporting website (https://s-edison.info.nih.gov/iEdison/).
(end of clause)

H-20 Export Control Clause

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

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

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

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

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

(end of clause)

H-21 Technical Data – Withholding of Payment

(a) If technical data specified to be delivered under this contract, is not delivered within the time specified by this contract or is deficient upon delivery (including having restrictive markings not identified in the list described in the clause at 252.227-7013(e)(2) or 252.227-7018(e)(2) of this contract), the Contracting Officer may until such data is accepted by the Government, withhold payment to the Contractor in the amount of One Hundred Thousand Dollars ($100,000). Payments shall not be withheld nor any other action taken pursuant to this paragraph when the Contractor's failure to make timely delivery or to deliver such data without deficiencies arises out of causes beyond the control and without the fault or negligence of the Contractor.

(b) The withholding of any amount or subsequent payment to the Contractor shall not be construed as a waiver of any rights accruing to the Government under this contract.

(end of clause)

H-22 Security

Military Security requirements in the performance of this contract shall be maintained in accordance with the security provisions required by the DD Form 254, Contract Security Classification Specification, Attachment No. 4 hereto. The highest classification involved in the performance of this effort is SECRET. The contract is unclassified.

(end of clause)

H-23 Pre-Contract Costs

The extent of allowability of costs incurred by the Contractor from August 11, 2010 to the effective date of the contract shall be governed by the advance agreement retained in the contract file and is hereby incorporated by reference and attached hereto as Attachment 8.
(end of clause)

Section I - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

| | | |
|---|---|---|
| 52.202-1 | Definitions | JUL 2004 |
| 52.203-3 | Gratuities | APR 1984 |
| 52.203-5 | Covenant Against Contingent Fees | APR 1984 |
| 52.203-6 | Restrictions On Subcontractor Sales To The Government | SEP 2006 |
| 52.203-7 | Anti-Kickback Procedures | JUL 1995 |
| 52.203-8 | Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity | JAN 1997 |
| 52.203-10 | Price Or Fee Adjustment For Illegal Or Improper Activity | JAN 1997 |
| 52.203-12 | Limitation On Payments To Influence Certain Federal Transactions | SEP 2007 |
| 52.203-13 | Contractor Code of Business Ethics and Conduct | APR 2010 |
| 52.203-14 | Display of Hotline Poster(s) | DEC 2007 |
| 52.204-2 | Security Requirements | AUG 1996 |
| 52.204-4 | Printed or Copied Double-Sided on Recycled Paper | AUG 2000 |
| 52.204-7 | Central Contractor Registration | APR 2008 |
| 52.209-6 | Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment | SEP 2006 |
| 52.211-5 | Material Requirements | AUG 2000 |
| 52.215-2 | Audit and Records--Negotiation | MAR 2009 |
| 52.215-8 | Order of Precedence--Uniform Contract Format | OCT 1997 |
| 52.215-9 | Changes or Additions to Make-or-Buy Program | OCT 1997 |
| 52.215-10 | Price Reduction for Defective Cost or Pricing Data | OCT 1997 |
| 52.215-11 | Price Reduction for Defective Cost or Pricing Data--Modifications | OCT 1997 |
| 52.215-12 | Subcontractor Cost or Pricing Data | OCT 1997 |
| 52.215-13 | Subcontractor Cost or Pricing Data--Modifications | 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 |
| 52.215-21 | Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data--Modifications | OCT 1997 |
| 52.216-7 | Allowable Cost And Payment | DEC 2002 |
| 52.216-8 | Fixed Fee | MAR 1997 |
| 52.219-4 | Notice of Price Evaluation Preference for HUBZone Small Business Concerns | JUL 2005 |
| 52.219-8 | Utilization of Small Business Concerns | MAY 2004 |
| 52.219-8 (DEV) | Utilization of Small Business Concerns (DEVIATION) | MAY 2004 |
| 52.219-9 Alt II | Small Business Subcontracting Plan (Jul 2010) Alternate II | OCT 2001 |
| 52.219-16 | Liquidated Damages-Subcontracting Plan | JAN 1999 |
| 52.219-28 | Post-Award Small Business Program Rerepresentation | APR 2009 |
| 52.222-3 | Convict Labor | JUN 2003 |
| 52.222-21 | Prohibition Of Segregated Facilities | FEB 1999 |
| 52.222-26 | Equal Opportunity | MAR 2007 |
| 52.222-35 | Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans | SEP 2006 |

| | | |
|---|---|---|
| 52.222-36 | Affirmative Action For Workers With Disabilities | JUN 1998 |
| 52.222-37 | Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans | SEP 2006 |
| 52.222-50 | Combating Trafficking in Persons | FEB 2009 |
| 52.222-54 | Employment Eligibility Verification | JAN 2009 |
| 52.223-6 | Drug-Free Workplace | MAY 2001 |
| 52.223-13 | Certification of Toxic Chemical Release Reporting | AUG 2003 |
| 52.223-14 | Toxic Chemical Release Reporting | AUG 2003 |
| 52.225-13 | Restrictions on Certain Foreign Purchases | JUN 2008 |
| 52.226-1 | Utilization Of Indian Organizations And Indian-Owned Economic Enterprises | JUN 2000 |
| 52.227-1 Alt I | Authorization And Consent (Dec 2007) - Alternate I | APR 1984 |
| 52.227-2 | Notice And Assistance Regarding Patent And Copyright Infringement | DEC 2007 |
| 52.228-7 | Insurance--Liability To Third Persons | MAR 1996 |
| 52.230-2 | Cost Accounting Standards | OCT 2008 |
| 52.230-4 | Disclosure and Consistency of Cost Accounting Practices for Contracts Awarded to Foreign Concerns | JUN 2010 |
| 52.230-6 | Administration of Cost Accounting Standards | JUN 2010 |
| 52.232-9 | Limitation On Withholding Of Payments | APR 1984 |
| 52.232-17 | Interest | OCT 2008 |
| 52.232-20 | Limitation Of Cost | APR 1984 |
| 52.232-22 | Limitation Of Funds | APR 1984 |
| 52.232-23 Alt I | Assignment of Claims (Jan 1986) - Alternate I | APR 1984 |
| 52.232-25 | Prompt Payment | OCT 2008 |
| 52.232-33 | Payment by Electronic Funds Transfer--Central Contractor Registration | OCT 2003 |
| 52.233-1 | Disputes | JUL 2002 |
| 52.233-2 | Service Of Protest | SEP 2006 |
| 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 |
| 52.243-2 Alt V | Changes--Cost-Reimbursement (Aug 1987) - Alternate V | APR 1984 |
| 52.244-2 | Subcontracts | JUN 2007 |
| 52.244-5 | Competition In Subcontracting | DEC 1996 |
| 52.244-6 | Subcontracts for Commercial Items | JUN 2010 |
| 52.245-1 (Dev) | Government Property (Deviation) | JUN 2007 |
| 52.245-9 | Use And Charges | JUN 2007 |
| 52.246-23 | Limitation Of Liability | FEB 1997 |
| 52.246-24 | Limitation Of Liability--High-Value Items | FEB 1997 |
| 52.246-25 | Limitation Of Liability--Services | FEB 1997 |
| 52.247-63 | Preference For U.S. Flag Air Carriers | JUN 2003 |
| 52.247-67 | Submission Of Transportation Documents For Audit | FEB 2006 |
| 52.249-6 | Termination (Cost Reimbursement) | MAY 2004 |
| 52.249-14 | Excusable Delays | APR 1984 |
| 52.253-1 | Computer Generated Forms | JAN 1991 |
| 252.201-7000 | Contracting Officer's Representative | DEC 1991 |
| 252.203-7000 | Requirements Relating to Compensation of Former DoD Officials | JAN 2009 |
| 252.203-7001 | Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies | DEC 2008 |

| | | |
|---|---|---|
| 252.203-7002 | Requirement to Inform Employees of Whistleblower Rights | JAN 2009 |
| 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 |
| 252.204-7005 | Oral Attestation of Security Responsibilities | NOV 2001 |
| 252.204-7006 | Billing Instructions | OCT 2005 |
| 252.204-7008 | Export-Controlled Items | APR 2010 |
| 252.205-7000 | Provision Of Information To Cooperative Agreement Holders | DEC 1991 |
| 252.209-7004 | Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country | DEC 2006 |
| 252.209-7005 | Reserve Officer Training Corps and Military Recruiting on Campus | JAN 2000 |
| 252.211-7000 | Acquisition Streamlining | DEC 1991 |
| 252.211-7003 | Item Identification and Valuation | AUG 2008 |
| 252.211-7007 | Reporting of Government-Furnished Equipment in the DoD Item Unique Identification (IUID) Registry | NOV 2008 |
| 252.215-7000 | Pricing Adjustments | DEC 1991 |
| 252.215-7002 | Cost Estimating System Requirements | DEC 2006 |
| 252.215-7004 | Excessive Pass-Through Charges | MAY 2008 |
| 252.219-7003 (Dev) | Small Business Subcontracting Plan (DoD Contracts) (Deviation) | APR 2007 |
| 252.222-7006 | Restrictions on the Use of Mandatory Arbitration Agreements | MAY 2010 |
| 252.223-7002 | Safety Precautions For Ammunition And Explosives | MAY 1994 |
| 252.223-7004 | Drug Free Work Force | SEP 1988 |
| 252.225-7001 | Buy American Act And Balance Of Payments Program | JAN 2009 |
| 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 | JUN 2010 |
| 252.225-7013 | Duty-Free Entry | DEC 2009 |
| 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 |
| 252.227-7000 | Non-estoppel | OCT 1966 |
| 252.227-7013 | Rights in Technical Data--Noncommercial Items | NOV 1995 |
| 252.227-7014 | Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation | JUN 1995 |
| 252.227-7015 | Technical Data--Commercial Items | NOV 1995 |
| 252.227-7016 | Rights in Bid or Proposal Information | JUN 1995 |
| 252.227-7019 | Validation of Asserted Restrictions--Computer Software | JUN 1995 |
| 252.227-7027 | Deferred Ordering Of Technical Data Or Computer Software | APR 1988 |
| 252.227-7030 | Technical Data--Withholding Of Payment | MAR 2000 |
| 252.227-7037 | Validation of Restrictive Markings on Technical Data | SEP 1999 |
| 252.227-7038 | Patent Rights--Ownership by the Contractor (Large Business) | DEC 2007 |
| 252.227-7039 | Patents--Reporting Of Subject Inventions | APR 1990 |
| 252.229-7011 | Reporting of Foreign Taxes--U.S. Assistance Programs | SEP 2005 |
| 252.231-7000 | Supplemental Cost Principles | DEC 1991 |
| 252.232-7003 | Electronic Submission of Payment Requests and Receiving Reports | MAR 2008 |
| 252.232-7010 | Levies on Contract Payments | DEC 2006 |
| 252.234-7001 | Notice of Earned Value Management System | APR 2008 |
| 252.235-7011 | Final Scientific or Technical Report | NOV 2004 |
| 252.239-7001 | Information Assurance Contractor Training and Certification | JAN 2008 |

| | | |
|---|---|---|
| 252.242-7004 | Material Management And Accounting System | JUL 2009 |
| 252.243-7001 | Pricing Of Contract Modifications | DEC 1991 |
| 252.243-7002 | Requests for Equitable Adjustment | MAR 1998 |
| 252.244-7000 | Subcontracts for Commercial Items and Commercial Components (DoD Contracts) | AUG 2009 |
| 252.247-7023 | Transportation of Supplies by Sea | MAY 2002 |
| 252.247-7024 | Notification Of Transportation Of Supplies By Sea | MAR 2000 |

CLAUSES INCORPORATED BY FULL TEXT

52.217-9 OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 2000)

(a) The Government may extend the term of this contract by written notice to the Contractor within the term of this contract; provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least thirty (30) days before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option clause.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed Twenty Six (26) months.
(End of clause)

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

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

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

"Transportation is for the Defense Advanced Research Project Agency (DARPA) and the actual total transportation charges paid to the carrier(s) by the consignor or consignee are assignable to, and shall be reimbursed by, the Government."

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

"Transportation is for the Defense Advanced Research Project Agency (DARPA) and the actual total transportation charges paid to the carrier(s) by the consignor or consignee shall be reimbursed by the Government, pursuant to cost-reimbursement contract no. HR0011-10-C-0126. This may be confirmed by contacting the Administrative Contracting Officer at DCMA Boston."

(End of clause)

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://farsite.hill.af.mil

(End of clause)

52.252-6 AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)

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

(b) The use in this solicitation or contract of any Defense Federal Acquisition Regulation (48 CFR Part 201 et seq.) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation. (End of clause)

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

(a) The Contractor shall include an acknowledgment of the Government's support in the publication of any material based on or developed under this contract, stated in the following terms: This material is based upon work supported by the Defense Advanced Research Project Agency under Contract No. HR0011-10-C-0126.

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

Section J - List of Documents, Exhibits and Other Attachments

## Exhibit/Attachment Table of Contents

| DOCUMENT TYPE | DESCRIPTION |
|---|---|
| Attachment 1 | Statement of Work (SOW) |
| Attachment 2 | Program Metrics |
| Attachment 3 | Deliverables |
| Attachment 4 | DD Form 254 |
| Attachment 5 | COR |
| Attachment 6 | GFE |
| Attachment 7 | Asserted Rights |
| Attachment 8 | Pre-Contract Cost Agreement |

# TRITON Program Prime Contract Statement of Work
# Contract No.: HR0011-10-C-0126
# Date: September 22, 2010

## 1.0 INTRODUCTION

This Statement of Work (SOW) sets forth the task objectives, dates, approach, responsibility, completion criteria and deliverables necessary for QinetiQ North America, Inc. (QNA) to execute the DARPA TRITON Program. Our SOW includes all the following work areas linked to our Master Work Breakdown Structure (WBS, see Section 3.0) and Master TRITON Program Schedule.

## 2.0 BACKGROUND

Current tactical submarine communications do not provide connectivity at speed and depth. TRITON is intended to provide communication connectivity at all speeds and operationally useful submarine depths, at basic data rates, for the demonstration tests onboard a 688 class submarine. The schedule for the TRITON program is aggressive and delivery of the required laser module hardware must be completed under the important constraint of meeting this schedule.

The TRITON program paves the way for enabling operating submarines to play a significant role in joint operations, operating covertly in littoral areas with real time intelligence and targeting information, providing simultaneous two-way (duplex) data transfer. TRITON uses laser optical links in the maritime environment to communicate to aircraft platforms, which will relay these messages to Fleet assets including manned aircraft, ships, and shore.

## 3.0 TECHNICAL REQUIREMENTS

The tasks in our SOW include all work packages needed to plan and carry out the TRITON program. The overriding objective is to successfully develop and operate the TRITON System in an Anti-Submarine Warfare Exercise in late Government FY 2012 or the first half of FY 2013. To do this, QNA must develop two complete submarine laser communication systems (blue laser transceivers), integrate these transceivers on their respective aircraft and submarine platforms, conduct engineering and technical testing at the Southern California Offshore RangE (SCORE) to validate their performance, and then participate in a Navy Fleet Exercise located on the Southern California (SOCAL) ASW Range operating area around San Clemente Island, CA.

Following the Fleet evaluation, the TRITON transceiver systems shall be de-installed from their respective platforms and stored. A Final Report is produced that captures the program details and TRITON System performance at sea with quantitative performance measures. It is the goal of the TRITON program to demonstrate the transceivers at Technical Readiness Level 6 (TRL 6).

