15G. TOTAL AMOUNT OF CONTRACT  $3,064,417.00
Section B - Supplies or Services and Prices

<table>
<thead>
<tr>
<th>ITEM NO</th>
<th>SUPPLIES/SERVICES</th>
<th>ESTIMATED COST</th>
<th>FIXED FEE</th>
<th>TOTAL EST. COST PLUS FIXED FEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>Phase I- Base Period AO No. Q407/46</td>
<td>(0)</td>
<td>(0)</td>
<td>$3,064,417.00</td>
</tr>
</tbody>
</table>

Phase I- The Contractor shall complete first generation system modeling and performance optimization with a system design and modeling effort, followed by a subsequent first generation component development effort (MOPA laser, detectors, PLL's) in accordance with the Attachment (1)-Statement of Work.

<table>
<thead>
<tr>
<th>ITEM NO</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>000101</td>
<td>$575,770.00</td>
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</table>

AO No. Q407/46
ACRN AA
<table>
<thead>
<tr>
<th>ITEM NO</th>
<th>SUPPLIES/SERVICES</th>
<th>ESTIMATED COST</th>
<th>FIXED FEE</th>
<th>TOTAL EST. COST PLUS FIXED FEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0002</td>
<td>Reports and Deliverables</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td></td>
<td>Phase I Reports and Deliverables-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Deliverables/Reports will be provided in</td>
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<tr>
<td></td>
<td>accordance with the Attachment (1)--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Statement of Work.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0003</td>
<td>Phase II- Option 1</td>
<td></td>
<td></td>
<td>$3,769,705.00</td>
</tr>
<tr>
<td></td>
<td>Phase II- The Contractor shall complete</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>second generation system modeling and</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>performance optimization in accordance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>with the Attachment (1)--Statement of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Work.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>000301</td>
<td>Funding for CLIN 0003</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITEM NO</td>
<td>SUPPLIES/SERVICES</td>
<td>ESTIMATED COST</td>
<td>FIXED FEE</td>
<td>TOTAL EST. COST PLUS FIXED FEE</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------</td>
<td>----------------</td>
<td>-----------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>0004</td>
<td>Reports and Deliverables</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

Phase II Reports and Deliverables-Deliverables/Reports will be provided in accordance with the Attachment (1)--Statement of Work.
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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 Number (CLINs) 0001 and 0002 in accordance with the Statement of Work, Attachment 1 hereto, and as specified in the Contractor’s proposal entitled “Coherent Locking of Diode Laser Arrays to Achieve High Power, Diffraction Limited Performance”, dated April 23, 2005, including cost update dated January 31, 2006, copies of which are in possession of both parties.

(b) The Contractor shall furnish the necessary personnel, materials, facilities and other services as may be required to perform Option Item 1, as stated in CLINs 0003 and 0004 respectively, if and to the extent exercised, in accordance with the Statement of Work, Attachment 1 hereto, and as specified in the Contractor’s Proposal entitled “Coherent Locking of Diode Laser Arrays to Achieve High Power, Diffraction Limited Performance”, dated April 23, 2005, including cost update dated January 31, 2006, copies of which are in possession of both parties.

(c) 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.

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
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.
(ix) Fiscal status, to include reporting of summary level financial data in the following format: (next page)
### R&D STATUS REPORT

#### PROGRAM FINANCIAL STATUS

<table>
<thead>
<tr>
<th>Work Breakdown</th>
<th>Cumulative to Date</th>
<th>At Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure or Task Element</strong></td>
<td><strong>Planned Expend</strong></td>
<td><strong>Actual Expend</strong></td>
</tr>
</tbody>
</table>

Subtotal:

Management Reserve:

Or

Unallocated Resources:

TOTAL:

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

Based on currently authorized work:

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

YES  NO

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

$ __________________

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

YES  NO
(2) ADDITIONAL MISC. DELIVERABLES
The Contractor shall deliver those items listed in the Contract Attachment (1)- Statement of Work under the paragraph entitled "Deliverables", as applicable. The contractor shall adhere to the schedule, as applicable, in the Statement of Work.

(3) SPECIAL TECHNICAL REPORT
These reports, prepared in accordance with the Contractor's format, shall document the results of a significant task, test, event or symposium.

(4) DD FORM 882, REPORT OF INVENTIONS AND SUBCONTRACTIONS
These reports shall be submitted in accordance with FAR 52.227-11 Patent Rights – Retention by the Contractor (Short Form) (JAN 1997)

(5) FINAL REPORT
This report, prepared in accordance with DFARS 252.235-7011, 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, September 1988

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

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

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

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

Sponsored by
Defense Advanced Research Projects Agency
Microsystems Technology Office (MTO)
Program: ADHELS
ARPA Order No. 407/46, Program Code: 5G10
Issued by DARPA/CMO under Contract No. HR0011-06-C-0029

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

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

(3) All technical reports must (1) be prepared in accordance with American National Standards Institute (ANSI) Standard Z39.18; (2) include a Standard Form 298, August 1998; and (3) be marked with an appropriate Distribution Statement.

(end of clause)
Section D - Packaging and Marking

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D-1 Packaging and Marking

(a) 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)
IN\$PECTION AND ACCEPTANCE TERMS

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

CLAUSES INCORPORATED BY REFERENCE

252.246-7000 Material Inspection And Receiving Report MAR 2005
DElIVERY INFORMATION

<table>
<thead>
<tr>
<th>CLIN</th>
<th>DELIVERY DATE</th>
<th>QUANTITY</th>
<th>SHIP TO ADDRESS</th>
<th>UIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>18 mths. ADC</td>
<td>N/A</td>
<td>FOB: Destination</td>
<td></td>
</tr>
<tr>
<td>000101</td>
<td>18 mths. ADC</td>
<td>N/A</td>
<td>FOB: Destination</td>
<td></td>
</tr>
<tr>
<td>0002</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>0003</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>000301</td>
<td>36 mths. ADC</td>
<td>N/A</td>
<td>FOB: Destination</td>
<td></td>
</tr>
<tr>
<td>0004</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

CLAUSES INCORPORATED BY REFERENCE

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 through eighteen (18) months thereafter.