Table 1 provides WBS task descriptions by element and program phase, along with responsibility for the work packages and a listing of data deliverables by element and phase. Section 4.0 of the SOW provides a full description of each task objective(s), approach, schedule, exit criteria, responsibility and data deliverables. Schedule dates are from the updated Master Program Schedule.

# Table 1. TRITON Master WBS Roll-up and Work Scope by Phase With Responsibility Assignments and Data Deliverables

| Master WBS | Task Descriptions | Primary Responsibility | Deliverables |
|---|---|---|---|
| TRITON PHASE 1 | | | |
| 1 | **Develop Uplink and Downlink Laser Modules at** [redacted] | [redacted] | |
| 1.1 | Provide PDR Package | | PDR Package |
| 1.2 | Provide CDR Package | | CDR Package |
| 1.3 | Provide TRR Package | | TRR Package |
| 1.4 | Develop Airborne Laser Module | | Acceptance Test Plan and Procedure, Test Report |
| 1.5 | Develop Submarine Laser Module | | Acceptance Test Plan and Procedure, Test Report |
| 1.6 | Perform Risk Analysis Plan | | Risk Analysis Document |
| 1.7 | Provide Laser Module Operating Instructions, Uplink and Downlink | | Operating Instructions |
| 1.8 | Provide Laser Module Status Reports, & Quarterly Reviews | | Monthly and Quarterly Reports |
| 2 | **Develop TRITON System Transmitters at QNA** | QNA TSG | |
| 2.1 | Conduct Program Management of the TRITON Program | QNA TSG | |
| 2.1.1 | Perform System Engineering Trades | QNA TSG | Concept of Operations |
| 2.1.2 | Develop TRITON Integration Design Approach | QNA TSG | Requirements Specification, Systems Specification |
| 2.1.3 | Develop PDR Package | QNA TSG | Preliminary Design Report |
| 2.1.4 | Develop CDR Package | QNA TSG | Critical Design Report |
| 2.1.5 | Develop TRR Package | QNA TSG | Technical Readiness Report |
| 2.1.6 | Provide QNA System Level Status Reports and Quarterly Reviews | QNA TSG | Monthly and Quarterly Reports |
| 2.1.7 | Publish the Technical and Management Work Plan | QNA TSG | Technical and Management Work Plan |
| 2.1.8 | Conduct an Engineering Risk Evaluation | QNA TSG | Risk Analysis Report and Mgmt Plan |
| 2.1.9 | Provide Semi-Annual Project Summary Reports (WAR) | QNA TSG | Semi-Annual Project Summary Reports |
| 2.1.10 | Conduct System Study No. 1 for SLC Post-TRITON System Employment | QNA TSG | SLC Study Report No. 1 |
| 2.1.11 | Conduct System Study No. 2 for SLC Post TRITON System Employment | QNA TSG | SLC Study Report No. 2 |
| 2.1.12 | Provide Programmatic Oversight | QNA TSG | |
| 2.1.13 | Provide Financial Review and EVMS Tracking, Budgetary Analysis | QNA TSG | |
| 2.1.14 | Provide Quoting and Purchasing Support; and Receiving, Shipping and Kitting | QNA TSG | |
| 2.1.15 | Provide Quality Engineering Support | QNA TSG | |
| 2.2 | ADRC Communication Signal Processor Development | QNA TSG | Engineering Test Plan and Procedures, Test Report |
| 2.3 | Develop the TRITON Transmitter Systems | QNA TSG | Engineering Test Plan and Procedures, Test Report |
| 2.3.1 | Develop Airborne Downlink Transmitter | QNA TSG | |
| 2.3.2 | Develop Submarine Uplink Transmitter System | QNA TSG | |
| 3 | **Develop Cesium Atomic Line Filters at** [redacted] | [redacted] | |
| 3.1 | Provide PDR Package | | PDR Package |
| 3.2 | Provide CDR Package | | CDR Package |
| 3.3 | Provide TRR Package | | TRR Package |
| 3.4 | Develop Airborne ALF Filter | | |
| 3.5 | Develop Submarine ALF Filter | | |
| 3.6 | Provide Cs ALF Status Reports and Quarterly Reviews | | Monthly and Quarterly Reports |
| 4 | **Develop TRITON System Receivers at QNA** | QNA TSG | |
| 4.1 | Develop Airborne Uplink Receiver | QNA TSG | Engineering Test Plan and Procedures, Test Report |
| 4.2 | Develop Gimbal Design Changes | QNA TSG | Aircraft Transceiver Operating Manual |
| 4.3 | Integrate Airborne Transceiver in the Gimbals and Test in the Lab | QNA TSG | Acceptance Test Plan and Procedure, Test Report |
| 4.4 | Develop the Submarine Downlink Receiver | QNA TSG | Engineering Test Plan and Procedures, Test Report |
| 4.5 | Integrate Complete Sub Transceiver in the Lab and Test | QNA TSG | Acceptance Test Plan and Procedure, Test Report; Submarine Transceiver Operating Manual |
| 4.6 | Develop the LPI Receiver | QNA TSG | Engineering Test Plan and Procedures, Test Report |
| 5 | **Final TRITON System Checkout at QNA** | QNA TSG | |
| 5.1 | Perform Integrated Communication Tests in the Lab (Uplink/Downlink) | QNA TSG | Engineering Test Plan and Procedures, Test Report |
| 5.2 | Perform Final System Calibrations Prior to Platform Integration | QNA TSG | Calibration Test Report |
| 5.3 | Conduct End Phase 1. System TRR and Demonstrate TRITON System | QNA TSG | Acceptance Test Plan and Procedure, Test Report, 2 Proto SLC Systems (Uplink+Downlink) & Spares |
| 6 | **Platform Integration, Test Development and Laser Safety** | QNA TSG | |
| 6.1 | Submarine Installation Development at [redacted] | [redacted] | |
| 6.1.1 | Provide PDR Package for 6.1, 6.3 and 6.4 | | PDR Package |

| Master WBS | Task Description | Primary Responsibility | Deliverable |
|---|---|---|---|
| 6.1.2 | Provide CDR Package for 6.1, 6.3 and 6.4 | (b)(4) | CDR Package |
| 6.1.3 | Provide TRR Package for 6.1, 6.3 and 6.4 | | TRR Package |
| 6.1.4 | Provide Status Reports and Quarterly Reviews for 6.1, 6.3 and 6.4 | | Monthly and Quarterly Reports |
| 6.1.5 | Conduct SSN Design Evaluation for Transmitter & Receiver Placements | | |
| 6.1.6 | Develop Submarine Transmitter Installation Design Approach | | Submit Optical Uplink Penetrator/Window Design if Required |
| 6.1.7 | Develop Submarine Rx Mounting External Design Approach | | |
| 6.1.8 | Develop Integrated Submarine Tx & Rx Installation Design and Integration Plan | | Uplink & Downlink Submarine Integration Plan |
| 6.1.8.1 | Hydrostatically Test Modular Canister System | | Acceptance Test Plan and Procedure, Test Report |
| 6.1.8.2 | Develop Complete Internal & External Tx & Rx TEMPALT Package and Submit | | Submit Submarine TEMPALT Package |
| 6.2 | Aircraft Installation Development at General Dynamics AIS | | PDR, CDR, TRR Packages; Monthly & Quarterly Rpts.; Aircraft Integration Plan & Aircraft Certification Package |
| 6.3 | TRITON Laser Safety Review and Approval Process (QNA TSG) | QNA TSG | Laser Eye Safety Pkgs. Pier-Side, SCORE, Fleet Exercise & LSRB |
| 6.4 | TRITON Test Planning for SCORE and Fleet Exercise | (b)(4) | San Diego, SCORE & Fleet Exercise Draft Test Plans |
| 6.5 | Conduct Final TRITON Test Readiness Review at QNA in San Diego, CA | QNA TSG | Test Readiness Review (Phase 1 Completion) |
| TRITON PHASE 2 | | | |
| 7 | Install TRITON System on SSN and Aircraft at QNA (San Diego, CA) | QNA TSG | |
| 7.1 | Perform SSN Transceiver Installation Pier-Side and Checkout | (b)(4) | Deliver Submarine Transceiver |
| 7.2 | Perform Aircraft Transceiver Installation and Checkout, FAA Signoff | | Deliver Aircraft Transceiver; Aircraft Delivery Will Take Place at Willow Run Flight Facility (WRFF) |
| 7.3 | Perform Field Calibration Measurements | QNA TSG | Calibration Test Report |
| 7.4 | Conduct Overflights Pier-Side for End-to-End Testing | (b)(4) | Engineering Test Plan and Procedures, Test Flts & Test Report |
| 7.5 | Check Field Calibration Measurements | QNA TSG | Calibration Test Report |
| 7.6 | Perform Data Quick-Look Analysis on Pier-Side Data | QNA TSG | San Diego Quicklook Test Report |
| 7.7 | Conduct Final Readiness for Sea Review | QNA TSG | Readiness for SEA Review |
| 8 | Conduct Engineering Field Tests at SCORE (QNA SCORE Team) | QNA TSG | |
| 8.1 | Publish Final SCORE SLC Test Plan and Brief Participants | (b)(4) | San Diego & SCORE Final TRITON Test Plan |
| 8.2 | Check Field Calibration Measurements | QNA TSG | Calibration Test Report |
| 8.3 | Conduct Operational Safety and Laser Safety Reviews | (b)(4) | |
| 8.4 | Conduct QNA Data Collection Operations for SLC | QNA TSG | Calibration Rpt., Test Data Package to QNA, and Quicklook Rpt. |
| 8.5 | Conduct SCORE Data Collection Operations for SLC | (b)(4) | Test Data Package to QNA TSG |
| 8.6 | Conduct Phase 2 Milestone Review at QNA Following Test Completion | QNA TSG | Readiness for Phase 3 Review (Phase 2 Completion) |
| TRITON PHASE 3 | | | |
| 9 | Participate in 2012 Fleet Exercise (QNA Fleet Exercise Team) | QNA TSG | |
| 9.1 | Publish Final Fleet Exercise SLC Test Plan and Brief Participants | (b)(4) | Fleet Exercise Operational Final TRITON Test Plan |
| 9.2 | Check Field Calibration Measurements | QNA TSG | Calibration Test Report |
| 9.3 | Conduct Operational Safety and Laser Safety Reviews | (b)(4) | |
| 9.4 | Conduct QNA Communications at Sea Operations to Support fleet exercise | QNA TSG | Calibration Rpt., Test Data Package to QNA, and Quicklook Rpt. |
| 9.5 | Conduct Fleet Exercise Data Collection Operations for SLC | (b)(4) | Test Data Package to QNA TSG |
| 10 | Provide Post-Fleet Exercise Engineering Support and Analyses (QNA Test Teams) | QNA TSG | |
| 10.1 | Support Aircraft De-Installation of TRITON System Elements/Return to QNA | (b)(4) | |
| 10.2 | Support SSN De-Installation of TRITON TEMPALT/Return System to QNA | | |
| 10.3 | Post Calibrate Transceiver Systems for Data Evaluation | QNA TSG | Calibration Test Report |
| 10.4 | Analyze Data from SCORE and the fleet exercise | QNA TSG | Test Data Report |
| 10.5 | Publish TRITON Test Report | QNA TSG | TRITON Final Report |
| 10.6 | Provide TRITON Final Briefing | QNA TSG | TRITON Final Report Presentation (Phase 3 Completion) |

***Table 1.***

## 4.0 WORK PACKAGE DESCRIPTIONS

### 4.1 WBS 1. Develop Uplink and Downlink Laser Modules at [redacted]

**Objective: QNA** shall develop and deliver uplink (submarine) and downlink (aircraft) laser modules from Fibertek to system specifications for TRITON provided by QNA. Laser modules shall be integrated, tested and modulated prior to being shipped from [redacted] to QNA for integration into the submarine and aircraft transmitter installations.

**Approach.** Six laser communication modules, one redundant laser seed module for the submarine and a single laser seed module for the aircraft, and control electronics will be designed and built to the required output and form factor using optical, mechanical, electrical and thermal interface specifications provided by QNA. The six laser communication modules will be configured as independent Line Replaceable Units (LRU's) that include the laser optical head, laser electronics assembly, thermal control unit, and wavelength reference unit. A beam combining module will be included for the aircraft to polarization-combine the two downlink LRU beam lines into one. A separate laboratory heat exchanger subsystem (chiller) will be provided by QNA (from SPAWAR GFE) for operating the laser modules in the lab. The final heat exchanger subsystems (aircraft and submarine) will be provided by QNA. All LRU's will provide a single, polarized beam line of the required output power (pulse repetition rate (PRR) and energy per pulse) and will be wavelength stabilized as required in the operating specification provided by QNA. All LRU's will be capable of operating serially, simultaneously, or in any combination of pulse position modulated (PPM) outputs required to meet QNA specifications. In addition, operation of the LRU's shall provide redundancy of operation to mitigate against LRU reduced output or failure.

QNA shall monitor schedule and manage development risk at [redacted] while the laser modules are being designed, built and tested. QNA will hold regular Integrated Product Team (IPT) telecon and face-to-face meetings to ensure adequate oversight and visibility into the laser development and delivery process. QNA shall be present when all laser communication modules are acceptance tested at Fibertek, and will provide sufficient notice to DARPA and Navy project personnel for them to attend all acceptance test events. Successful acceptance testing will be followed by physical delivery to QNA.

QNA shall require a Preliminary Design Review (PDR), Critical Design Review (CDR), and Test Readiness Review (TRR) for the laser module development work package. These reviews will be part of the overall TRITON system level PDR, CDR, and TRR meetings, and will include technical progress, financial earned value and schedule status, projected milestone completion dates, identification of problems, and an update of risk issues and risk mitigation.

**Schedule and Exit Criteria.** The goal is to deliver two LRU's in month 10 with a seed module, and the remaining LRU's and all associated hardware to be delivered in months 11, 12 and 13 of Phase 1 (the baseline program). Exit criteria is delivery of all hardware to the required interface and performance specifications of QNA. Post-delivery support from [redacted] will be provided, as required by QNA.

**Responsibility and Deliverables. QNA** shall have overall responsibility for the development and delivery of the laser modules. QNA's subcontractor, Fibertek, shall be responsible for all laser development work. Deliverables for this work package include the following: all laser hardware; PDR, CDR and TRR review packages, Acceptance Test Plan and Procedures (ATP); Test Reports for each ATP; Risk Analysis Document; Laser Operating Instructions; and Monthly and Quarterly Progress Reports.

## 4.2 WBS 2. Develop TRITON System Transmitters at QNA

**Objectives: QNA** shall develop and deliver uplink (submarine) and downlink (aircraft) laser communication transmitters for the laser transceivers. Transmitter design specifications will be developed by QNA from the system architecture provided in QNA's proposal. QNA shall integrate uplink and downlink transmitter modules with the Adaptive Data Rate Processor and lab test to verify Pulse Position Modulation (PPM) and transmitter output performance.

**Approach:** This work package includes trade study verification of the proposed system architecture, development of the integrated Communication System design approach, completion of the GFE Adaptive Data Rate Communication (ADRC) PPM signal processor; and design, development and delivery of the transmitter subsystems for the aircraft and submarine transceivers. Trade study verification will include engineering trades and system performance modeling to check and complete derived requirements, check system engineering flow-down requirements, verify or complete any CONOPS revisions, and check critical subsystem engineering requirements prior to PDR. From this, the GFE ADRC signal processing design and hardware will be updated and completed to provide the necessary signal processing and decoding hardware for each transceiver. QNA shall build, test and demonstrate performance of the ADRC signal processor, including verification of minimum signal-to-noise ratio (SNR) and Reed-Solomon forward error correction coding performance.

QNA, assisted by [redacted] shall develop and deliver an aircraft downlink transmitter design and hardware to include configuration and control of the integrated laser LRU's, seed module, beam combining module, laser system control electronics and ADRC signal processor; plus design and delivery of the transmitter heat exchanger, anamorphic optical zoom optics, and the beam transport optical assembly to bring the downlink LRU combined beam line to the zoom optic on the transmitter gimbal assembly. Design of the aircraft transmitter system will include development of interface specifications as needed to support aircraft installation design development, and design of the integrated airborne transceiver with the transmitter gimbal.

QNA, assisted by [redacted] shall develop a submarine uplink transmitter design to include configuration and control of the integrated laser LRU's, redundant seed module, beam shaping module, laser system control electronics and ADRC signal processor in the submarine external installation. Design of the uplink transmitter system will include development of interface specifications as needed to support submarine installation design and development, and design of the integrated TRITON submarine transmitter with the submarine downlink receiver.

QNA shall monitor schedule and manage development risk while the laser transmitter subsystems are being designed, built and tested. QNA will hold regular Integrated Product Team (IPT) telecons and face-to-face meetings to ensure adequate oversight and visibility into the transmitter development process and delivery schedule. QNA shall test the uplink and downlink transmitters in the lab, and will provide notice to DARPA and Navy project personnel sufficiently far in advance for them to attend all important test events.

QNA shall provide a Preliminary Design Review (PDR), Critical Design Review (CDR), and Test Readiness Review (TRR) of the laser transmitters as part of the overall system level PDR, CDR, and TRR meetings; and will include program technical progress, financial earned value and schedule status, projected milestone completion dates, and identification of problems. QNA will provide an update of risks and mitigation plans at each review.

**Schedule and Exit Criteria.** Two transmitters (uplink and downlink) will be delivered at the end of Phase 1 of the baseline program. Exit criteria are delivery of all lab-tested hardware to the

required interface and performance specifications of QNA and completion of all required data deliverables below.

**Responsibility and Deliverables. QNA** shall have overall responsibility for the development and delivery of the laser transmitters. Subcontractors shall be responsible to QNA for all laser transmitter system interface work, both aircraft and submarine. Deliverables for this work package include the following: all uplink and downlink transmitter hardware; full program PDR, CDR and TRR review packages; a Concept of Operations Report, a TRITON System Requirements Specification, a TRITON System Specification, a Technical and Management Work Plan, a Risk Analysis and Management Plan and Semi-Annual Project Summary Reports; Engineering Test Plans and Procedures for each transmitter final test; follow-up Test Reports; and full program Monthly and Quarterly Progress Reports. In addition, QNA shall provide reports for technology transition studies of the TRITON laser and filter technologies.

### 4.3 WBS 3. Develop Cesium Atomic Line Filters at [redacted]

**Objective: QNA** shall deliver uplink (aircraft) and downlink (submarine) laser communication atomic line filters (ALF's) from [redacted] for the laser receivers. ALF performance and interface design specifications will be developed by QNA from the system architecture provided in their proposal. All ALF modules shall be tested and characterized.

**Approach:** Up to nine ALF modules (very narrowband optical filters) shall be designed and built for the uplink and downlink receiver subsystems. Each ALF will be designed and built to the required performance characteristics and form factor using optical, mechanical, electrical and thermal interface specifications provided by QNA. Each individual ALF assembly will be characterized for white light (background) rejection, measured for signal line width and transmission, and measured for field-of-view (FOV) transmission to full aperture collimated (signal) light. All measurements will be made from on-axis to 10% throughput off-axis, using the full aperture of the filter. A measurement of background light-leakage through the filter due to other ALF design factors will be made.

QNA shall monitor schedule and manage development risk at [redacted] while the ALF modules are built and tested. QNA will hold regular Integrated Product Team (IPT) telecons and face-to-face meetings to ensure adequate oversight and visibility into the ALF development process and delivery schedule. QNA shall witness all acceptance tests of the ALF modules at [redacted] and will provide notice to DARPA and Navy project personnel sufficiently far in advance for them to attend all acceptance test events. Successful acceptance testing will be followed by physical delivery to QNA.

QNA shall require a Kickoff Meeting, Preliminary Design Review (PDR), Critical Design Review (CDR), and Test Readiness Review (TRR) of the ALF work package. These reviews will be part of the overall system level PDR, CDR, and TRR meetings, and will include technical progress, schedule status, projected milestone completion dates, identification of problems, and an update of risk items and mitigation plans.

**Schedule and Exit Criteria.** The goal is to deliver two ALF modules at approximately month 9, three more in month 10 and the final four in month 11 of Phase 1 (the baseline program). Exit criteria are delivery of all hardware to the required interface and performance specifications of QNA, and completion of all required data deliverables. Post-delivery support from [redacted] will be provided, as required by QNA.

**Responsibility and Deliverables. QNA** shall have overall responsibility for the development and delivery of the atomic line filters. QNA's subcontractor, [redacted] shall be responsible for ALF

design, fabrication, test and delivery. Deliverables for this work package include the following: up to nine ALFs; PDR, CDR and TRR review packages, Acceptance Test Plan and Procedures (ATP); Test Reports for each ATP; and Monthly and Quarterly Progress Reports.

### 4.4 WBS 4. Develop TRITON System Receivers/Transceivers at QNA

**Objectives: QNA** shall develop and deliver uplink (aircraft) and downlink (submarine) laser communication receivers and integrate the laser aircraft and submarine transceivers. QNA shall also develop and deliver a single intercept receiver for surface ship use during both Southern California Offshore Range (SCORE) and the Navy Fleet Exercise (FLEETEX) testing. Receiver and integrated transceiver design specifications will be developed by QNA from the system architecture provided in QNA's proposal. QNA shall integrate uplink and downlink receiver systems with the Adaptive Data Rate Signal Processor and transmitter systems, and lab test to verify PPM decoding, sensitivity and bit error rate performance.

**Approach:** This work package includes design, development and delivery of three separate blue laser receiver systems (uplink, downlink and intercept) and integration of the aircraft and submarine transceivers. QNA shall design and develop the airborne scanning receiver for uplink communications, including uplink spot detection, gimbal tracking, and duplex communication decoding of the uplink signal using ADRC signal processing. The uplink receiver shall be able to operate from an aircraft at medium to high altitudes in the presence of clear air or reduced visibility conditions, including thick cloud conditions, defined to be an optical thickness up to a Tau of 30 with the bottom of the clouds down to the ocean surface. The uplink receiver shall be able to scan side-to-side and fore-and-aft, acquire and track the uplink signal, and receive communication signals in excess of 70 degrees from nadir to maximize area coverage rate of the system. The uplink receiver will be integrated on an aircraft platform capable of supporting at-sea testing. Integration of the aircraft single/dual-gimbal transceiver in the lab shall include firmware checkout and gimbal scanning verification for both the downlink transmitter and uplink receiver systems, checkout of the user interface and data recording subsystems, and end-to-end testing with the sub laser transceiver as part of acceptance testing.

QNA shall design and develop the submarine laser communication transceiver and certify it through the TEMPALT process for submarine operations on a 688 class submarine. The downlink receiver will incorporate ADRC signal processing and be capable of operating in support of duplex communications with the uplink transmitter on the submarine. QNA shall specifically address the issue of downlink receiver operation due to scattering into the receiver aperture from the uplink pulsed signal close in wavelength. Integration of the submarine transceiver in the lab shall include firmware checkout and checkout of the user interface and data recording subsystems, and end-to-end testing with the aircraft laser transceiver as part of acceptance testing. Lab testing during ATP shall include uncorrected bit error rate (BER) testing, forward error correction (corrected BER) testing, and development of receiver operating curves (ROC) performance characterization of the uplink and downlink systems.

QNA shall develop a pulsed/imaging laser intercept receiver for Low Probability of Detection/Low Probability of Intercept (LPD/LPI) testing during the SCORE at-sea tests at night. This receiver will be designed, built and characterized in the lab in parallel with developing the transceiver systems. It must be capable of operation aboard a surface ship at-sea.

QNA shall monitor schedule and manage development risk while the laser receiver systems are being designed, built and tested. QNA will hold regular Integrated Product Team (IPT) telecons and face-to-face meetings to ensure adequate oversight and visibility into the receiver

and transceiver development process and delivery schedule. QNA shall test the uplink and downlink receivers and integrated aircraft and submarine transceivers in the lab, and will provide notice to DARPA and Navy project personnel sufficiently far in advance for them to attend all important test events.

QNA shall provide a Preliminary Design Review (PDR), Critical Design Review (CDR), and Test Readiness Review (TRR) of the laser receivers and transceivers as part of the overall system level PDR, CDR, and TRR meetings, and will include technical progress, financial earned value and schedule status, projected milestone completion dates, and identification of problems. In addition, QNA will provide an update of risk items and mitigation plans at each review.

QNA is solely responsible for the development and delivery of all TRITON data packages required by TEMPALT, Laser Safety Board, Test Ranges, FAA aircraft certification, optical penetrator certification, or other organizations requiring permission or approval to operate and/or demonstrate the TRITON system.

**Schedule and Exit Criteria.** Two receivers (uplink and downlink) and two integrated transmitter systems will be delivered at the end of Phase 1. Exit criteria are delivery of all lab-tested transceiver hardware (aircraft and submarine) to the required interface and performance specifications from QNA, and completion of all required data deliverables below.

**Responsibility and Deliverables. QNA** shall have overall responsibility for the development and delivery of the laser receivers and system transceivers. Deliverables for this work package include the following: all uplink and downlink transceiver hardware; PDR, CDR and TRR review packages; Engineering Test Plans and Procedures for receiver final test; follow-up Test Reports; Acceptance Test Plans and Procedures for transceiver acceptance testing; follow-up Acceptance Test Reports; Aircraft and Submarine Transceiver Operating Manuals; and Monthly and Quarterly Progress Reports.

### 4.5 WBS 5. Final TRITON System Checkout at QNA

**Objective. QNA** shall perform final end-to-end TRITON Communication System checkout and test/measurement of communication performance prior to integration of the aircraft and submarine transceivers on their respective platforms. This final prototype system checkout constitutes system acceptance test as part of Phase 1 Milestone completion.

**Approach.** Following integration of the submarine transceiver system into its submarine installation configuration, and integration of the aircraft transceiver system into its gimbaled configuration, QNA shall conduct final end-to-end Acceptance Tests of the TRITON System. These tests are envisioned as occurring at QNA in San Diego, CA, but may be held at another location if logistically more supportable. QNA shall provide notice to DARPA and Navy project personnel sufficiently far in advance for them to attend all important test events. Support will be provided by QNA's subcontractors, including [redacted] (aircraft), [redacted] (submarine), [redacted] (laser transmitters) and [redacted] (atomic line filters).

**Schedule and Exit Criteria.** The transceivers will be acceptance tested at the end of Phase 1. Exit criteria are delivery of all TRITON transceivers ready for platform integration and validated against the required interface and performance specifications of QNA; plus, completion of all required data deliverables below.

**Responsibility and Deliverables. QNA** shall have overall responsibility for the Phase 1 Milestone Completion final system checkout and acceptance testing/demonstration. Deliverables for this work package include the following: a complete, two-transceiver TRITON Communication System; Acceptance Test Plans and Procedures for transceiver acceptance

testing; follow-up Acceptance Test Reports; Calibration Test Reports for both transceivers; and Monthly and Quarterly Progress Reports. QNA is solely responsible for the development and delivery of all TRITON data packages required by TEMPALT, Laser Safety Board, Test Ranges, FAA aircraft certification, optical penetrator certification, or other organizations requiring permission or approval to operate and/or demonstrate the TRITON system.

### 4.6 WBS 6. Platform Integration, Test Development and Laser Safety

**Objectives. QNA** shall develop the transceiver installations for the aircraft and submarine platforms, obtain FAA and NAVSEA TEMPALT approvals, respectively; perform test planning for both the SCORE and FLEETEX at-sea tests, and conduct laser safety planning for all test venues. Completion of these activities, including obtaining the necessary approvals prior to Phase 1 completion, is included under this work package.

**Approach.** Four major work elements (two platform installation developments, laser safety and test planning) are included herein because their planning and approval processes are inter-related. Together, they encompass the remainder of the work necessary to complete Phase 1. Support will be provided by QNA's subcontractors, including [redacted] (aircraft), [redacted] (submarine), [redacted] (laser transmitters) and [redacted] (atomic line filters).

QNA, assisted by [redacted] shall develop, build and certify submarine installations for the submarine transceiver subsystems, including the uplink transmitter and downlink receiver on the submarine. Design and integration of the submarine receiver and transmitter systems will specifically address fabrication, test and certification schedules necessary to support submarine TEMPALT approval in time for installation prior to SCORE at-sea testing. QNA shall consider important aspects influencing the design of each installation such as electrical penetrator locations on the submarine pressure hull; submarine optical penetrator engineering and certification issues; fabrication timelines for new external canisters; the availability of external cables and watertight connectors; and the placement, weight and feasibility of large external canister systems on the submarine deck. QNA shall ensure any required signal communication between the receiver and transmitter for ADRC signal processing, and minimize optical cross-talk from the uplink transmitter to the downlink receiver.

QNA, assisted by [redacted] shall develop, build and certify the aircraft installation for transceiver deployment. Design and integration of the laser transmitter and airborne scanning receiver will address field-of-regard for scanning, area coverage rate, and duplex communication issues in accordance with the anticipated acquisition CONOPS, test scenarios and the FLEETEX concept of operations (CONOPS). In addition, QNA shall anticipate test RF communication requirements, aircraft ferry operations, laser safety and aircraft flight test issues, and timelines.

QNA shall initiate and implement laser safety planning and procedures for all test activities outside the lab. This includes preparing the program Laser Safety Review package for the Navy Laser Safety Review Board; and coordinating with range and operational organizations during the test planning process to ensure laser safety and safe operation of the TRITON system at sea. QNA shall initiate and conduct test planning for both SCORE and the Navy Fleet Exercise, including air operations, ground truth operations, submarine operations, safety and risk planning, RF communication planning, obtaining necessary permissions and approvals, setting up briefings and meetings to plan and coordinate with other US Navy and governmental agencies, and develop the necessary science and operational test matrices and plans to ensure a complete execution of test objectives and day/night operations as required.

**Schedule and Exit Criteria.** The aircraft and submarine platform installations will be ready at the end of Phase 1. Exit criteria are delivery of all platform installation hardware to the required interface specifications of QNA, and completion of all required data deliverables below.

**Responsibility and Deliverables. QNA** shall have overall responsibility, with critical subcontractor support in the areas of submarine TEMPALT development and aircraft integration. Deliverables for this work package include the following: submarine and aircraft installation hardware, PDR, CDR and TRR review packages, the submarine TEMPALT package, any required submarine optical penetrator certification package, Acceptance Test Plans and Procedures for hydrostatic pressure testing; a Submarine Integration Plan, an Aircraft Integration Plan, an Aircraft Certification Package, and Monthly and Quarterly Progress Reports. QNA is solely responsible for the development and delivery of all TRITON data packages required by TEMPALT, Laser Safety Board, Test Ranges, FAA aircraft certification, optical penetrator certification, or other organizations requiring permission or approval to operate and/or demonstrate the TRITON system.

### 4.7 WBS 7. Install TRITON Systems on SSN and Aircraft in San Diego, CA

**Objectives. QNA** shall install the transceivers on their respective platforms and perform system checkout, calibration, and end-to-end tests pier-side or at-sea off San Diego, CA. Successful final testing and system operational readiness for sea constitutes readiness to proceed with SCORE at-sea tests.