(b) The period of performance for Option I, as set forth in CLINs 0003 and 0004, if and to the extent exercised, shall extend the base contract by an additional eighteen (18) months.

(end of clause)

F-2 Reports and Other Deliverables

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

Phase I
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Due Date (on or before)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>Interim Reports</td>
<td>Quaterly commencing 3 months ADC</td>
</tr>
<tr>
<td>0001</td>
<td>Special Test Report</td>
<td>As Required</td>
</tr>
<tr>
<td>0001</td>
<td>Phase I Table Top Demonstration.</td>
<td>17 Months ADC</td>
</tr>
<tr>
<td>0001</td>
<td>DD Form 882, Report of Inventions and Subcontracts</td>
<td>Interim reports submitted annually; report submitted upon expiration of contract.</td>
</tr>
<tr>
<td>0001</td>
<td>Final Report</td>
<td>Upon expiration of contract Phase I (see Article F-1)</td>
</tr>
</tbody>
</table>

**Phase II (Option I if and to the extent exercised)**

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description</th>
<th>Due Date (on or before)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0003</td>
<td>Interim Reports</td>
<td>Quaterly</td>
</tr>
<tr>
<td>0003</td>
<td>Special Test Report</td>
<td>As Required</td>
</tr>
<tr>
<td>0003</td>
<td>Phase II Table Top Demonstration</td>
<td>35 Months ADC</td>
</tr>
<tr>
<td>0003</td>
<td>Final Report</td>
<td>Upon expiration of contract Phase II(see Article F-1)</td>
</tr>
</tbody>
</table>

(end of clause)

**F-3 Report Distribution**

(a) DARPA/Microsystems Technology Office (MTO)
   Attn: [REDACTED]
   3701 North Fairfax Drive
   Arlington, VA 22203-1714
   E-mail: [REDACTED]@darpa.mil
   (one copy each report)

(b) DARPA/Microsystems Technology Office (MTO)
   Attn: ADPM
   3701 North Fairfax Drive
   Arlington, VA 22203-1714
   (one copy each report)
F-4 Notice Regarding Late Delivery

(a) 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: 9750400 1320 Q407 PSG10 2525 DPAC 5 5509 S12136 62702E
AMOUNT: $575,770.00
CIN 000000000000000000000000000000: $575,770.00

CLAUSES INCORPORATED BY FULL TEXT

G-1 Procuring Office Representative

(a) The Procuring Office Representative is [REDACTED] DARPA/CMO, 3701 North Fairfax Drive, Arlington, VA 22203-1714, telephone: 703-696-2434, e-mail: [REDACTED] @darpa.mil
(end of clause)

G-2 Electronic Submission of Payment Requests

(a) A cost voucher identified by contract number shall be submitted for payment directly via the Internet to Wide Area WorkFlow Receipt and Acceptance at https://wawf.eb.mil
(b) Final cost vouchers shall be submitted for review and approval to DCAA:

DCAA San Fernando Valley Branch Office
5320 Van Nuys Boulevard, Federal Building, Room 2001
Van Nuys, CA 91401-2781
Phone: (818) 756-4330
E-mail: dcaa-fao4231@dcaa.mil

(end of clause)

G-3 Delegation of Authority for Contract Administration

(a) DCMA Los Angeles, 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 [REDACTED] AERL/DEL0 Kirtland AFB, NM 87117-5776, telephone (505) 846-1633, e-mail: [REDACTED] @kirtland.af.mil. Such technical direction includes those instructions to the Contractor necessary to accomplish the Statement of Work. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the
Government. The COR does not have the authority to alter the Contractor's obligations or to change the specifications of the contract.

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

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

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

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

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

G-5  Payment Instructions for Multiple Accounting Classification Citations

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

G-6  Incremental Funding

(a) This contract shall be subject to incremental funding with $575,770 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 April 16, 2006. 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 $575,770 shall arise unless and until additional funds are made available by the Contracting Officer through a modification to this contract.

G-7  Payment of Cost and Fee

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

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

(2) A fixed fee in the amount set forth as “Fixed Fee” in Section B, in accordance with the Section I contract clause entitled “Fixed Fee”. The Contractor may bill on each invoice the amount of the fixed fee bearing the same percentage to the total fixed fee as the amount of cost billed bears to the total estimated cost.
H-1 Contracting Officer

(a) 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.

H-2 Type of Contract

(a) This is a Cost-Plus-Fixed-Fee completion contract.

H-3 Public Release or Dissemination of Information

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

(b) When submitting material for clearance for open publication, the Contractor must furnish DARPA Technical Information Officer, 3701 North Fairfax Drive, Arlington VA 22203-1714, telephone (703) 526-4163 with five copies and allow four weeks for processing. Viewgraph presentations must be accompanied with a written text. Whenever a paper is to be presented at a meeting, the Contractor must indicate the exact dates of the meeting or the Contractor's date deadline for submitting the material.

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. Personnel identified in the proposal as key individuals to be assigned for participation in the performance of the contract;
2. Personnel whose resumes were submitted with the proposal; or
3. 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

(a) 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, and 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

(a) The Contractor's Representations and Certifications dated 30 January 2006 are incorporated herein by reference.

( end of clause)

H-7 Insurance Schedule

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

( 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.
H-9 Metric System

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

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

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

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

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

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

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

H-10 Consent to Subcontract

(a) Pursuant to the clause of the General Provisions entitled "Subcontracts (AUG 1998)," FAR 52.244-2, the Contracting Officer hereby consents to the placement of subcontract(s) with the following firm(s)/consultant(s) at the ceiling amounts specified:

<table>
<thead>
<tr>
<th>NAME</th>
<th>Phase I (Base)</th>
<th>Phase II (Option 1)</th>
<th>Total Base + Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Institute of Technology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintessence Photonics Corporation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Approval must be obtained from the Administrative Contracting Officer to increase the use or number of subcontractors from the level established in subparagraph 1.

H-11 Government Furnished Property/Facilities and Services
(a) In accordance with the Section I contract clause entitled "Government Property (Cost Reimbursement, Time and Material, or Labor-Hour Contracts)", the following property, facilities and/or services shall be provided for use in the performance of this contract.

<table>
<thead>
<tr>
<th>Need Date</th>
<th>QTY</th>
<th>PROPERTY NOMENCLATURE</th>
<th>DELIVERY TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td></td>
<td>IDENTIFIED AT TIME OF CONTRACT AWARD.</td>
<td></td>
</tr>
</tbody>
</table>

(end of clause)

H-12 Proprietary Technical Data and Computer Software

(a) 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.

(end of clause)

H-13 Consultants

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

<table>
<thead>
<tr>
<th>Name</th>
<th>No. of Hours</th>
<th>Rate</th>
<th>Total Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Approval must be obtained from the Administrative Contracting Officer to increase the use of consultants from the level estimated in subparagraph (1).

(end of clause)

H-14 Exercise of Options

The Government may exercise the option indicated below, in whole or in part, by written notice signed by the Contracting Officer and sent to the contractor on or before the date specified:

**OPTION NUMBER** | DATE
--- | ---
Option 1 | Eighteen (18) months ADC

H-15 Indirect Cost Ceiling

(a) Effective on the date of contract award and notwithstanding any other provisions of this contract, the contractor shall not be entitled to reimbursement of the following:

1. Labor Overhead, including fringe benefits, in excess of [__] for Years 1-3 of the contractor's allowable direct labor costs allocable to the contract; and

2. General and Administrative (G&A) expenses in excess of [__] for Year 2, and [__] for Year 3.

(b) In the event the final indirect cost rates and actual G&A expenses are less than the negotiated ceiling rates and actual expenses, the negotiated rates and expenses will be reduced to conform to the lower rates and expenses.

(end of clause)
Section I - Contract Clauses

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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 (insert the period of time within which the Contracting Officer may exercise the option); provided that the Government gives the Contractor a preliminary written notice of its intent to extend at least days (60 days unless a different number of days is inserted) 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
52.219-23 NOTICE OF PRICE EVALUATION ADJUSTMENT FOR SMALL DISADVANTAGED BUSINESS CONCERNS (SEP 2005) ALTERNATE I (JUN 2003)

(a) Definitions. As used in this clause—

Small disadvantaged business concern means an offeror that represents, as part of its offer, that it is a small business under the size standard applicable to this acquisition; and either—

(i) It has received certification by the Small Business Administration as a small disadvantaged business concern consistent with 13 CFR 124, Subpart B; and

(ii) No material change in disadvantaged ownership and control has occurred since its certification;

(iii) Where the concern is owned by one or more disadvantaged individuals, the net worth of each individual upon whom the certification is based does not exceed $750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(iv) It is identified, on the date of its representation, as a certified small disadvantaged business concern in the database maintained by the Small Business Administration (PRO-Net);

(2) It has submitted a completed application to the Small Business Administration or a Private Certifier to be certified as a small disadvantaged business concern in accordance with 13 CFR 124, Subpart B, and a decision on that application is pending, and that no material change in disadvantaged ownership and control has occurred since its application was submitted. In this case, in order to receive the benefit of a price evaluation adjustment, an offeror must receive certification as a small disadvantaged business concern by the Small Business Administration prior to contract award; or

(3) Is a joint venture as defined in 13 CFR 124.1002(f).

Historically black college or university means an institution determined by the Secretary of Education to meet the requirements of 34 CFR 608.2. For the Department of Defense (DoD), the National Aeronautics and Space Administration (NASA), and the Coast Guard, the term also includes any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

Minority institution means an institution of higher education meeting the requirements of Section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1067k) including a Hispanic-serving institution of higher education as defined in Section 316(b)(1) of the Act (20 U.S.C. 1101a)).
United States means the United States, its territories and possessions, the Commonwealth of Puerto Rico, the U.S. Trust Territory of the Pacific Islands, and the District of Columbia.

(b) Evaluation adjustment. (i) The Contracting Officer will evaluate offers by adding a factor of [Contracting Officer insert the percentage] percent to the price of all offers, except—

(i) Offers from small disadvantaged business concerns that have not waived the adjustment; and

(ii) An otherwise successful offer from a historically black college or university or minority institution.

(2) The Contracting Officer will apply the factor to a line item or a group of line items on which award may be made. The Contracting Officer will apply other evaluation factors described in the solicitation before application of the factor. The factor may not be applied if using the adjustment would cause the contract award to be made at a price that exceeds the fair market price by more than the factor in paragraph (b)(1) of this clause.

(c) Waiver of evaluation adjustment. A small disadvantaged business concern may elect to waive the adjustment, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply to offers that waive the adjustment.

Offeror elects to waive the adjustment.

(d) Agreements. (i) A small disadvantaged business concern, that did not waive the adjustment, agrees that in performance of the contract, in the case of a contract for—

(i) Services, except construction, at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern;

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

(iii) General construction, at least 15 percent of the cost of the contract, excluding the cost of materials, will be performed by employees of the concern; or

(iv) Construction by special trade contractors, at least 25 percent of the cost of the contract, excluding the cost of materials, will be performed by employees of the concern.

(2) A small disadvantaged business concern submitting an offer in its own name shall furnish in performing this contract only end items manufactured or produced by small business concerns in the United States or its outlying areas. This paragraph does not apply to construction or service contracts.

(End of clause)
52.219-23  NOTICE OF PRICE EVALUATION ADJUSTMENT FOR SMALL DISADVANTAGED BUSINESS CONCERNS (SEP 2005) ALTERNATE II (OCT 1998)

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

Small disadvantaged business concern means an offeror that represents, as part of its offer, that it is a small business under the size standard applicable to this acquisition; and either--

(1) It has received certification by the Small Business Administration as a small disadvantaged business concern consistent with 13 CFR 124, Subpart B; and

(i) No material change in disadvantaged ownership and control has occurred since its certification;

(ii) Where the concern is owned by one or more disadvantaged individuals, the net worth of each individual upon whom the certification is based does not exceed $750,000 after taking into account the applicable exclusions set forth at 13 CFR 124.104(c)(2); and

(iii) It is identified, on the date of its representation, as a certified small disadvantaged business concern in the database maintained by the Small Business Administration (PRO-Net).