**Approach.** This work package provides for integration of the aircraft and submarine systems on their respective platforms, including checkout, calibration, and end-to-end system testing to ensure readiness for at-sea tests on the SCORE.

Integration of the aircraft system will occur at [redacted] FAA inspection and certification will occur at the same location. The aircraft will then be flight tested with the transceiver system and flown to San Diego, CA for participation in end-to-end system testing with the submarine transceiver system. End-to-end communication tests pier-side or underway at sea are expected to occur with either aircraft over-flights of the submarine at Ballast Point submarine station, or with the submarine underway on the surface, or with the aircraft on the ground at North Island Naval Air Station. (Testing with the aircraft on the ground at NAS North Island was done for SLCAIR-84.)

Integration of the TRITON submarine system onto the 688 class SSN will occur pier-side at the submarine base in San Diego, CA at Ballast Point Naval Station. Pier-side crane facilities will be used to mount the external canister assemblies, assisted by [redacted] NAVSEA, ship's force, and Naval Station personnel. System topside and internal hardware installation and interconnections will be followed by power up, checkout, calibration and functional testing. Navy certification for sea will be completed.

QNA shall complete planning and preparations needed for end-to-end system testing, including operational briefings and laser safety compliance. Data collected during end-to-end testing will be analyzed and a Quicklook Report generated that includes the calibration test report. A final Readiness for Sea determination and briefing will be conducted with Navy and DARPA TRITON project personnel, Navy operational submarine staff and [redacted]

**Schedule and Exit Criteria.** The goal is for completion of system transceiver integration on the aircraft and submarine to take place by months 19-20 of the program. Actual completion of installation on the submarine also will be determined by SSN availability. System integration,

receipt of the necessary final FAA and Navy approvals, together with successful end-to-end system testing and functional checkout, will constitute readiness for sea (RFS). RFS and delivery of all required data deliverables below are the exit criteria for this work package.

**Responsibility and Deliverables. QNA** shall have overall responsibility, with critical subcontractor support from [redacted] for system installation on the submarine and aircraft, respectively. Deliverables for this work package include the following: submarine and aircraft transceiver systems, a Calibration Test Report; Engineering Test Plan, Procedures and Report; Test Data Package and Quicklook Test Report; and Readiness for Sea Review. QNA is solely responsible for the development and delivery of all TRITON data packages required by TEMPALT, Laser Safety Board, Test Ranges, FAA aircraft certification, optical penetrator certification, or other organizations requiring permission or approval to operate and/or demonstrate the TRITON system.

### 4.8 WBS 8. Conduct Engineering and Technical Testing at SCORE

**Objectives.** Conduct safe and successful system operational and engineering tests at sea on the Navy SCORE at San Clemente Island. Satisfy key test matrix objectives in the SCORE Test Plan and collect the data necessary to validate system performance and operational effectiveness.

**Approach. QNA** shall publish a final SCORE Test Plan and brief all necessary participants on test operations and safety. QNA shall provide for test planning that encompasses all the required operational elements for testing of the system on the SCORE, including communications, aircraft and submarine operations, and platform operations for cloud and water ground truth; and optical intercept receiver operations on the surface ship. QNA, through [redacted] shall provide a test organization, a test director and personnel to support all the platforms on the range during TRITON testing. Specific responsibilities, test objectives, and activities of all participants shall be defined in the Test Plan. QNA shall complete planning and preparations as needed, including operational briefings and laser safety compliance. [redacted]

Ideally, two test operational periods shall be planned, separated by one-two weeks for system adjustments, review of lessons learned, examination of Quicklook data, and review of test objectives and system performance to date. Test objectives shall include uplink and downlink tests, acquiring and tracking the uplink spot, uplink acquisition at extreme nadir angles followed by hand-off to duplex communications, duplex optical communication in cloudy and clear conditions both day and night, and quantification of optical signal detection and interception at increasing ranges at night. Following SCORE testing, a final Quicklook Report shall be released and a Test Readiness Review for Phase 3 will be conducted to end Phase 2. Test support will be provided by QNA's subcontractors, including [redacted]

**Schedule and Exit Criteria.** The goal is for the SCORE test to take place in months 20 and 21 of the Phase 2 program. The actual test schedule also will be determined by range and SSN availability. Exit criteria are completion of key test matrix objectives in the SCORE Test Plan, collection of the data necessary to validate system performance and operational effectiveness; and delivery of all required data deliverables below.

**Responsibility and Deliverables. QNA** shall have overall responsibility for the system test at SCORE, with critical subcontractor test planning and test execution support by [redacted] Data

deliverables include Calibration Test Reports prior to and following at-sea testing, completion of the required test data packages (aircraft, submarine, water and clouds ground truth, and SCORE tracking information); and a SCORE Quicklook Report. Test data will be classified in accordance with the contract Security Classification Guide - 655 (SCG-655). A Test Readiness Review for Phase 3 will be held to end Phase 2 and confirm readiness for the Navy Fleet Exercise. QNA is solely responsible for the development and delivery of all TRITON data packages required by TEMPALT, Laser Safety Board, Test Ranges, FAA aircraft certification, optical penetrator certification, or other organizations requiring permission or approval to operate and/or demonstrate the TRITON system.

### 4.9 WBS 9. Participate in the Navy Fleet Exercise, SOCAL OPAREA

**Objectives.** Conduct safe and successful system operational and engineering tests at sea during the Navy Fleet Exercise (FLEETEX). Satisfy key test matrix objectives in the TRITON Fleet Exercise Test Plan and collect the data necessary to validate system performance and operational effectiveness in an actual Navy ASW operational environment.

**Approach. QNA** shall publish a final Fleet Exercise Test Plan and brief all necessary participants on test operations and safety. QNA shall provide for test planning that encompasses all the required operational elements for testing and demonstrating the full system during the Navy Fleet Exercise, including communications, aircraft and submarine operations, and platform operations for cloud and water ground truth; and optical intercept receiver operations on the surface ship. QNA, supported by [redacted] shall provide a test organization, a test director and personnel to support all the platforms on the range during testing. Specific responsibilities, test objectives, and activities of all participants shall be defined in the Test Plan.

The aircraft shall be based at NAS North Island or in San Diego, CA and made ready to support the Fleet Exercise on the SOCAL ASW Range. The submarine will be based in San Diego and the TRITON system checked, calibrated, and made ready to support the Fleet Exercise as well. QNA shall complete planning and preparations as needed, including operational briefings and laser safety compliance.

Test objectives shall include demonstrating timely communications at speed and depth between the aircraft and the submarine; successfully supporting ASW operations between a battle group and the SSN; demonstrating duplex optical communications in an operational ASW environment; demonstrating SSN uplink detection and acquisition in an OPAREA at sea during SSN free-play; demonstrating uplink acquisition at extreme nadir angles and conducting duplex communications at >70 degrees nadir angle; and demonstrating LPI of the laser signals at tactically relevant ranges at night. [redacted] Following Fleet Exercise testing, a final Quicklook Report shall be released and a post-FLEETEX Out-Brief held. Support will be provided by QNA's subcontractors, including [redacted] as needed.

**Schedule and Exit Criteria.** The goal is for the Fleet Exercise test to take place in months 24/25 of the program. The actual test schedule also will be determined by Fleet scheduling and ship/SSN availability. Exit criteria are completion of key test matrix objectives in the Fleet Exercise Test Plan, collection of the data necessary to validate system performance and operational effectiveness during the Fleet exercise; and delivery of all required data deliverables below.

**Responsibility and Deliverables. QNA** shall have overall responsibility for the system tests during the Fleet exercise, with critical subcontractor test planning and test direction support by GD-AIS. Data deliverables include Calibration Test Reports prior to and following the Fleet Exercise testing, completion of the required test data packages (aircraft, submarine, water and clouds ground truth, and communication information); a Fleet Exercise Quicklook Report, and a post-FLEETEX Out-Brief. Test data will be classified in accordance with the contract Security Classification Guide (SCG-655). QNA is solely responsible for the development and delivery of all TRITON data packages required by TEMPALT, Laser Safety Board, Test Ranges, FAA aircraft certification, optical penetrator certification, or other organizations requiring permission or approval to operate and/or demonstrate the TRITON system.

### 4.10 WBS 10. Provide Post-FLEETEX Engineering Support and Analyses

**Objectives.** Recover all TRITON hardware systems to the Navy for safe keeping and compile all records and data from the program, SCORE and FLEETEX testing for analysis. Publish a TRITON Final Report and deliver a Final Briefing to DARPA and the Navy.

**Approach. QNA** shall be responsible for recovery of all hardware systems to the Navy for safekeeping. The submarine system will be removed in San Diego, CA and provided to the Navy for storage. The aircraft system shall be removed for storage as well. [redacted] All data from Fleet Exercise, SCORE, and the TRITON program will be compiled in San Diego at QNA's facility, reviewed and analyzed.

Data analysis shall establish the system's performance at TRL-6 and provide a quantitative assessment of how well the two-way optical communication link performed in support of submarine operations at depth and speed. Performance against specific test objectives during SCORE and Fleet Exercise testing shall be evaluated. Quantitative assessments of system performance during clear and cloudy day and night conditions will be provided. An analysis of depth performance, data rate and BER as a function of SNR will be completed. Time to acquire the submarine and time to establish duplex communications will be analyzed. Interception of the optical signals will be addressed and quantified (LPI/LPD performance). Finally, overall readiness of the TRITON system for further development and operational evaluation shall be determined.

**Schedule and Exit Criteria.** The goal is for the Fleet Exercise test to take place in months 24/25 of the program. Actual dates at the end of the program will be determined by Navy schedules and operations. Exit criteria are recovery of all TRITON hardware systems to the Navy for safe keeping; compilation of all records and data from the program, SCORE and Fleet Exercise testing for analysis; production of a TRITON Final Report; and deliver a Final Briefing to DARPA and the Navy.

**Responsibility and Deliverables. QNA** shall have overall responsibility for post-FLEETEX activities, with critical subcontractor support from [redacted] Data deliverables include a Final Report; and deliver a Final Briefing to DARPA and the Navy. Test data, results and reports will be classified in accordance with the contract Security Classification Guide (SCG-655).

## 5.0 PERIOD OF PERFORMANCE AND SUMMARY PROGRAM SCHEDULE

The TRITON detailed project schedule is provided separately, provides more detailed planning and work package information, and will be maintained by the Prime Contractor, QNA. Deliverable completion dates in this SOW and summarized in Table 2 have been updated from the proposal and constitute the baseline program. Actual schedule dates as determined by Navy SCORE availability and FLEETEX scheduling may introduce changes to these timelines and delivery dates.

## Table 2. TRITON Program Deliverable Descriptions and Completion (Delivery) Dates

| Deliverable | Responsibility | WBS | SOW |
|---|---|---|---|
| Technical and Management Work Plan | QNA-TSG | 2.1.7 | 4.2 |
| WAR (semi-annual project summary report) | QNA-TSG | 2.1.9 | 4.2 |
| Monthly Status Reports | QNA-TSG | 1.8, 2.1.6, 3.6, 6.1.4 | 4.1, 4.2, 4.3, 4.6 |
| Quarterly Program Review Briefings | QNA-TSG | 1.8, 2.1.6, 3.6, 6.1.4 | 4.1, 4.2, 4.3, 4.6 |
| Concept of Operations | QNA-TSG | 2.1.1.3 | 4.2 |
| Requirements Specification | QNA-TSG | 2.1.2.1 | 4.2 |
| Preliminary Design Review/Report | QNA-TSG | 1.1, 3.1, 2.1.3, 6.1.1, 6.2.1 | 4.1, 4.2, 4.6 |
| Critical Design Review/Report | QNA-TSG | 1.2, 3.2, 2.1.4, 6.1.2, 6.2.2 | 4.1, 4.2, 4.6 |
| Test Readiness Review/Report | QNA-TSG | 1.3, 3.3, 2.1.5, 6.1.3, 6.2.3, 6.5 | 4.1, 4.2, 4.6 |
| System Specification | QNA-TSG | 2.1.2.2 | 4.2 |
| Aircraft Integration Plan | (b)(4) | 6.2.7 | 4.6 |
| Atomic Line Filters | | 1.4.3, 1.5.3 | 4.1 |
| Laser Modules | | 3.4.3, 3.5.3 | 4.3 |
| Two (2) prototype transceiver systems, one uplink/downlink, plus spares as bid | QNA-TSG | 5.3 | 4.5 |
| Uplink optical window for installation into the 688/688I submarine (if required) | (b)(4) | 6.1.6.3 | 4.6 |
| Laser Eye Safety Package | QNA-TSG | 6.3 | 4.6 |
| Submarine Integration Plan | (b)(4) | 6.1.7.4 | 4.6 |
| Submarine TEMPALT Package | | 6.1.8.2 | 4.6 |
| Acceptance Test Plan (for major assemblies-lasers & filters-and transmitters and receivers) | QNA-TSG | 3.5.3, 4.3.5, 4.5.5, 5.3, 6.1.6.3, 6.1.8.1 | 4.3, 4.4, 4.5,4.6 |
| Acceptance Test Procedures | QNA-TSG | 3.5.3, 4.3.5, 4.5.5, 5.3 | 4.3, 4.4, 4.5 |
| Aircraft Certification Package | (b)(4) | 6.2.7.4 | 4.6 |
| Risk Analysis Plan | QNA-TSG | 1.6, 2.1.8 | 4.1, 4.2 |
| Study Reports No. 1 and No. 2 | (b)(4) | 2.1.10, 2.1.11 | 4.2 |
| Equipment Operator Manuals for both transceiver systems (aircraft and submarine) | QNA-TSG | 4.3.4, 4.5.4 | 4.4 |
| Engineering Test Plan (may be included as part of a single test plan and procedure document for functional, performance and acceptance testing) | QNA-TSG | 2.2.5, 2.3.2, 2.3.1.8, 2.3.2.10, 3.4.3, 4.1.8, 4.4.9, 4.6.9, 5.1, 7.4.1 | 4.2, 4.3, 4.4, 4.5, 4.7 |
| Engineering Test Procedures (may be included as part of a single test plan and procedure document for functional, performance and acceptance testing) | QNA-TSG | 2.2.5, 2.3.2, 2.3.1.8, 2.3.2.10, 3.4.3, 4.1.8, 4.4.9, 4.6.9, 5.1, 7.4.1 | 4.2, 4.3, 4.4, 4.5, 4.7 |
| Calibration Test Report | QNA-TSG | 5.2, 7.3, 7.5, 8.2, 8.4, 9.2, 9.4, 10.3 | 4.5, 4.7, 4.8, 4.9 |
| Operational Test (SCORE) and Demonstration (FLEETEX) Test Plans | (b)(4) | 6.4.2.8, 9.1 | 4.6, 4.9 |
| SCORE at-Sea Testing | QNA-TSG | 8.5.2 | 4.8 |
| FLEETEX Operational Demonstration | QNA-TSG | 9.1 | 4.9 |
| Test Data and Quicklook Test Reports | QNA-TSG | 8.4.7, 9.4.7 | 4.8, 4.9 |
| Test and Evaluation Plans (All demonstrations, final demonstrations, and associated experimentation) | (b)(4) | 6.4.1.8 | 4.6 |
| Final Test Reports (detailing all laboratory and at sea test results) | | 7.3, 7.4.3, 8.2, 8.4, 8.4.4, 8.4.5, 8.4.6, 8.4.7, 8.5.3, 9.2, 9.4, 9.4.4, 9.4.5, 9.4.6, 9.4.7, 9.5.4, | 4.7, 4.8, 4.9 |
| Monthly Earned Value Management Assessments (include in mo. reports) | QNA-TSG | 2.1.13 | 4.2 |
| Final Report | QNA-TSG | 10.3, 10.4, 10.5, 10.6 | 4.10 |

## 6.0 TRAVEL

Trips to the customer, subcontractors, vendors, and test sites are considered necessary to execute the tasks identified herein and are approved as authorized in the TRITON prime contract.

## 7.0 POINTS OF CONTACT

### 7.1 QinetiQ North America, Technology Solutions Group

(b)(4)

(b)(4)

### 7.2 U.S. Government

Dr. Larry Stotts
TRITON Program Manager
Defense Advanced Research Projects Agency
Strategic Technology Office (STO)
3701 North Fairfax Drive
Arlington, VA 22203-1714
Office: (571) 218-4346
larry.stotts@darpa.mil

Robin Swatloski
TRITON Contracting Officer
DARPA/CMO
Defense Adv. Research Projects Agency
3701 North Fairfax Drive
Arlington, VA 22203-1714
Office: (571) 218-4542
robin.swatloski@darpa.mil

Pete Poirier
Contracting Officer's Representative (COR)
Space and Naval Warfare (SPAWAR) Systems Center Pacific
53560 Hull Street
San Diego, CA 92152
Office: (619) 553-6144
pete.poirier@navy.mil

Ray Potts
SPAWAR TRITON Program Manager
PEO C4I
PMW 770 - Submarine Integration Program Office
4301 Pacific Highway
San Diego, CA 92110
Office: (619) 524-7037
ray.potts@navy.mil

## 1.2 PROGRAM METRICS

The following program metrics shall serve as the basis for determining whether satisfactory progress is being made to warrant continued funding of the program.

### 1.2.1 TRITON Projected Downlink Performance Trades

The TRITON communication requirements and descriptions are contained in the FOUO Tables and Figures document (provided separately) and include the following:

- Table 2 – Phase 2 (Checkout) and Phase 3 (ASW Operations) Field Trial Metrics
- Table 3 – TRITON Blue Laser Performance Specification
- Table 4 – TRITON Cesium Faraday Rotation Atomic Line Optical Receiver Module Performance Specifications
- Figure 3 - TRITON Analysis Parameter Summary

### 1.2.2 TRITON Projected Uplink Performance Trades

To ensure that submarine location is not compromised by the uplink communications, an inquiry-reply uplink initiation strategy was assumed. Figure 4 illustrates said strategy. Given no prior knowledge of submarine's location, the TRITON paging function interrogates the submarine's operational area (OPAREA), sending out an "inquiry" message to each downlink spot. The uplink receivers are co-aligned and slaved to the downlink transmitter spot. Upon receipt of the downlink paging signal, and verification of a valid message by the submarine receiver system, the uplink laser begins broadcasting an acquisition sequence. The link will close by tracking the uplink spot with the aircraft receiver and transmitter. Information will be transferred in both directions once the link has been closed. Upon completion of the information transfer, the aircraft system will continue to scan the OPAREA using the paging message until the entire area is covered. The assumed communications SNR was $\geq$ 13 dB.

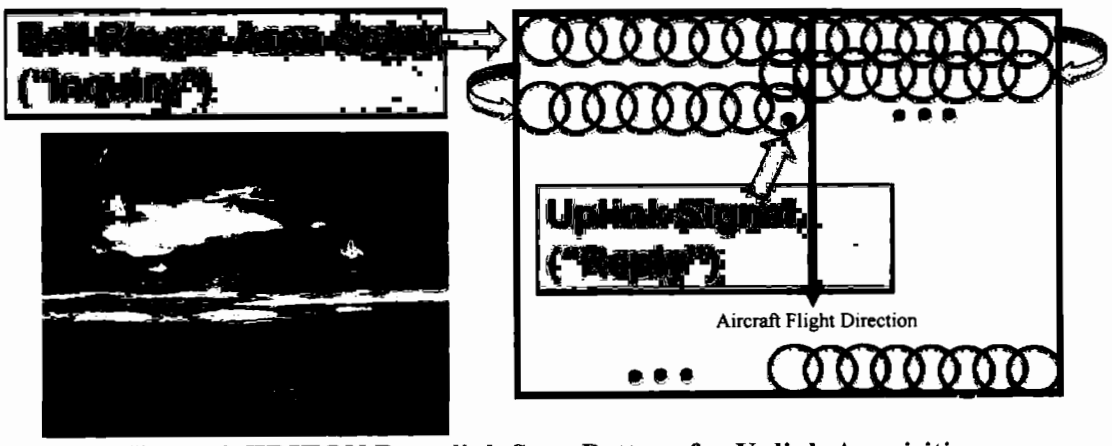


**Figure 4. TRITON Downlink Scan Pattern for Uplink Acquisition**

The contractor will be evaluated on how well the proposed TRITON design meets, or exceeds, the Navy requirements cited in Tables 2 in the FOUO Tables and Figures document, as well as

how credible the prototype uplink and downlink systems can be developed to those performance numbers. This analysis will be performed for Jerlov II waters, and for sky condition up to 72% link availability (cloud conditions of Tau = 30). The performance characteristics for the laser and receiver systems shall be clearly defined, which then will constitute a major portion of the metrics for Phases 1 and 2, in addition to the program metrics cited above.

### 1.2.3 TRITON Requirements

The contractor shall conduct design and trade-off analysis similar to sections 1.2.1 and 1.2.2 to determine what the operational downlink and uplink system designs, respectively, that are likely to provide the best set of numbers meeting the Navy communication requirements. Uplink covertness is key, even at nighttime, so the government is looking for a novel, innovative design to ensure that capability; variations on strategy in section 1.2.2 is expected and encouraged. The government is looking for the solution most advantageous to the Government. Trades shall be done with the Government Furnished Model and environmental parameters, e.g., Jerlov II waters, 72% cloud availability, described in the proposer documentation. The analysis shall look at various platform options, e.g., geosynchronous satellite, low earth orbiter, and/or high altitude flyer. Based on these SLC performance results, the contractor shall design the best TRITON systems that would emulate the envisioned performance from the trades in a Fleet Exercise.

In addition to meeting the stated requirements, the contractor shall also specify in the system specification the following parameters for each command and control product in each mission area:

- Bit Error Rate (BER) - uncorrected
- Forward Error Correction (FEC) – corrected BER
- Anamorphic iris or basic zoom for a/c receiver and transmitter

Attachment 4

# DEPARTMENT OF DEFENSE
# CONTRACT SECURITY CLASSIFICATION SPECIFICATION

*(The requirements of the DoD Industrial Security Manual apply to all security aspects of this effort.)*

**1. CLEARANCE AND SAFEGUARDING**

a. FACILITY CLEARANCE REQUIRED: SECRET

b. LEVEL OF SAFEGUARD REQUIRED: SECRET

**2. THIS SPECIFICATION IS FOR:** *(X and complete as applicable)*

| | | |
|---|---|---|
| X | a. PRIME CONTRACT NUMBER: HR0011-10-C-0126 | |
| | b. SUBCONTRACT NUMBER | |
| | c. SOLICITATION OR OTHER NO. | DUE DATE *(YYYYMMDD)* |

**3. THIS SPECIFICATION IS:** *(X and complete as applicable)*

| | | | |
|---|---|---|---|
| X | a. ORIGINAL *(Complete date in all cases)* | | DATE *(YYYYMMDD)*: 20100518 |
| | b. REVISED (Supercedes all previous specs) | REVISION NO. | DATE *(YYYYMMDD)* |
| | c. FINAL *(Complete item 5 in all cases)* | | DATE *(YYYYMMDD)* |

**4. IS THIS A FOLLOW-ON CONTRACT?** [ ] YES [X] NO. If Yes, complete the following:

Classified material received or generated under _____ *(Preceding Contract Number)* is transferred to this follow-on contract.

**5. IS THIS A FINAL DD FORM 254?** [ ] YES [X] NO. If Yes, complete the following:

In response to the contractor 's request dated _____, retention of the classified material is authorized for the period of _____

**6. CONTRACTOR** *(Include Commercial and Government Entity (CAGE) Code)*

| a. NAME, ADDRESS, AND ZIP CODE | b. CAGE CODE | c. COGNIZANT SECURITY OFFICE *(Name, Address, and Zip Code)* |
|---|---|---|
| QinetiQ North America, Inc.<br>Technology Solutions Group<br>350 Second Avenue<br>Waltham, MA 02451 | 5B2G7 | DSS BOSTON, MA FIELD OFFICE<br>495 Summer Street<br>Suite 300<br>Boston, MA 02210 |

**7. SUBCONTRACTOR**

| a. NAME, ADDRESS, AND ZIP CODE | b. CAGE CODE | c. COGNIZANT SECURITY OFFICE *(Name, Address, and Zip Code)* |
|---|---|---|
| | | |

**8. ACTUAL PERFORMANCE**

| a. NAME, ADDRESS, AND ZIP CODE | b. CAGE CODE | c. COGNIZANT SECURITY OFFICE *(Name, Address, and Zip Code)* |
|---|---|---|
| | | |

**9. GENERAL IDENTIFICATION OF THIS PROCUREMENT**

Tactical Relay Information Network (TRITON) program support.

| 10. CONTRACTOR WILL REQUIRE ACCESS TO: | YES | NO | 11. IN PERFORMING THIS CONTRACT, THE CONTRACTOR WILL: | YES | NO |
|---|---|---|---|---|---|
| a. COMMUNICATIONS SECURITY (COMSEC) INFORMATION | X | | a. HAVE ACCESS TO CLASSIFIED INFORMATION ONLY AT ANOTHER CONTRACTOR'S FACILITY OR A GOVERNMENT ACTIVITY | | X |
| b. RESTRICTED DATA | | X | b. RECEIVE CLASSIFIED DOCUMENTS ONLY | | X |
| c. CRITICAL NUCLEAR WEAPON DESIGN INFORMATION | | X | c. RECEIVE AND GENERATE CLASSIFIED MATERIAL | X | |
| d. FORMERLY RESTRICTED DATA | | X | d. FABRICATE, MODIFY, OR STORE CLASSIFIED HARDWARE | X | |
| e. INTELLIGENCE INFORMATION | | | e. PERFORM SERVICES ONLY | | X |
| (1) Sensitive Compartmented Information (SCI) | | X | f. HAVE ACCESS TO U.S. CLASSIFIED INFORMATION OUTSIDE THE U.S., PUERTO RICO, U.S. POSSESSIONS AND TRUST TERRITORIES | | X |
| (2) Non-SCI | | X | g. BE AUTHORIZED TO USE THE SERVICES OF DEFENSE TECHNICAL INFORMATION CENTER (DTIC) OR OTHER SECONDARY DISTRIBUTION CENTER | | X |
| f. SPECIAL ACCESS INFORMATION | | X | h. REQUIRE A COMSEC ACCOUNT | X | |
| g. NATO INFORMATION | | X | i. HAVE TEMPEST REQUIREMENTS | | X |
| h. FOREIGN GOVERNMENT INFORMATION | | X | j. HAVE OPERATIONS SECURITY (OPSEC) REQUIREMENTS | | X |
| i. LIMITED DISSEMINATION INFORMATION | | X | k. BE AUTHORIZED TO USE THE DEFENSE COURIER SERVICE | | X |
| j. FOR OFFICIAL USE ONLY INFORMATION | X | | l. OTHER *(Specify)* | | |
| k. OTHER *(Specify)* | | X | Automated Information Systems (A.I.S.)<br>See Item 13. | X | |

DD FORM 254, DEC 1999 PREVIOUS EDITION IS OBSOLETE

**12. PUBLIC RELEASE.** Any information *(classified or unclassified)* pertaining to this contract shall not be released for public dissemination except as provided by the Industrial Security Manual or unless it has been approved for public release by appropriate U.S. Government authority. Proposed public releases shall be submitted for approval prior to release (•) Direct ( ) Through *(Specify)*

See Attachment 1 / Item 12.

to the Directorate for Freedom of Information and Security Review, Office of the Assistant Secretary of Defense (Public Affairs)* for review.
* In the case of non-DoD User Agencies, requests for disclosure shall be submitted to that agency.

**13. SECURITY GUIDANCE.** The security classification guidance needed for this classified effort is identified below. If any difficulty is encountered in applying this guidance or if any other contributing factor indicates a need for changes to this guidance, the contractor is authorized and encouraged to provide recommended changes; to challenge the guidance or the classification assigned to any information or material furnished or generated under this contract; and to submit any questions for interpretation of this guidance to the official identified below. Pending final decision, the information involved shall be handled and protected at the highest level of classification assigned or recommended. *(Fill in as appropriate for the classified effort. Attach, or forward under separate correspondence, any documents/guides/extracts referenced herein. Add additional pages as needed to provide complete guidance.)*

See Attachment 1.

Item 11l. (Con't.)
With regard to TSCM: The facility is subject to Technical Surveillance Countermeasures (TSCM) surveys by, or at the direction of, DARPA, and facility managers are required to take corrective actions in accordance with the findings of said surveys.

With regard to TEMPEST: The contractor is subject to TEMPEST counter-measures levied by the DARPA CTTA in accordance with Chapter 11 of the NISPOM. The contractor will perform a TEMPEST review in accordance with DoD 5105.21-M-1, Appendix J, titled "TEMPEST ADDENDUM TO THE FIXED FACILITY CHECKLIST", upon award of contract.

With regard to SAP's: The performer is required to submit FFC's and/or SSP's via "MUSTANG" or "CAST" systems.

With regard to Test Plans: Submit plans no later than thirty (30) days in advance of the scheduled demonstration to the DARPA Program Manager (PM) or Program Security Officer (PSO) for approval.

Item 17. (Con't.)
STO PM - Larry Stotts - 571-218-1714
STO PSO - Paul McLean - 703-526-6706
STO PSR - Michael Quantrille - 703-526-4101
SID Classification Management Office

**14. ADDITIONAL SECURITY REQUIREMENTS.** Requirements, in addition to ISM requirements, are established for this contract. ( ) Yes (•) No
*(If Yes, identify the pertinent contractural clauses in the contract document itself, or provide an appropriate statement which identifies the additional requirements. Provide a copy of the requirements to the cognizant security office. Use Item 13 if additional space is needed.)*

**15. INSPECTIONS.** Elements of this contract are outside the inspection responsibility of the cognizant security office. ( ) Yes (•) No
(If Yes, explain and identify specific areas or elements carved out and the activity responsible for inspections. Use Item 13 if additional space is needed.)

**16. CERTIFICATION AND SIGNATURE.** Security requirements stated herein are complete and adequate for safeguarding the classified information to be released or generated under this classified effort. All questions shall be referred to the official named below.

| a. TYPED NAME OF CERTIFYING OFFICIAL | b. TITLE | c. TELEPHONE *(Include Area Code)* |
|---|---|---|
| Flaherty, Kevin G David Smith | Assistant Director, SAPCO | 703-526-4113 |

| d. ADDRESS *(Include Zip Code)* | 17. REQUIRED DISTRIBUTION |
|---|---|
| Defense Advanced Research Projects Agency (DARPA)<br>3701 N. Fairfax Drive<br>Arlington, VA 22203 | [X] a. CONTRACTOR<br>[ ] b. SUBCONTRACTOR<br>[X] c. COGNIZANT SECURITY OFFICE FOR PRIME AND SUBCONTRACTOR |
| e. SIGNATURE | [ ] d. U.S. ACTIVITY RESPONSIBLE FOR OVERSEAS SECURITY ADMINISTRATION<br>[X] e. ADMINISTRATIVE CONTRACTING OFFICER<br>[X] f. OTHERS AS NECESSARY |

DD FORM 254 (BACK), DEC 1999

**-ATTACHMENT #1 TO DD FORM 254 FOR CONTRACT #HR0011-10-C-0126-**

**For Block 13**

Items 10a & 11h. Contractor is authorized the use of secure telephones (STU-III/STE) with fax. Access to classified COMSEC information requires a final U.S. Government clearance at the appropriate level. Further disclosure of COMSEC information by a contractor, to include subcontracting, requires prior approval of the contracting activity.