(2) It has submitted a completed application to the Small Business Administration or a Private Certifier to be certified as a small disadvantaged business concern in accordance with 13 CFR 124, Subpart B, and a decision on that application is pending, and that no material change in disadvantaged ownership and control has occurred since its application was submitted. In this case, in order to receive the benefit of a price evaluation adjustment, an offeror must receive certification as a small disadvantaged business concern by the Small Business Administration prior to contract award; or

(3) Is a joint venture as defined in 13 CFR 124.1002(f).

Historically black college or university means an institution determined by the Secretary of Education to meet the requirements of 34 CFR 608.2. For the Department of Defense (DoD), the National Aeronautics and Space Administration (NASA), and the Coast Guard, the term also includes any nonprofit research institution that was an integral part of such a college or university before November 14, 1986.

Minority institution means an institution of higher education meeting the requirements of Section 1046(3) of the Higher Education Act of 1965 (20 U.S.C. 1067k including a Hispanic-serving institution of higher education as defined in Section 316(h)(1) of the Act (20 U.S.C. 1101a)).

(b) Evaluation adjustment. (1) The Contracting Officer will evaluate offers by adding a factor of [Contracting Officer insert the percentage] percent to the price of all offers, except--
(i) Offers from small disadvantaged business concerns that have not waived the adjustment;

and

(ii) An otherwise successful offer from a historically black college or university or minority institution.

(2) The Contracting Officer will apply the factor to a line item or a group of line items on which award may be made. The Contracting Officer will apply other evaluation factors described in the solicitation before application of the factor. The factor may not be applied if using the adjustment would cause the contract award to be made at a price that exceeds the fair market price by more than the factor in paragraph (b)(1) of this clause.

(c) Waiver of evaluation adjustment. A small disadvantaged business concern may elect to waive the adjustment, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply to offers that waive the adjustment.

---Offeror elects to waive the adjustment.

(d) Agreements. (1) A small disadvantaged business concern, that did not waive the adjustment, agrees that in performance of the contract, in the case of a contract for—

(i) Services, except construction, at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern;

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

(iii) General construction, at least 15 percent of the cost of the contract, excluding the cost of materials, will be performed by employees of the concern; or

(iv) Construction by special trade contractors, at least 25 percent of the cost of the contract, excluding the cost of materials, will be performed by employees of the concern.

(2) A small disadvantaged business concern submitting an offer in its own name agrees to furnish in performing this contract only end items manufactured or produced by small disadvantaged business concerns in the United States. This paragraph does not apply in connection with construction or service contracts.

(End of clause)

52.222-2 PAYMENT FOR OVERTIME PREMIUMS (JUL 1990)

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

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

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

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

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

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

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

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

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

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

* Insert either "zero" or the dollar amount agreed to during negotiations. The inserted figure does not apply to the exceptions in paragraph (a)(1) through (a)(4) of the clause.

(End of clause)

52.233-4 APPLICABLE LAW FOR BREACH OF CONTRACT CLAIM (OCT 2004)

United States law will apply to resolve any claim of breach of this contract.

(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 _____ 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."

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

"Transportation is for the _____ 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. ______. This may be confirmed by contacting ______."

(End of clause)

52.248-1 VALUE ENGINEERING (FEB 2000)

(a) General. The Contractor is encouraged to develop, prepare, and submit value engineering change proposals (VECP's) voluntarily. The Contractor shall share in any net acquisition savings realized from accepted VECP's, in accordance with the incentive sharing rates in paragraph (f) below.

(b) Definitions. "Acquisition savings," as used in this clause, means savings resulting from the application of a VECP to contracts awarded by the same contracting office or its successor for essentially the same unit. Acquisition savings include--

(1) Instant contract savings, which are the net cost reductions on this, the instant contract, and which are equal to the instant unit cost reduction multiplied by the number of instant contract units affected by the VECP, less the Contractor's allowable development and implementation costs;

(2) Concurrent contract savings, which are net reductions in the prices of other contracts that are definitized and ongoing at the time the VECP is accepted; and

(3) Future contract savings, which are the product of the future unit cost reduction multiplied by the number of future contract units in the sharing base. On an instant contract, future contract savings include savings on increases in quantities after VECP acceptance that are due to contract modifications, exercise of options, additional orders, and funding of subsequent year requirements on a multiyear contract.

"Collateral costs," as used in this clause, means agency cost of operation, maintenance, logistic support, or Government-furnished property.

"Collateral savings," as used in this clause, means those measurable net reductions resulting from a VECP in the agency's overall projected collateral costs, exclusive of acquisition savings, whether or not the acquisition cost changes.

"Contracting office" includes any contracting office that the acquisition is transferred to, such as another branch of the agency or another agency's office that is performing a joint acquisition action.

"Contractor's development and implementation costs," as used in this clause, means those costs the Contractor incurs on a VECP specifically in developing, testing, preparing, and submitting the VECP, as well as those costs the Contractor incurs to make the contractual changes required by Government acceptance of a VECP.

"Future unit cost reduction," as used in this clause, means the instant unit cost reduction adjusted as the Contracting Officer considers necessary for projected learning or changes in quantity during the sharing period. It is calculated at the time the VECP is accepted and applies either (1) throughout the sharing period, unless the Contracting Officer decides that recalculation is necessary because conditions are significantly different from those previously anticipated or (2) to the calculation of a lump-sum payment, which cannot later be revised.
"Government costs," as used in this clause, means those agency costs that result directly from developing and implementing the VECP, such as any net increases in the cost of testing, operations, maintenance, and logistics support. The term does not include the normal administrative costs of processing the VECP or any increase in this contract's cost or price resulting from negative instant contract savings.

"Instant contract," as used in this clause, means this contract, under which the VECP is submitted. It does not include increases in quantities after acceptance of the VECP that are due to contract modifications, exercise of options, or additional orders. If this is a multiyear contract, the term does not include quantities funded after VECP acceptance. If this contract is a fixed-price contract with prospective price redetermination, the term refers to the period for which firm prices have been established.

"Instant unit cost reduction" means the amount of the decrease in unit cost of performance (without deducting any Contractor's development or implementation costs) resulting from using the VECP on this, the instant contract. If this is a service contract, the instant unit cost reduction is normally equal to the number of hours per line-item task saved by using the VECP on this contract, multiplied by the appropriate contract labor rate.

"Negative instant contract savings" means the increase in the cost or price of this contract when the acceptance of a VECP results in an excess of the Contractor's allowable development and implementation costs over the product of the instant unit cost reduction multiplied by the number of instant contract units affected.

"Net acquisition savings" means total acquisition savings, including instant, concurrent, and future contract savings, less Government costs.

"Sharing base," as used in this clause, means the number of affected end items on contracts of the contracting office accepting the VECP.

Sharing period, as used in this clause, means the period beginning with acceptance of the first unit incorporating the VECP and ending at a calendar date or event determined by the contracting officer for each VECP.

"Unit," as used in this clause, means the item or task to which the Contracting Officer and the Contractor agree the VECP applies.

"Value engineering change proposal (VECP)" means a proposal that---

(1) Requires a change to this, the instant contract, to implement; and

(2) Results in reducing the overall projected cost to the agency without impairing essential functions or characteristics; provided, that it does not involve a change---

(i) In deliverable end item quantities only;

(ii) In research and development (R&D) end items or R&D test quantities that is due solely to results of previous testing under this contract; or

(iii) To the contract type only.

(c) VECP preparation. As a minimum, the Contractor shall include in each VECP the information described in subparagraphs (1) through (8) below. If the proposed change is affected by contractually required configuration management or similar procedures, the instructions in those procedures relating to format, identification, and priority assignment shall govern VECP preparation. The VECP shall include the following:
(1) A description of the difference between the existing contract requirement and the proposed requirement, the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, the effect of the change on the end item's performance, and any pertinent objective test data.

(2) A list and analysis of the contract requirements that must be changed if the VECP is accepted, including any suggested specification revisions.

(3) Identification of the unit to which the VECP applies.

(4) A separate, detailed cost estimate for (i) the affected portions of the existing contract requirement and (ii) the VECP. The cost reduction associated with the VECP shall take into account the Contractor's allowable development and implementation costs, including any amount attributable to subcontracts under the Subcontracts paragraph of this clause, below.

(5) A description and estimate of costs the Government may incur in implementing the VECP, such as test and evaluation and operating and support costs.

(6) A prediction of any effects the proposed change would have on collateral costs to the agency.

(7) A statement of the time by which a contract modification accepting the VECP must be issued in order to achieve the maximum cost reduction, noting any effect on the contract completion time or delivery schedule.

(8) Identification of any previous submissions of the VECP, including the dates submitted, the agencies and contract numbers involved, and previous Government actions, if known.

d) Submission. The Contractor shall submit VECPs to the Contracting Officer, unless this contract states otherwise. If this contract is administered by other than the contracting office, the Contractor shall submit a copy of the VECP simultaneously to the Contracting Officer and to the Administrative Contracting Office.

e) Government action. (1) The Contracting Officer will notify the Contractor of the status of the VECP within 45 calendar days after the contracting office receives it. If additional time is required, the Contracting Officer will notify the Contractor within the 45-day period and provide the reason for the delay and the expected date of the decision. The Government will process VECPs expeditiously; however, it shall not be liable for any delay in acting upon a VECP.

(2) If the VECP is not accepted, the Contracting Officer will notify the Contractor in writing, explaining the reasons for rejection. The Contractor may withdraw any VECP, in whole or in part, at any time before it is accepted by the Government. The Contracting Officer may require that the Contractor provide written notification before undertaking significant expenditures for VECP effort.

(3) Any VECP may be accepted, in whole or in part, by the Contracting Officer's award of a modification to this contract citing this clause and made either before or within a reasonable time after contract performance is completed. Until such a contract modification applies a VECP to this contract, the Contractor shall perform in accordance with the existing contract. The decision to accept or reject all or part of any VECP is a unilateral decision made solely at the discretion of the Contracting Officer.

(f) Sharing rates. If a VECP is accepted, the Contractor shall share in net acquisition savings according to the percentages shown in the table below. The percentage paid the Contractor depends upon (1) this contract's type (fixed-price, incentive, or cost-reimbursement), (2) the sharing arrangement specified in paragraph (a) above (incentive, program requirement, or a combination as delineated in the Schedule), and (3) the source of the savings (the instant contract, or concurrent and future contracts), as follows:

**CONTRACTOR'S SHARE OF NET ACQUISITION SAVINGS**
### Contract Type

<table>
<thead>
<tr>
<th>Incentive (Voluntary)</th>
<th>Program Requirement (Mandatory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instant Contract Rate</td>
<td>Concurrent and Future Contract Rate</td>
</tr>
<tr>
<td>Fixed-price (includes fixed-price-award-fee; excludes other fixed-price incentive contracts)</td>
<td>(1) 50</td>
</tr>
<tr>
<td>Incentive (fixed-price or cost) (other than award fee)</td>
<td>(2)</td>
</tr>
<tr>
<td>Cost-reimbursement (includes cost-plus-award-fee; excludes other cost-type incentive Contracts)</td>
<td>(3) 25</td>
</tr>
</tbody>
</table>

1. The Contracting Officer may increase the Contractor's sharing rate to as high as 75 percent for each VECP.

2. Same sharing arrangement as the contract's profit or fee adjustment formula.

3. The Contracting Officer may increase the Contractor's sharing rate to as high as 50 percent for each VECP.

(g) Calculating net acquisition savings.

1. Acquisition savings are realized when (i) the cost or price is reduced on the instant contract, (ii) reductions are negotiated in concurrent contracts, (iii) future contracts are awarded, or (iv) agreement is reached on a lump-sum payment for future contract savings (see subparagraph (ii)(4) below). Net acquisition savings are first realized, and the Contractor shall be paid a share, when Government costs and any negative instant contract savings have been fully offset against acquisition savings.