Item 10j. "FOR OFFICIAL USE ONLY" (FOUO) is not a classification marking. It identifies unclassified DoD information that is exempt from public disclosure. It must not be given general circulation without receiving public release authority in accordance with Block 12, above. FOUO information will be marked, transmitted, safeguarded and disposed of in accordance with DoD Regulation 5200.1R, DoD Information Security Program.

Item 11c. Classified material generated in support of this contract shall be classified in accordance with the source material used or DARPA-CG-655, which will be provided by the DARPA program manager. All classified information received or generated under this contract is the property of the U.S. Government. At the termination or expiration of this contract, DARPA will be contacted for proper disposition instructions.

Item 11l. With regard to A.I.S.: Automated Information Systems must be certified and accredited by the cognizant security agency prior to processing classified information for a DARPA program. Automated Information Systems used to store or process DARPA information that has not been cleared for public release posting must meet the requirements of DARPA Instruction No. 54 (DI54), "DARPA Unclassified Website Administration" and associated web guide which will be provided by the DARPA program manager.

Item 12. No information, except as provided in applicable U.S. Statutes, which is classified or unclassified pertaining to this contract shall be released for public dissemination without prior written approval of DARPA. Material and information proposed for public release must be submitted at least sixty (60) days prior to the requested release date. For additional information please visit www.darpa.mil/tio. Submit requests for Public Release of information to:

DARPA/TIO
3701 N. Fairfax Drive,
Arlington, VA 22203-1714
(571) 218-4235

The following information must accompany each submission:
1) Requesting organizations Point of Contact information
2) Document title
3) Document Author (s)

4) Non-technical description of document's subject
5) Number of pages, or for videos number of minutes
6) Document Format (PowerPoint, Word, Spreadsheet, etc.)
7) Document Type (Briefing, Speech, Report, Abstract, Article, Internet Posting, etc.)
8) Event type (Conference, Principle Investigator Meeting, Press Release, etc.)
9) Event Title
10) Event Date
11) Desired Date
12) DARPA Program Manager or DARPA POC
13) Has a previous version or portion of this material been submitted to DARPA/TIO? Provide case number if available.
14) Has this material been submitted to another agency for public release? Provide POC and contact information.
15) Other information pertinent to this request."

Additional:
a. Copies of all subcontractor DD 254's should be faxed to the DARPA Classification Management Office, at 571-218-4638. Signed, scanned copies can also be emailed to: sid-clasmgmt@darpa.mil.
b. Any questions concerning this DD254 should be presented to the DARPA, STO POC's listed in block 13, under Item 17 (Con't.).
c. Reports of loss, compromise or suspected compromise shall be provided to the Contracting Officer for Security Matters, DARPA within 24 hours of the incident, in addition to the reporting requirements to DSS outlined in the NISPOM.
d. All of the above security requirements, where applicable, will flow down to any subcontractors and consultants supporting this contract.

| No. | Deliverable | Responsibility | WBS | SOW | Delivery |
|---|---|---|---|---|---|
| a | TRITON Kickoff Brief | QNA-TSG | 1.8 | III.8 | As Soon As Possible After Award |
| 1 | Technical and Management Work Plan (IMS in MS Project; Cost tracking Resource Plan in Excel) | QNA-TSG | 2.1.7 | 4.2 | As Soon As Possible After Award but NLT 11/30/10 |
| 2 | WAR (semi-annual project summary report in MS Power Point format and covering technical progress, financial status and major milestone updates) | QNA-TSG | 2.1.9 | 4.2 | 2x Annual |
| 3 | Monthly Status Reports (technical progress, problems, financial status and IMS schedule updates-electronic email) | QNA-TSG | 1.8, 2.1.6, 3.6, 6.1.4 | 4.1, 4.2, 4.3, 4.6 | Initial NLT 10 Nov 10, then Monthly |
| 4 | Quarterly Program Review Briefings (Report technical progress, problems and recommendations, financial and schedule updates, MS PPT Presentation) | QNA-TSG | 1.8, 2.1.6, 3.6, 6.1.4 | 4.1, 4.2, 4.3, 4.6 | Quarterly |
| 5 | Concept of Operations (Briefly presents a concept for a follow-on operational SLC system and describes how the TRITON system emulates key aspects of the system - MS PPT presentation) | QNA-TSG | 2.1.1.3 | 4.2 | 03/28/11 |
| 6 | Requirements Specification for TRITON top level system (MS PPT presentation and technical document in QNA Engineering format) | QNA-TSG | 2.1.2.1 | 4.2 | 03/28/11 |
| 7 | Preliminary Design Review/Report (preliminary design review in MS Power Point format and covering requirements, ConOps, performance, system and subsystem technical approach, platform engineering approach, preliminary test scenarios, and financial status and major milestone updates) | QNA-TSG | 1.1, 3.1, 2.1.3, 6.1.1, 6.2.1 | 4.1, 4.2, 4.6 | 11/30/10 |
| 8 | Critical Design Review/Report (final design review in MS Power Point format and covering final requirements, ConOps, performance, system and subsystem technical dwgs, platform engineering dwgs & plans, test scenarios, and financial status and major milestone updates) | QNA-TSG | 1.2, 3.2, 2.1.4, 6.1.2, 6.2.2 | 4.1, 4.2, 4.6 | 03/28/11 |
| 9 | Test Readiness Review/Report providing the results of subsystem or system integration and the test preparation and planning status (in MS Power Point format) | QNA-TSG | 1.3, 3.3, 2.1.5, 6.1.3, 6.2.3, 6.5 | 4.1, 4.2, 4.6 | 11/30/11 |
| 10 | System Specification for TRITON top level system (MS PPT presentation and technical document in QNA Engineering format) | QNA-TSG | 2.1.2.2 | 4.2 | Draft at PDR, Final NLT 03/28/11 |
| 11 | Aircraft Integration Plan presenting the airframe modifications and airborne transceiver system (detailed installation plans in MS PPT format) | [redacted] | 6.2.7 | 4.6 | 11/30/11 |

| No. | Deliverable | Responsibility | WBS | SOW | Delivery |
|---|---|---|---|---|---|
| 12 | Atomic Line Filters (hardware deliverables, up to 9: 4 submarine, 4 aircraft and one airborne spare) | | 1.4.3, 1.5.3 | 4.1 | 10/26/11 |
| 13 | Laser Modules (hardware deliverables, 2 aircraft and 4 submarine) | | 3.4.3, 3.5.3 | 4.3 | 08/25/11 |
| 14 | Two (2) Prototype Transceiver Systems (one ea. uplink and downlink) | QNA-TSG | 5.3 | 4.5 | 04/25/12 |
| 15 | Laser Eye Safety Package (as specified by Navy ESRB requirements, MS Power Point format plus backup material as required) | QNA-TSG | 6.3 | 4.6 | 11/30/11 |
| 16 | Submarine Integration Plan presenting the SSN modifications and submarine transceiver system detailed installation plans in MS PPT format | | 6.1.7.4 | 4.6 | Draft at CDR, Final NLT 11/30/11 |
| 17 | Submarine TEMPALT Package conforming to Navy specifications (NAVSEA compliant) | | 6.1.8.2 | 4.6 | 04/25/12 |
| 18 | Acceptance Test Plan (for major assemblies-lasers & filters-and transmitters and receivers, QNA engineering document format) | QNA-TSG | 3.5.3, 4.3.5, 4.5.5, 5.3, 6.1.6.3, 6.1.8.1 | 4.3, 4.4, 4.5,4.6 | Various (NLT 1 month prior to the test) |
| 19 | Acceptance Test Procedures for major assemblies-lasers & filters and transmitters and receivers (QNA engineering document format, may be combined into a single document with ATP) | QNA-TSG | 3.5.3, 4.3.5, 4.5.5, 5.3 | 4.3, 4.4, 4.5 | Various (NLT 2 weeks prior to the test) |
| 20 | Aircraft Certification Package conforming to FAA specifications and engineering requirements | | 6.2.7.4 | 4.6 | 04/25/12 |
| 21 | Risk Analysis Plan for TRITON System including major subsystems (MS PowerPoint format, includes a list of all planned system level engineering tests and a short explanation of the test objective.) | QNA-TSG | 1.6, 2.1.8 | 4.1, 4.2 | Draft due at PDR, Final NLT 03/25/11 |
| 22 | Study Reports No. 1 and No. 2, MS Power Point format | | 2.1.10, 2.1.11 | 4.2 | 11/30/11 |
| 23 | Equipment Operator Manuals for both transceiver systems (aircraft and submarine, provided in QNA engineering format and supporting GUI console operations) | QNA-TSG | 4.3.4, 4.5.4 | 4.4 | 04/25/12 |
| 24 | Engineering Test Plan (may be included as part of a single test plan and procedure document for functional, performance and acceptance testing) | QNA-TSG | 2.2.5, 2.3.2, 2.3.1.8, 2.3.2.10, 3.4.3, 4.1.8, 4.4.9, 4.6.9, 5.1, 7.4.1 | 4.2, 4.3, 4.4, 4.5, 4.7 | Various (NLT two months prior to the test) |
| 25 | Engineering Test Procedures (may be included as part of a single test plan and procedure document for functional, performance and acceptance testing) | QNA-TSG | 2.2.5, 2.3.2, 2.3.1.8, 2.3.2.10, 3.4.3, 4.1.8, 4.4.9, 4.6.9, 5.1, 7.4.1 | 4.2, 4.3, 4.4, 4.5, 4.7 | Various (NLT one month prior to the test) |
| 26 | Calibration Test Reports as required by IMS, in QNA Engineering format | QNA-TSG | 5.2, 7.3, 7.5, 8.2, 8.4, 9.2, 9.4, 10.3 | 4.5, 4.7, 4.8, 4.9 | Various (NLT two weeks after the test is finished) |

| No. | Deliverable | Responsibility | WBS | SOW | Delivery |
|---|---|---|---|---|---|
| 27 | Operational Test (SCORE) and Demonstration (FLEETEX) Test Plans covering at-sea operations, laser safety, communications, platform movements, test objectives and test matrices, operational procedures, and scheduling (QNA Engineering formatted document and MS PPT presentation) | (b)(4) | 6.4.2.8, 9.1 | 4.6, 4.9 | 04/25/12<br>06/25/12 |
| 28 | SCORE at Sea Testing (conduct at-sea operations) | QNA-TSG | 8.5.2 | 4.8 | Phase 2 |
| 29 | FLEETEX Operational Demonstration (conduct at-sea operations) | QNA-TSG | 9.1 | 4.9 | Phase 3 |
| 30 | Test Data and Quicklook Test Reports (collect and return test data for analysis; provide a brief summary report of at-sea operations, results and conclusions; Quicklook in MS Power Point format) | QNA-TSG | 8.4.7, 9.4.7 | 4.8, 4.9 | Phases 2, 3 |
| 31 | Test and Evaluation Plans (All demonstrations, final demonstrations, and associated experimentation; provide as part of FLEETEX and SCORE Test Plans) | (b)(4) | 6.4.1.8 | 4.6 | Various (NLT one month prior to the demo.) |
| 32 | Final Test Reports (detailing all laboratory and at-sea test results; MS Power Point Format) | | 7.3, 7.4.3, 8.2, 8.4, 8.4.4, 8.4.5, 8.4.6, 8.4.7, 8.5.3, 9.2, 9.4, 9.4.4, 9.4.5, 9.4.6, 9.4.7, 9.5.4 | 4.7, 4.8, 4.9 | NLT 30 Days after each Phase |
| 33 | Monthly Earned Value Management Assessments (include in mo. reports, MS Excel format) | QNA-TSG | 2.1.13 | 4.2 | Initial due at 10 Nov 10, then Monthly |
| 34 | Final Report covering the entire TRITON program in QNA format with accompanying (Written report QNA format) | QNA-TSG | 10.3, 10.4, 10.5, 10.6 | 4.10 | 12/31/12 |

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

**MEMORANDUM FOR CONTRACTING OFFICER'S REPRESENTATIVE**

FROM: DARPA, Contracts Management Office

TO: Pete Poirier

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

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

   Contract Number: HR0011-10-C-0126
   Contractor: QinetiQ NA
   Program Description: TRITON

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

   a. Furnish plans, schedules, specifications, descriptions, and other documents to the contractor as required by the contract.

   b. Assist the contractor in interpreting technical aspects of the contract specifications/statement of work. Differences of opinion and interpretations which could affect the terms and conditions of the contract will be referred to the contracting officer for resolution.

   c. Provide Government recommendations/approvals to the contractor promptly in all cases where the contract calls for technical approval.

   d. Observe, monitor, and assess the contractor's performance under the terms of the contract. This includes reporting promptly to the contracting officer any failures, delays, or significant deviations of performance, quality, costs, or other actions which might jeopardize contract performance.

3. In the performance of the duties delegated to you in this letter, you are cautioned that you could be held personally liable for actions taken or directions given by you to the contractor that are beyond the authorities given to you in this letter. The duties or authorities in this letter are not delegable; therefore, you must advise the Contracting Officer or the Contract Administrator/Specialist immediately when you are unable to perform these duties.

4. In your dealings with the contractor you must not give technical direction as though the contractor's employees are Government employees. You must maintain a formal, arms-length relationship with the contractor in order to avoid even an appearance that the contract

f. The COR must maintain a separate file for each contract for which he/she acts as COR. The file should serve as a repository and record of all documents and communications between the contractor and the COR. At a minimum, the file must include a copy of the contract and all modifications as well as the COR appointment letter. Examples of other file documentation may include:

- Reports required per the contract, e.g. interim and final technical or patent reports
- Memoranda for Record documenting important contract discussions
- Records of formal meetings, e.g. post award conference, program reviews, etc.

g. Assist ACO and/or PCO, as requested, with closeout activities at completion of contract period of performance.

8. If this is your first appointment as a COR or if you have not performed COR duties within the last two years, and in order to comply with DFARS 201.6-2, you must complete COR training immediately so that you can properly execute your responsibilities under this contract. A good source of COR training is available via a web-based module, CLC 106, "Contracting Officer Representative with a Mission Focus" at www.dau.mil.

9. Your appointment as COR for this effort expires on or about November 2011 unless a contract option is exercised.

10. Your good judgment in performing your duties under the contract will have an important effect on the value of the performance obtained by the Government.