2. Except in incentive contracts, Government costs and any price or cost increases resulting from negative instant contract savings shall be offset against acquisition savings each time such savings are realized until they are fully offset. Then, the Contractor's share is calculated by multiplying net acquisition savings by the appropriate Contractor's percentage sharing rate (see paragraph (f) above). Additional Contractor shares of net acquisition savings shall be paid to the Contractor at the time realized.

3. If this is an incentive contract, recovery of Government costs on the instant contract shall be deferred and offset against concurrent and future contract savings. The Contractor shall share through the contract incentive structure in savings on the instant contract items affected. Any negative instant contract savings shall be added to the target cost or to the target price and ceiling price, and the amount shall be offset against concurrent and future contract savings.
(4) If the Government does not receive and accept all items on which it paid the Contractor's share, the Contractor shall reimburse the Government for the proportionate share of these payments.

(h) Contract adjustment. The modification accepting the VECP (or a subsequent modification issued as soon as possible after any negotiations are completed) shall--

(1) Reduce the contract price or estimated cost by the amount of instant contract savings, unless this is an incentive contract;

(2) When the amount of instant contract savings is negative, increase the contract price, target price and ceiling price, target cost, or estimated cost by that amount;

(3) Specify the Contractor's dollar share per unit on future contracts, or provide the lump-sum payment;

(4) Specify the amount of any Government costs or negative instant contract savings to be offset in determining net acquisition savings realized from concurrent or future contract savings; and

(5) Provide the Contractor's share of any net acquisition savings under the instant contract in accordance with the following:

(i) Fixed-price contracts--add to contract price.

(ii) Cost-reimbursement contracts--add to contract fee.

(i) Concurrency and future contract savings.

(1) Payments of the Contractor's share of concurrent and future contract savings shall be made by a modification to the instant contract in accordance with subparagraph (h)(5) above. For incentive contracts, shares shall be added as a separate firm-fixed-price line item on the instant contract. The Contractor shall maintain records adequate to identify the first delivered unit for 3 years after final payment under this contract.

(2) The Contracting Officer shall calculate the Contractor's share of concurrent contract savings by (i) subtracting from the reduction in price negotiated on the concurrent contract any Government costs or negative instant contract savings not yet offset and (ii) multiplying the result by the Contractor's sharing rate.

(3) The Contracting Officer shall calculate the Contractor's share of future contract savings by (i) multiplying the future unit cost reduction by the number of future contract units scheduled for delivery during the sharing period, (ii) subtracting any Government costs or negative instant contract savings not yet offset, and (iii) multiplying the result by the Contractor's sharing rate.

(4) When the Government wishes and the Contractor agrees, the Contractor's share of future contract savings may be paid in a single lump sum rather than in a series of payments over time as future contracts are awarded. Under this alternate procedure, the future contract savings may be calculated when the VECP is accepted, on the basis of the Contracting Officer's forecast of the number of units that will be delivered during the sharing period. The Contractor's share shall be included in a modification to this contract (see subparagraph (h)(3) above) and shall not be subject to subsequent adjustment.

(5) Alternate no-cost settlement method. When, in accordance with subsection 48.104-4 of the Federal Acquisition Regulation, the Government and the Contractor mutually agree to use the no-cost settlement method, the following applies:

(i) The Contractor will keep all the savings on the instant contract and on its concurrent contracts only.
(ii) The Government will keep all the savings resulting from concurrent contracts placed on other sources, savings from all future contracts, and all collateral savings.

(j) Collateral savings. If a VECP is accepted, the Contracting Officer will increase the instant contract amount, as specified in paragraph (h)(5) of this clause, by a rate from 20 to 100 percent, as determined by the Contracting Officer, of any projected collateral savings determined to be realized in a typical year of use after subtracting any Government costs not previously offset. However, the Contractor's share of collateral savings will not exceed the contract's firm-fixed-price, target price, target cost, or estimated cost, at the time the VECP is accepted, or $100,000, whichever is greater. The Contracting Officer will be the sole determiner of the amount of collateral savings.

(k) Relationship to other incentives. Only those benefits of an accepted VECP not rewardable under performance, design-to-cost (production unit cost, operating and support costs, reliability and maintainability), or similar incentives shall be rewarded under this clause. However, the targets of such incentives affected by the VECP shall not be adjusted because of VECP acceptance. If this contract specifies targets but provides no incentive to surpass them, the value engineering sharing shall apply only to the amount of achievement better than target.

(l) Subcontracts. The Contractor shall include an appropriate value engineering clause in any subcontract of $100,000 or more and may include one in subcontracts of lesser value. In calculating any adjustment in this contract's price for instant contract savings (or negative instant contract savings), the Contractor's allowable development and implementation costs shall include any subcontractor's allowable development and implementation costs, and any value engineering incentive payments to a subcontractor, clearly resulting from a VECP accepted by the Government under this contract. The Contractor may choose any arrangement for subcontractor value engineering incentive payments; provided, that the payments shall not reduce the Government's share of concurrent or future contract savings or collateral savings.

(m) Data. The Contractor may restrict the Government's right to use any part of a VECP or the supporting data by marking the following legend on the affected parts:

"These data, furnished under the Value Engineering clause of contract ............, shall not be disclosed outside the Government or duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate a value engineering change proposal submitted under the clause. This restriction does not limit the Government's right to use information contained in these data if it has been obtained or is otherwise available from the Contractor or from another source without limitations."

If a VECP is accepted, the Contractor hereby grants the Government unlimited rights in the VECP and supporting data, except that, with respect to data qualifying and submitted as limited rights technical data, the Government shall have the rights specified in the contract modification implementing the VECP and shall appropriately mark the data. (The terms "unlimited rights" and "limited rights" are defined in Part 27 of the Federal Acquisition Regulation.)

(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):

[www.com]
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 I) 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 insert regulation name (48 CFR ____) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

(End of clause)

252.204-7006 BILLING INSTRUCTIONS (OCT 2005)

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

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

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

(End of clause)
Section J - List of Documents, Exhibits and Other Attachments

**LIST OF ATTACHMENTS**

<table>
<thead>
<tr>
<th>Document Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment 1</td>
<td>Statement of Work</td>
</tr>
</tbody>
</table>
Phase I:

Statement of Work Summary

Phase I begins with a system design and modeling effort, followed by a subsequent first generation component development effort (MOPA laser, detectors, PLL’s). A key milestone of Phase I is the demonstration of...

Table 8 summarizes the requirements for Telaris’ subcontractors by task.

Table 8:

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Contractor Requirements</th>
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<tbody>
<tr>
<td>1.</td>
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<td>8.</td>
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</tbody>
</table>

Statement of Work Detail

Task 1: First generation system modeling and performance optimization
- relationship between closed loop emitter phase noise and noise at detector (detector noise, scattered and stray light background, scattered and stray light beating products)
• relationship between closed loop emitter phase noise and PLL circuit noise
• relationship between closed loop emitter phase noise and DFB drive circuit noise
• relationship between laser linewidth, loop bandwidth, open loop emitter phase noise and closed loop emitter phase noise
• range of RO, LO powers at detector/mixer for which locking occurs
• beam propagation factor as a function of emitter phase noise
• level of acceptable spurious backreflections scatter from lens array onto detector
• beam propagation efficiency for given level of power phase imbalance between emitters, array geometry, laser asymmetry astigmatism
• optimal loop filter response/transfer function/loop bandwidth/delay
• stability criterion for locking in presence of noise

Task 2: Design and Develop First Generation Component Technologies
• MOPA laser emitter design and fabrication (p side or junction side up)
• microlens array design and fabrication
• baffle design and fabrication approach
• polarizer design and fabrication
• SiGe detector design and fabrication
• electronics design and fabrication
• electronics integration approach
• detector integration approach
• design and fabrication of beam combining optics
• design and fabrication of reference laser beam expanding optics

Task 3: Demonstrate Locking of Two Lasers
• characterize reference and local MOPA laser chirp, linewidth, noise characteristics
• characterize photodetector
• integrate local laser, reference laser, detector, OPLL circuitry
• characterize relative phase error between two lasers
• demonstrate and develop initial frequency acquisition process
• demonstrate long term locking stability

Task 4: Demonstrate individual MOPA elements
• MOPA laser emitter design and fabrication (p side or junction side down to facilitate heat conduction out of laser)
• conduct lifetime testing at

Task 5: Integrate first generation components into array
- MOPA laser array design and fabrication
- PLL design and fabrication
- detector design and fabrication
- opto-mechanical-electrical design and integration
- develop alignment fixturing
- develop alignment procedure
- develop packaging procedure
- conduct lifetime testing of array

Task 6: Demonstrate coherent locking and beam combining of array
- characterize laser array linewidth, noise characteristics
- characterize output beam characteristics (phase and amplitude ripple)
- develop tests, algorithms and hardware to program in optimal phase per emitter

Task 7: Characterization of laser array in relation of program’s Phase I performance goals
- characterize beam combining efficiency
- characterize beam propagation efficiency
- characterize electrical efficiency
- characterize electrical power requirements of phase control electronics
- characterize total optical power

Task 8: Plan to improve Laser Performance Metric to >0.24 and power > 10 kW
- review performance and design data
- refine system level design
- refine component level design

Table 9
Table 9 summarizes the design and performance parameters of Phase I. The quality of the wavefront will be experimentally determined by use of an optical beam profiling system and each factor contributing to the Laser Performance Metric will be characterized.

**Phase II:**

**Statement of Work Summary**

Following a similar approach as in Phase I, Phase II will begin with a system modeling effort building on the results of Phase I. This will be followed by a second generation component (laser, detector, PLL, lens) development effort. The output power of each laser will be increased to 2.5 W and the beam quality will be improved. We anticipate that the primary path to increase the power per emitter will be to [3](4).

Table 10 summarizes the requirements for Telaris' subcontractors by task.

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Contractor Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Statement of Work Detail**

**Task 1:** Second generation system modeling and performance optimization
- develop highly scaleable and parallel optical-electrical-mechanical integration approach
- system-level simulation of integrated approach
Task 2: Design and Develop Second Generation Component Technologies
- MOPA laser emitter design and fabrication (p side or junction side down)
- design microlens array
- design microbaflle array
- characterize photodetectors

Task 3: Integrate second generation components into array
- MOPA laser array design and fabrication
- PLL design and fabrication
- detector design and fabrication
- opto-mechanical-electrical design and integration
- develop alignment fixturing
- develop alignment procedure
- develop packaging procedure
- conduct array lifetime testing

Task 4: Demonstrate locking of 4900 elements
- develop acquisition procedure
- characterize laser array linewidth, noise characteristics
- characterize output beam characteristics

Task 5: Characterization of laser array in relation of program's Phase II performance goals
- characterize beam combining efficiency
- characterize beam propagation efficiency
- characterize electrical efficiency
- characterize electrical power requirements of phase control electronics
- characterize total optical power
- characterize long term stability

Task 6: Proposed design approach to attain
- review performance and design data
- refine system level design
- refine component level design
- simulate system level performance for coherent combining, wavelength combining, polarization combining approaches to "Phase III"

The key performance targets of Phase II are summarized in Table 11.

Table 11
<table>
<thead>
<tr>
<th>System Design and Performance Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
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</table>
### AMENDMENT/MODIFICATION OF SOLICITATION/MODIFICATION OF CONTRACT

<table>
<thead>
<tr>
<th>1. CONTRACT ID CODE</th>
<th>2. AMENDMENT/MODIFICATION NO.</th>
<th>3. EFFECTIVE DATE</th>
<th>4. REQUISITION/PURCHASE REQ. NO.</th>
<th>5. PROJECT NO. (Applicable)</th>
<th>PAGE OF PAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>P00001</td>
<td>28-Mar-2006</td>
<td>042746</td>
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</table>

<table>
<thead>
<tr>
<th>6. ISSUED BY CODE</th>
<th>7. ADMINISTERED BY CODE</th>
<th>8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)</th>
<th>9. AMENDMENT OF SOLICITATION NO.</th>
<th>10A. MOD. OF CONTRACT/ORDER NO.</th>
<th>10B. DATED (SEE ITEM 13)</th>
<th>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DARPA CMD</td>
<td>HR0011</td>
<td>TELARIS INC, 2118 HILLSIDE BLVD, #206, SANTA MONICA CA 90403-5784</td>
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**CODE: 4 APP6 FACILITY CODE**