[redacted]

Robin M. Swatloski
DARPA PCO
Contracting Officer

Sept 21, 2010
Date

Pete Poirier
Appointee
Contracting Officer's Representative

SEPT 21, 2010
Date

Government Furnished Property
TRITON Proposal

[redacted]

= QNA, confirmed
= SSC confirmed
= Navy Property
= DARPA property

HR0011-10-C-0126
Attachment 6

| Item | Part | Description | Mfgr | Mfgr Part Number | Qty | $, Each | $, Ext | Basis of Cost | WBS Element / TRITON Use | Need Date | Current Location | Where to Deliver |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Plant Account # PA14086 | McDonald Douglas Submarine Qualified Receiver Canister (including cabling and documentation) | unknown | McDonald Douglas | 6 | $ 350,000.00 | $ 2,100,000.00 | QNA Estimate | 4.4 - Submarine receiver canisters | 15 days ARO | SSC | QNA - SD |
| 2 | 1 @ Quartz Filter | 532 nm Quartz Birefringent Filter Assemblies for Submarines | McDonald Douglas | 9" x 9" x 9" quartz birefringent filters and attached heating circuits | 1 | $ 250,000.00 | $ 250,000.00 | QNA Estimate | 4.4 - Test asset for early integration of submarine electronics | 15 days ARO | One unit @ QNA Laser Lab | @QNA |
| 3 | unknown | Submarine Canister Crane - Yellow | unknown | unknown | 1 | $1,000 | $ 1,000.00 | QNA Estimate | 4.4 - Lab equipment for moving canisters | 15 days ARO | SSC | QNA - SD |
| 4 | V4DSP-48130 | 6U VME FPGA Card, build level 4 double density memory | Radstone | V4DSP-48130 | 1 | $ 20,258.00 | $ 20,258.00 | Actual Cost | 4.1 - Airborne digital flight HW | 15 days ARO | QNA Bonded Storage | @QNA |
| 5 | V4DSP-48130 | 6U VME PFGA Board 250MHz | GE Fanuc Intelligent Platforms | 6U VME PFGA Board 250MHz | 1 | $ 20,582.00 | $ 20,582.00 | Actual Cost | 4.4 - Submarine digital flight HW | 15 days ARO | QNA Laser Lab | @QNA |
| 6 | N/A | connectorized laser doubler | Acculight Corp | connectorized laser doubler | 1 | $ 10,000.00 | $ 10,000.00 | Actual Cost | 4.4 - Test asset for PMT testing | 15 days ARO | QNA Comms Lab | @QNA |
| 7 | VWRAP-1m | v wrap ip wrapper for v4dsp maintenance | Radstone | v wrap ip wrapper for v4dsp maintenance | 1 | $ 9,000.00 | $ 9,000.00 | Actual Cost | 4.4 - FPGA software development tools | 15 days ARO | QNA Serveer | @QNA |
| 8 | N/A | modulator | Acculight Corp | modulator | 1 | $ 6,500.00 | $ 6,500.00 | Actual Cost | 4.4 - Test asset for PMT testing | 15 days ARO | QNA Comms Lab | @QNA |
| 9 | APE-VHDL-F, MAPE-VHD | VHDL Simulation Tool | Aldec, Inc | VHDL Simulation Tool | 1 | $ 5,900.00 | $ 5,900.00 | Actual Cost | 4.4 - FPGA design development tool | 15 days ARO | QNA Serveer | @QNA |
| 10 | Rc011 g03 bc3 m084 | Chiller, Rc011 g03 bc3 m007 (kodiak 11, rs-232, external valve, 1.8GPM pump | Lytron | Chiller, Rc011 g03 bc3 m007 (kodiak 11, rs-232, external valve, 1.8GPM pump | 1 | $ 4,138.00 | $ 4,138.00 | Actual Cost | 2.3.1 - Test asset for lab cooling of lasers | 15 days ARO | SSC | QNA - SD |
| 11 | HW-V4-ML410-UNI-G | ML410 developmental Board | NuHorizons | ML410 developmental Board | 2 | $ 2,995.00 | $ 5,990.00 | Actual Cost | 4.1 - FPGA development board for multiple desigers use | 15 days ARO | QNA Bonded Storage | @QNA |
| 12 | 2903 | Signal Connector | PAVE Technology | Signal Connector | 8 | $ 300.00 | $ 2,400.00 | Actual Cost | 4.4 - Submarine receiver canister flight HW | 15 days ARO | SSC | QNA - SD |
| 13 | rds5-900v | VME Development Chasis | Radstone | vme development chasis | 2 | $ 2,380.00 | $ 4,760.00 | Actual Cost | 4.1 - FPGA development chassis for multiple desigers use | 15 days ARO | QNA Bonded Storage | @QNA |
| 14 | V4DSPIO-11 | V4dsp p2 transition module | Radstone | V4DSPIO-11 | 4 | $ 995.00 | $ 3,980.00 | Actual Cost | 4.1 - FPGA development board for multiple desigers use | 15 days ARO | QNA Bonded Storage | @QNA |
| 15 | 304153 | Inner Housing (Steel) | Surrey Precision | Inner Housing (Steel) | 2 | $ 850.00 | $ 1,700.00 | Actual Cost | 4.4 - Submarine receiver canister flight HW | 15 days ARO | SSC | QNA - SD |
| 16 | 304154 | Inner Housing (Steel) | Surrey Precision | Inner Housing (Steel) | 2 | $ 850.00 | $ 1,700.00 | Actual Cost | 4.4 - Submarine receiver canister flight HW | 15 days ARO | SSC | QNA - SD |
| 17 | 1815 | OutBack FX2524MT Inverter | Conergy | OBP-17016 | 1 | $ 1,469.00 | $ 1,469.00 | Actual Cost | 4.1 - Lab test asset for running Nettmann gimbal | 15 days ARO | SSC | QNA - SD |
| 18 | 5840B-107 | ultra broadband amplifier, 21 db gain | Picosecond Pulse Lab | ultra broadband amplifier, 21 db gain | 2 | $ 695.00 | $ 1,390.00 | Actual Cost | 4.1 - Analog electrical test asset | 15 days ARO | QNA Comms Lab | @QNA |
| 19 | RGH25U15J00A | Readheah 1.5m cable ref mk | Renishaw, Inc | Readhead 1.5m cable ref mk | 4 | $ 264.00 | $ 1,056.00 | Actual Cost | 2.3.1 - Flight HW for optics zoom | 15 days ARO | SSC | QNA - SD |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | HWS300-12/HD | AC-DC Power Supply, +12VDC | Lambda Power | AC-DC Power Supply, +12VDC | 2 | $ 400.94 | $ 801.88 | Actual Cost | 2.3.1 - Power supply test asset | 15 days ARO | 1 @ SSC, 1 @ QNA | QNA - SD |
| 21 | HW-V4-ML405-UNI-G | ML405 development board | NuHorizons | ML405 development board | 1 | $ 795.00 | $ 795.00 | Actual Cost | 2.3.1 - FPGA code development CCA | 15 days ARO | QNA Bonded Storage | @QNA |
| 22 | 70.201 | Precision slits 5 micron | Rolyn | Precision slits 5 micron | 2 | $ 383.75 | $ 767.50 | Actual Cost | 2.3.1 - Test asset for optics measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 23 | UXD20PE | UXD20P Evaluation Board | Centellax Corporation | UXD20P Evaluation Board | 1 | $ 750.00 | $ 750.00 | Actual Cost | 4.4 - Digital CCA test asset | 15 days ARO | QNA Bonded Storage | @QNA |
| 24 | VME-8198-EXTM-LF | VME64X Extender Card, 6 layer | Twin Industries | VME64X Extender Card, 6 layer | 1 | $ 745.00 | $ 745.00 | Actual Cost | 4.4 - FPGA developmental test asset | 15 days ARO | QNA Bonded Storage | @QNA |
| 25 | 12-2202-532 | risley beam prism assembly, ar v-coated @532nm | Special Optics | 12-2202-532 | 1 | $ 735.00 | $ 735.00 | Actual Cost | 2.3.1 - Lab alignment of transmitters | 15 days ARO | QNA Bonded Storage | @QNA |
| 26 | 12-2002-532 | Risley Prism Beam Steering Assy | Special Optics | Risley Prism Beam Steering Assy | 1 | $ 735.00 | $ 735.00 | Actual Cost | 2.3.1 - Lab alignment of transmitters | 15 days ARO | QNA Bonded Storage | @QNA |
| 27 | HWS300-5 | Large +5 AC-DC Power Supply | Lambda | HWS50-5 | 2 | $ 365.00 | $ 730.00 | Actual Cost | 2.3.1 - Power supply test asset | 15 days ARO | SSC | QNA - SD |
| 28 | Custom Crosshairs | 7 & 14mm custom crosshairs. | Max Levy Autograph | 7 & 14mm custom crosshairs. | 2 | $ 728.00 | $ 1,456.00 | Actual Cost | 2.3.1 - Test asset for optics measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 29 | CA-5-01-10 | 10 foot pigtailed cable assembly for above light, RMG-3-FS | Remote Ocean Systems | 10 foot pigtailed cable assembly for above light, RMG-3-FS | 2 | $ 350.00 | $ 700.00 | Actual Cost | 4.4 - Test asset for underwater testing | 15 days ARO | QNA Optics Lab | @QNA |
| 30 | 2224v0070 | 2224ro24srie2-5 16 +22/5 69.2:1 DC motor and gearbox | Micro Mo/Faulhaber | 2224ro24srie2-5 16 +22/5 69.2:1 DC motor and gearbox | 4 | $ 348.60 | $ 1,394.40 | Actual Cost | 2.3.1 - Flight HW for optics zoom | 15 days ARO | SSC | QNA - SD |
| 31 | SIOX600-S | RS-232 Transition Module | Radstone | SIOX600-S | 3 | $ 232.00 | $ 696.00 | Actual Cost | 4.4 - FPGA design development tool asset | 15 days ARO | QNA Bonded Storage | @QNA |
| 32 | 5840B-107 | ultra broadband amplifier, 21 db gain | Picosecond Pulse Lab | ultra broadband amplifier, 21 db gain | 1 | $ 695.00 | $ 695.00 | Actual Cost | 4.4 - Analog electrical test asset | 15 days ARO | QNA Comms Lab | @QNA |
| 33 | A-9572-1034 | 5UM Si Interface Unit 1MHz | Renishaw | 5UM Si Interface Unit 1MHz | 2 | $ 341.70 | $ 683.40 | Actual Cost | 2.3.1 - Flight HW for optics zoom | 15 days ARO | SSC | QNA - SD |
| 34 | CR1 | Continuous optical rotation stage | Thorlabs | Continuous rotation stage | 2 | $ 299.00 | $ 598.00 | Actual Cost | 4.1 - Asset for optical measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 35 | RGB25D00R00 | 5um interface ref mk standard | Renishaw, Inc | 5um interface ref mk standard | 4 | $ 146.40 | $ 585.60 | Actual Cost | 2.3.1 - Flight HW for optics zoom | 15 days ARO | SSC | QNA - SD |
| 36 | 10QM20HM.35 | 45 degree - high energy Nd:YAG (2) Laser Mirror (532 nm, 25.4 mm, 6.35 nm, 45 deg) | Newport | 45 degree - high energy Nd:YAG (2) Laser Mirror (532 nm, 25.4 mm, 6.35 nm, 45 deg) | 3 | $ 195.00 | $ 585.00 | Actual Cost | 4.4 - Asset for optical measurements | 15 days ARO | QNA Bonded Storage | @QNA |
| 37 | 1575 | Power Connector | PAVE Technology | Power Connector | 6 | $ 90.00 | $ 540.00 | Actual Cost | 4.4 - Flight HW for canister | 15 days ARO | SSC | QNA - SD |
| 38 | 305916 | I/R beam block | UCSD Marine Science Development Center | I/R beam block | 1 | $ 525.00 | $ 525.00 | Actual Cost | 2.3.1 - Asset for optical measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 39 | N/A | Standard aspheric lens with MgF2 Coating | Optical Works, Inc | Standard aspheric lens with MgF2 Coating | 2 | $ 250.00 | $ 500.00 | Actual Cost | 4.1 - Asset for optical measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 40 | mrssma5/4xuv100/110 p-uvns/ss-3.0mm/2.0m | 4 legged randomized non-solarizing silica/silica step index optical fiber bundle assy | Ceramoptics | 4 legged randomized non-solarizing silica/silica step index optical fiber bundle assy | 1 | $ 500.00 | $ 500.00 | Actual Cost | 4.1 - Asset for optical measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 41 | Mai #120201-02C | micro control steel translation stage with micrometer | Musser & associates | micro control steel translation stage with micrometer | 4 | $ 124.00 | $ 496.00 | Actual Cost | 4.1 - Asset for optical measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 42 | 5915-100-375Mhz | Low pass filter, SMA Jack-Jack | Picosecond Pulse Lab | Low pass filter, SMA Jack-Jack | 1 | $ 495.00 | $ 495.00 | Actual Cost | 4.1 - High frequency analog electronics test asset | 15 days ARO | QNA Comms Lab | @QNA |
| 43 | 285-1330-ND | power supply, ind, 5v, 300w, 60a | Digi-Key | power supply, ind, 5v, 300w, 60a | 1 | $ 484.00 | $ 484.00 | Actual Cost | 4.4 - Submarine flight HW | 15 days ARO | QNA Bonded Storage | @QNA |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44 | SA-11 | SA Series solid aluminum plate, 12"x12", 1/4-20 holes on 1" grid | newport | SA Series solid aluminum plate, 12"x12", 1/4-20 holes on 1" grid | 2 | $ 222.00 | $ 444.00 | Actual Cost | 2.3.1 - Asset for optical measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 45 | mai 120201-04C | micro control steel precision linear stage with micrometer | Musser & associates | micro control steel precision linear stage with micrometer | 2 | $ 220.00 | $ 440.00 | Actual Cost | 2.3.1 - Asset for optical measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 46 | VBD-3/4 | 50 watt beam dump w/o post and holder | Vere | 50 watt beam dump w/o post and holder | 3 | $ 145.00 | $ 435.00 | Actual Cost | 2.3.1 - Asset for optical measurements | 15 days ARO | QNA Optics Lab | @QNA |
| 47 | 8551 | Radstone 8551 Analog to Digital CCA | Radstone | | 4 | $ 15,584.00 | $ 62,336.00 | Actual Cost | 4.1, 4.4 - Flight HW ADC boards for submarine & airborne recievers | 15 days ARO | 1 unit QNA Laser Lab; 3 units QNA Bonded Storage | @QNA |
| 48 | SEADEEP Custom Nettmann Gimbal | Nettmann Gyron Super-G Gimbal System & Control Electronics | Nettmann Systems | Gyron Super-G Gimbal System & Analog Controller | 1 | $372,077.00 | $ 372,077.00 | Actual Cost | 4.1 - Modification gimbal into flight HW for airborne receiver | 15 days ARO | SSC | QNA - SD |
| 49 | IPE Scan Track VME Chassis and Board | VME Scan & Track Processor for the Nettmann Gimbal | IPE Systems | N/A - Prototype development | 1 | $ 306,000.00 | $ 306,000.00 | Actual Cost | 4.1 - Scan & Track Controller for airborne flight HW | 15 days ARO | SSC | QNA - SD |
| 50 | 303821 | Optical Weldment Assy | QNA | 303821 Mechanical Assy for Airborne System to hold all RX parts | 1 | $100,000.00 | $ 100,000.00 | QNA Estimate | 4.1 - Component optics is flight HW for airborne receiver | 15 days ARO | SSC | QNA - SD |
| 51 | 303819 | APD & Iris Assembly includes 16 APDs, 4 APD High Voltage Power Supply CCAs, 64 coax cables, 4 Quad Optic Assys, & 4 Irises | QNA | 303819 QNA part number for APD Assy | 1 | $ 72,545.00 | $ 72,545.00 | Actual Cost | 4.1 - Airborne detector focaL plane flight HW | 15 days ARO | SSC | QNA - SD |
| 52 | 303820 | Receive Optics Assy | QNA | 4 @ reciver optics in its mechanical cage | 1 | $ 100,000.00 | $ 100,000.00 | Actual Cost | 4.1 - Airborne detector focaL plane flight HW | 15 days ARO | SSC | QNA - SD |
| 53 | HW-V4-ML403-UNI-G | ML403 development board | NuHorizons | ML403 development board | 2 | $ 795.00 | $ 1,590.00 | Actual Cost | 2.4 - FPGA CCA flight HW for PMT AGC | 15 days ARO | SSC | QNA - SD |
| 54 | 303924 | Beamformer stepper motor controller assy | QNA | 303924 QNA part number for beamformer control electronics | 1 | $ 2,500.00 | $ 2,500.00 | QNA Estimate | 2.3.1 - FPGA CCA flight HW for beamformer | 15 days ARO | SSC | QNA - SD |
| 55 | Front End CCA Test Chassis' | Test box with power supplies, single board CCAs and wiring in chassis | QNA | Test box for AFE CCAs | 3 | $ 1,500.00 | $ 4,500.00 | QNA Estimate | 4.1 & 4.4 - Detector focal plane flight HW test equipment | 15 days ARO | SSC | QNA - SD |
| 56 | 304960 | Stepper motor controller | QNA | 304960 QNA part for electronics of beamformer | 1 | $ 1,500.00 | $ 1,500.00 | QNA Estimate | plane flight HW test equipment | 15 days ARO | SSC | QNA - SD |
| 57 | 2224A0132 | 2224ro24srie2 69.2:1 DC motor and gearbox | Micro Mo/Faulhaber | 2224ro24srie2 69.2:1 DC motor and gearbox | 2 | $ 365.36 | $ 730.72 | Actual Cost | 2.3.1 - Spare motors for optics zoom | 15 days ARO | SSC | QNA - SD |
| 58 | 303920 | Transmitter Beamformer (opto-mechanical) Assy | QNA | 303920 QNA part number for motor, mounts, optics of beamformer parts w/o controller | 1 | $ 5,500.00 | $ 5,500.00 | QNA Estimate | 2.3.1 - Beamformer flight HW for optics zoom | 15 days ARO | SSC | QNA - SD |
| 59 | SFX series | 110 V Power Supply | iMBP | SFX-110 | 1 | $ 350.00 | $ 350.00 | QNA Estimate | 4.4 Submarine RX test asset | 15 days ARO | SSC | QNA - SD |
| 60 | HK100A-12 | 12 V Power Supply | Lambda | HK100A-12 12 V power supply | 2 | $ 99.00 | $ 198.00 | Actual Cost | 4.4 Submarine RX test asset | 15 days ARO | SSC | QNA - SD |
| 61 | VI-JOI-EY | 12 V Power Supply | Vicor | VI-JOI-EY 12 V power supply for Radstone CCA | 2 | $ 104.00 | $ 208.00 | Actual Cost | 4.4 Submarine RX test asset for Radstone CCA | 15 days ARO | SSC | QNA - SD |
| 62 | VI-JOO-EY | 5 V Power Supply | Vicor | VI-JOo-EY 5 V power supply for Radstone CCA | 2 | $ 104.00 | $ 208.00 | Actual Cost | 4.4 Submarine RX test asset for Radstone CCA | 15 days ARO | SSC | QNA - SD |