<table>
<thead>
<tr>
<th>11A. CODE</th>
<th>11B. DATED (SEE ITEM 13)</th>
<th>11C. MODIFIED ORDER/CONTRACT NO.</th>
<th>11D. DOTTED (Specify type of modification and authority)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR0011</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**AMENDMENTS/REVISIONS:**

**FACILITY CODE:**

The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of offer is extended.  The offer is extended.  The offer is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods:

- By completing item 8 and 15, and returning copies of the amendment: (b) By acknowledging receipt of this amendment on each copy of the offer submitted:
- or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

**ACCOUNTING AND APPROPRIATION DATA (If required):**

- **See Schedule**
- **13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACT ORDERS**
- **IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**
- **A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.**
- **B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).**
- **C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:**

**X. IMPORTANT:** Contractor is not. is required to sign this document and return copies to the issuing office.

**14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible):**

Modification Control Number: eawarcmo06481
Incremental Funding. See page 2.

Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as hereof otherwise, remain unchanged and in full force and effect.

**15A. NAME AND TITLE OF SIGNER (Type or print):**

**15B. CONTRACTOR/OFFEROR**

**15C. DATE SIGNED**

**16. NAME AND TITLE OF CONTRACTING OFFICER (Type or print):**

**16C. DATE SIGNED**

Exception to SF 30
APPROVED BY OIRM 11-84
30-105-04
STANDARD FORM 30 (Rev. 10-83)
Prepared by GSA
FAR (48 CFR) 53.243
SUMMARY OF CHANGES

Incremental funding in the amount of $2,108,445 is hereby provided to incrementally fund Contract Line Item Number (CLIN) 0001. Accordingly, Section B-2, Allotment of Funds, is restated as follows:

(a) For the purposes of paragraph (b) of the “Limitation of Funds” clause in Section I of this contract:

1. the amount available for payment and allotted to this incrementally funded contract is $2,684,215; and

2. the items provided for by such amount are CLIN 0001

3. the period of performance for which it is estimated that such amount will provide is through September 8, 2007.

SECTION G - CONTRACT ADMINISTRATION DATA

Accounting and Appropriation

Summary for the Payment Office

As a result of this modification, the total funded amount for this document was increased by $2,108,445.00 from $575,770.00 to $2,684,215.00.

SUBCLIN 000102:
Funding on SUBCLIN 000102 is initiated as follows:

ACRN: AB
CIN: 0000000000000000000000000000000000000000
Acctng Data: 9760400 1320 Q407 P6G10 2525 DPAC 6 5097 S12136 62702E
Increase: $2,108,445.00
Total: $2,108,445.00

(End of Summary of Changes)
# Amendment of Solicitation/Modification of Contract

## 2. Amendment/Modification No.
P00002

## 3. Effective Date
16-Jun-2006

## 4. Requisition/Purchase Req. No.
DARPA

## 5. Project No. (If Applicable)
S0512A

### 6. Issued By
- **Code**: DARPA
- **CMD**: (CALIFORNIA)
- **ATTN**: (2031 NORTH FAIRFAX DR/5)
- **ARLINGTON VA 22209-174

### 8. Name and Address of Contractor
- **No.**, **Street**, **City**, **State** and **Zip Code**
- **Telephone**
- **Facility Code**

## 9. Amendment of Solicitation No.

### 10A. MOD. OF CONTRACT/ORDER NO.
P00011-06-C-0029

### 10B. DATED (SEE ITEM 11)
08-Mar-2006

### 11. This Item Only Applies to Amendments of Solicitations

- If the above numbered solicitation is amended as set forth in Item 14, the hour and date specified for receipt of offer(s) is extended, is not extended.

### 12. Accounting and Appropriation Data (If Required)

### 13. This Item Applies Only to Modifications of Contract/Orders
IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14

#### A. This Change Order is Issued Pursuant To: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT/ORDER NO. IN ITEM 10A.

#### B. The Above Numbered Contract/Order is Modified to Reflect the Administrative Changes (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.163(B).

#### C. This Supplemental Agreement is Entered Into Pursuant to Authority of:
- Section 4.10 "Consent to Subcontract" and Mutual Agreement of the Parties

#### D. Other (Specify type of modification and authority)

### 14. Description of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
- **Modification Control Number**: ewarecmp06704
- **The purpose of this modification is to consent to the use of University of Southern California (USC), as a subcontractor, at a not-to-exceed amount of $1,500,000.** There is no change to the total estimated cost-plus-fixed-fee amount of the contract as a result of this modification. Additionally, this modification exempts the subcontract universities California Institute of Technology (CALTECH) and University of Southern California (USC) from DFAR clause 252.204-7000, Disclosure of Information and DFAR Clause 252.223-7004, Drug Free Workforce. See page two of this amendment.

### 15. Name and Title of Signer (Type or print)
- **Signature of person authorized to sign**

### 16. Name and Title of Contracting Officer (Type or print)
- **Signature of Contracting Officer**

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**EXCEPTION TO SF 30**

**APPROVED BY OIRM 11-84**

**STANDARD FORM 30 (Rev. 10-83)**

Prescribed by OSA

FAR (48 CFR) 53.243
1. SECTION H - SPECIAL CONTRACT REQUIREMENTS

The following have been modified as noted in bold:

**H-10  Consent to Subcontract**

(a) Pursuant to the clause of the General Provisions entitled “Subcontracts (AUG 1998),” FAR 52.244-2, the Contracting Officer hereby consents to the placement of subcontract(s) with the following firm(s)/consultant(s) at the ceiling amounts specified:

<table>
<thead>
<tr>
<th>NAME</th>
<th>Phase I (Base)</th>
<th>Phase II (Option 1)</th>
<th>Total Base + Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Institute of Technology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintessence Photonics Corporation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Southern California</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Approval must be obtained from the Administrative Contracting Officer to increase the use or number of subcontractors from the level established in subparagraph 1.

(End of clause)

(End of Summary of Changes)