Government Furnished Property
TRITON Proposal

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| 63 | Purge & Fill Control Box | Controller and plumbing for purging GFE canisters with dry nitrogen | QNA | Test equipment built to purge and fill the submarine canisters | 1 | $ 55,000.00 | $ 55,000.00 | QNA Estimate | 4.4 Submarine RX test asset for flight HW | 15 days ARO | SSC | QNA - SD |
| 64 | StartPac 3328 Battery Cart & Cables | 28 V Charger, Battery, & Controller for operating @ 28 V from 22o VAC source with high current cabling | Start Pac | Start Pac 3328 high capacity charger and 28 V battery with cable kit | 1 | $ 8,595.00 | $ 8,595.00 | QNA Estimate | 4.1 - Test asset for operating Nettmann gimbal in lab integration | 15 days ARO | SSC | QNA - SD |
| 65 | 28 V Aircraft Junction Box | Junction box modified with power supplies and EMI filtering to convert 28 V to power on-gimbal HW | QNA | EMI Filters, power supplies, cabling for operating airborne system off of 28 V A/C power | 1 | $ 16,000.00 | $ 16,000.00 | QNA Estimate | 4.1 - Test asset for operating RX in early lab integration efforts | 15 days ARO | SSC | QNA - SD |
| 66 | VME Test Assets | Box of various VME interface boxes and cabling for running the digital processor and Utility CCAs | QNA | Various parts needed to test VME digital processor electronics | 1 | $ 600.00 | $ 600.00 | QNA Estimate | 4.1 & 4.4 - Test asset for operating RX in integration efforts | 15 days ARO | SSC | QNA - SD |
| 67 | Hamamatsu PMT Detectors | SEADEEP PMT detectors used as test assets for electronic integration | Hamamatsu | Hamamatsu R1512 4" diam Photo-multiplier Tubes | 4 | $ 821.50 | $ 3,286.00 | Actual Cost | 4.4 - Test assets to perform early submarine RX electronics integration | 15 days ARO | SSC | QNA - SD |
| 68 | Hamamatsu PMT Detectors | PMT detectors used as test assets for electronic checkout of CCAs | Hamamatsu | Hamamatsu H7415 2" diam Photo-multiplier Tubes | 2 | $ 784.00 | $ 1,568.00 | Actual Cost | 4.4 - Test assets to perform submarine RX electronics checkout | 15 days ARO | SSC | QNA - SD |
| 69 | Utility CCAs | Utility CCA for VME chassis of flight hardware | QNA | Utility CCA interfaces to the Radstone V4DSP CCA to form VME chassis | 6 | $ 2,800.00 | $ 16,800.00 | QNA Estimate | 4.1 & 4.4 Flight HW for Radstone V4DSP CCA interfaces | 15 days ARO | SSC | QNA - SD |
| 70 | High Voltage Power Supplies | 0 - 2000 V Power Supplies with control interface | BELTAN | 2 kV PMT power supplies | 2 | $ 295.00 | $ 590.00 | Actual Cost | 4.4 - Variable voltage Flight Submarine HW Power Supplies for PMT | 15 days ARO | SSC | QNA - SD |
| 71 | 304900 | APD High Voltage Power Supply CCAs | QNA | 2 kV APD power supply CCAs | 3 | $ 1,500.00 | $ 4,500.00 | QNA Estimate | 4.1 - Variable voltage Flight Airborne HW Power Supplies for APDs | 15 days ARO | SSC | QNA - SD |
| 72 | Test Box for Motor Controller | Motor Controller Test Box Chassis | QNA | Test asset used on SEADEEP to protect motor control electronics in lab testing | 1 | $ 500.00 | $ 500.00 | QNA Estimate | 4.1 - Chassis test asset for integration of beamformer optics/ electronics | 15 days ARO | SSC | QNA - SD |
| 73 | 304940 | 16 Channel APD CCA | QNA | Partially assembled APD AFE boards for airborne receiver | 2 | $ 2,800.00 | $ 5,600.00 | QNA Estimate | 4.1 - Bare boards for sparing of 16 channel APD CCA | 15 days ARO | SSC | QNA - SD |
| 74 | 304940A | 2 Channel PMT CCA | QNA | Assembled PMT AFE boards for airborne receiver | 2 | $ 3,000.00 | $ 6,000.00 | QNA Estimate | 4.4 - Potential fight HW boards for Submarine PMT single channel | 15 days ARO | SSC | QNA - SD |
| 75 | Prototype AFE CCAs | Single Channel AFE CCA | QNA | Assembled & tested AFE CCA | 2 | $ 1,800.00 | $ 3,600.00 | QNA Estimate | 4.4 - Boards for Submarine PMT single channel test asset | 15 days ARO | SSC | QNA - SD |
| 76 | **SEADEEP Downlink Laser Assy** | **SEADEEP Downlink Laser Assembly** | **Fibertek** | **532 nm 10 W Downlink laser assembly with beam combiner and Risley prism output coupler** | 1 | **$ 800,000.00** | **$ 800,000.00** | QNA Estimate | **4.4 - SEADEEP downlink laser used as test asset in early electronic integration** | **15 days ARO** | **SSC** | **@QNA** |

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| 77 | SEADEEP Downlink Spare Parts | Various downlink laser spare parts in box | Fibertek | Cooling module, controller CCAs, Q switch CCA, turning prisms, Risley prisms, optical components | 1 | $ 75,000.00 | $ 75,000.00 | QNA Estimate | 4.4 - Spare parts for repair of SEADEEP downlink laser in electronic integration | 15 days ARO | SSC | QNA - SD |
| 78 | N/ A | Confidential 688/688I Submarine Drawings | US Navy | Naval drawing package | 1 | N/A | N/A | N/A | 2.3.2, 4.4 - Used in design of submarine interfaces | 15 days ARO | TBD - US Navy | @QNA |
| 79 | Prototype | 7" Cesium Atomic Line Filter (prototype) - to be received from Fibertek or DARPA | The Science Artist | N/A - Prototype development | 1 | $ 125,000.00 | $ 125,000.00 | QinetiQ estimate | 4.4 - Prototype for testing prior to delivery of flight ALF H/W | 15 days ARO | TBD - DARPA | @QNA |

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

(a) The terms used in this provision are defined in 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 documents, 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 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.

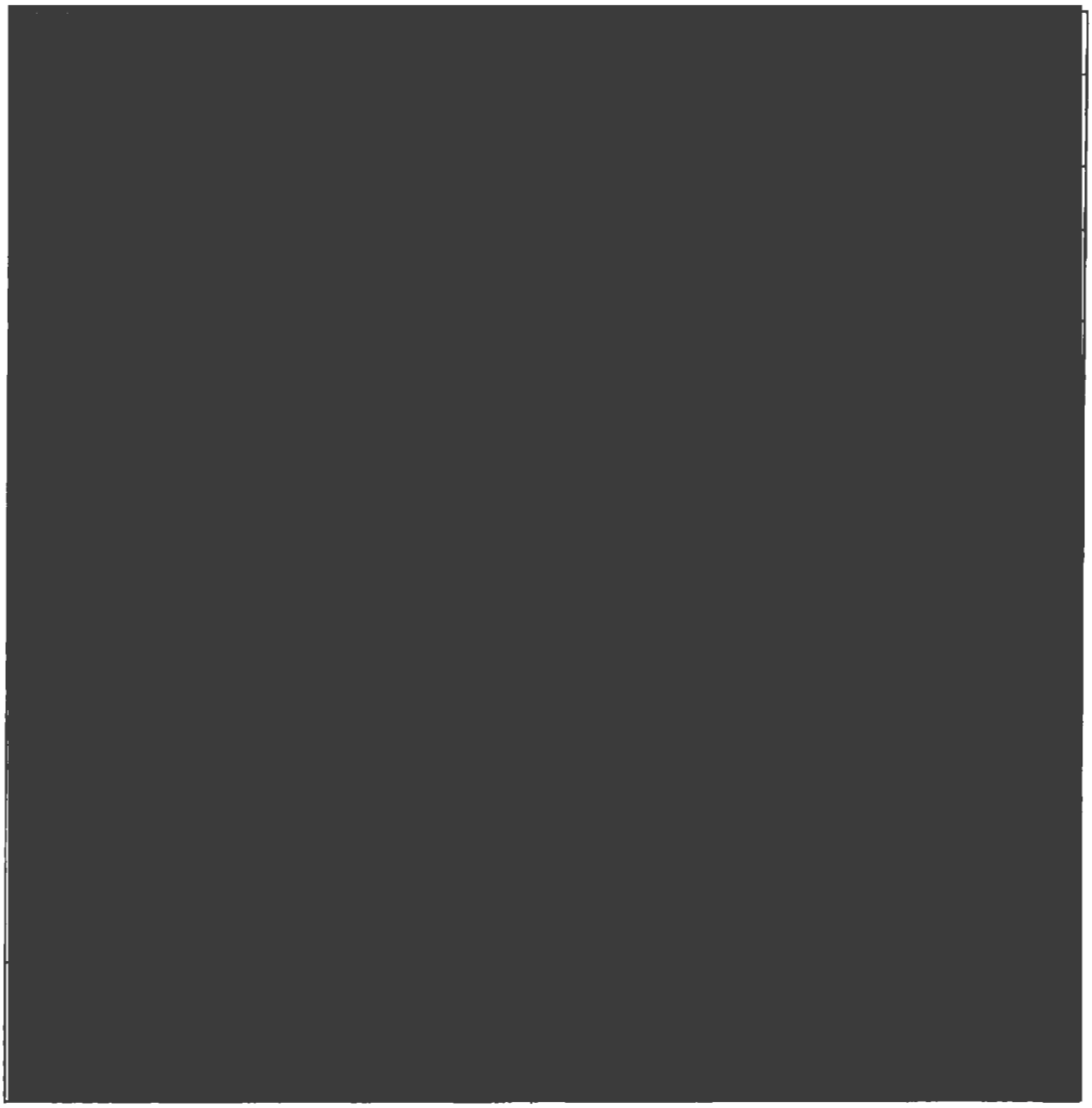
(c) Offers submitted in response to this solicitation shall identify, to the extent known at the time an offer is submitted to the Government, the technical data or computer software that the Offeror, its subcontractors or suppliers, or potential subcontractors or suppliers, assert should be furnished 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 Assertion **** | **Asserted Rights Category ***** | **Name of Person Asserting******* |
|---|---|---|---|
| (b)(4) | | | |



*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 items, 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 September 21, 2010

Printed Name and Title (b)(4)

Signature (b)(4)

(End of identificatic

(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.

(End of clause)

Attachment 8

Pre-Contract Cost
HR0011-10-C-0126
AMENDMENT 2

ADVANCE AGREEMENT TO AUTHORIZE INCURRENCE OF PRE-AWARD COSTS UNDER CONTRACT HR0011-10-C-0126

AMENDMENT 2

Re: (a) ARPA Order Z278/00
(b) QinetiQ proposal entitled "TACTICAL RELAY INFORMATION NETWORK (TRITON)", reference number FY10-10.050 dated 30 April 2010 submitted in response to DARPA-BAA-10-25 dated 29 January 2010.
(c) Pre-Award Cost Agreement dated 13 Aug 2010 as amended

The Government and Contractor hereby agree to the following changes to reference (c):

The Contracts Management Office (CMO) of the Defense Advanced Research Projects Agency (DARPA) has received a valid and properly funded procurement request, ARPA Order Z278/00, in support of this effort. Since the undersigned Contracting Officer has determined that the incurrence of costs before the actual issuance of a contract is necessary to ensure compliance with the delivery schedule, the Government and Contractor hereby agree as follows:

FIRST: In the event that a contract is awarded, pre-award costs, not to exceed $2,290,000 shall be allowable under the contract, provided that the individual cost elements therein shall be:
(a) otherwise allowable, reasonable, and allocable;
(b) incurred no sooner than 11 August 2010 or after 22 Sep 2010, and;
(c) incurred specifically and exclusively to accomplish the work described in the proposal referenced above.

SECOND: Contract terms and conditions shall be agreed to by the earlier of:
(a) 22 Sep 2010; or
(b) the date on which the amount of funds obligated, committed or expended under this Advance Agreement is equal to no more than $2,290,000.

THIRD AND FINALLY: It is the intention of the Government to award a contract to the contractor, subject to final agreement on the contract terms and conditions, specifications and price(s), which contract shall incorporate this Advance Agreement. It is understood and agreed by the parties herein that this Agreement concerns the treatment of pre-award costs in the event of a contract. This Agreement does not require the contractor to incur any such costs, and any costs so incurred are strictly at the risk of the contractor, until such time that a contract may be awarded.

FOR THE CONTRACTOR:

[redacted]

Technology Solutions Group
QinetiQ North America, Inc.
September 17, 2010

Date

FOR THE UNITED STATES OF AMERICA
DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

[redacted]

Robin M. Swatloski
Contracting Officer

9/20/2010

Date