

Technology Investment Agreement

between

The United States Of America

USAF/AFMC

DET 1 AF RESEARCH LABORATORY
2310 EIGHTH STREET, BUILDING 167
WRIGHT-PATTERSON AFB OH 45433-7801

and

CAGE:

Concerning

Advanced Complementary Metal Oxide Semiconductor (CMOS) Focal Plan Arrays (FPA) for Visible
Sensors for Star Trackers (VSST) Project

Agreement No.: FA8650-11-2-5513

Total Amount of the Agreement: \$0.00

Government share: \$0.00

Recipient share: \$0.00

Authority: 10 U.S.C. 2358

Effective Date:

Catalog of Federal Domestic Assistance number: 12.800

Notice:

For

For the United States of America

Name:

Title:

DIANNA C. ANITON

Agreements Officer

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1.000 AUTHORITY (SEP 2005)

This agreement is being issued under the authority of 10 U.S.C. 2358 and Title III of the Defense Production Act of 1950, as amended (50 U.S.C. App 2061 et seq.)

1.010 ORDER OF PRECEDENCE (APR 2000) (TAILORED)

In the event of a conflict between the terms of this agreement and other governing documents, the conflict shall be resolved by giving precedence in descending order as follows:

- (a) The articles in this agreement; and
- (b) The attachments to this agreement, if any.
- (c) DoD 3210.6-R, the DoD Agreement and Agreement Regulations (DoDGARS) (13 Apr 98);

1.020 ADMINISTRATIVE RESPONSIBILITIES (JUN 2001) (TAILORED)

- (a) Government representatives are:

Agreements Officer:

XXXXXXXXXXXXX
Agreements Officer
Det 1 AFRL/PKMD
2310 8th Street
Wright-Patterson AFB, OH 45433-7801
XXX.XXX@wpafb.af.mil
(937) XXX-XXXX
(937) 255-5302 (fax)

Business Point of Contact:

XXXXXXXXXXXXX
Agreements Negotiator
Det 1 AFRL/PKMD
2310 8th Street
Wright-Patterson AFB, OH 45433-7801
XXX.XXX@wpafb.af.mil
(937) XXX-XXXX
(937) 255-5302 (fax)

Agreements Administration Office:

DCMA XXXXXXXX
XXXXXXXXXXXXX
XXXXXXXXXXXXX
XXX-XXX-XXXX
XXXXXXXX@DCMA.MIL

Government Program Manager:

XXXXXXXXXXXXX
AFRL/RXME
2977 Hobson Way

Wright-Patterson AFB, OH 45433-7739
XXX.XXX@wpafb.af.mil
(937) XXX-XXXX

Payment Office:

DFAS Columbus Center (HQ0XXX)
DFAS-CO/XXXX Entitlement Operations
P.O. Box XXXXX
Columbus, OH 43218-XXXX

Financial Management:

XXXXXXXXXXXXX
AFRL/RXFM
2230 10th Street
Bldg 653, Room 206
Wright-Patterson AFB, OH 45433-7817
XXX.XXX@wpafb.af.mil
(937) XXX-XXXX

Servicing Staff Judge Advocate's office (for invention reporting)

AFMC LO/JAZI
Bldg. 11, Area B
2240 B Street, Rm 100
Wright-Patterson AFB, OH 45433-7109

(b) Recipient's representatives are:

Contracts Manager:

XXXXXXXXXX
XXXaddressXXX
XXXemailXXX
XXXphoneXXX

Recipient's Program Manager:

XXXXXXXXXX
XXXaddressXXX
XXXemailXXX
XXXphoneXXX

2.012 TRAFFICKING IN PERSONS (DEC 2007)

(a) Provisions applicable to a recipient that is a private entity.

(1) You as the recipient, your employees, subrecipients under this award, and subrecipients' employees may not--

(i) Engage in severe forms of trafficking in persons during the period of time that the award is in effect;

(ii) Procure a commercial sex act during the period of time that the award is in effect; or

(iii) Use forced labor in the performance of the award or subawards under the award.

(2) We as the Federal awarding agency may unilaterally terminate this award, without penalty, if you or a subrecipient that is a private entity --

(i) Is determined to have violated a prohibition in paragraph a.1 of this award term; or

(ii) Has an employee who is determined by the agency official authorized to terminate the award to have violated a prohibition in paragraph a.1 of this award term through conduct that is either--

(A) Associated with performance under this award; or

(B) Imputed to you or the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our agency at 2 CFR 180

(b) Provision applicable to a recipient other than a private entity. We as the Federal awarding agency may unilaterally terminate this award, without penalty, if a subrecipient that is a private entity--

(1) Is determined to have violated an applicable prohibition in paragraph a.1 of this award term; or

(2) Has an employee who is determined by the agency official authorized to terminate the award to have violated an applicable prohibition in paragraph a.1 of this award term through conduct that is either--

(i) Associated with performance under this award; or

(ii) Imputed to the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our agency at 2 CFR 180

(c) Provisions applicable to any recipient.

(1) You must inform us immediately of any information you receive from any source alleging a violation of a prohibition in paragraph a.1 of this award term.

(2) Our right to terminate unilaterally that is described in paragraph a.2 or b of this section:

(i) Implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. 7104(g)), and

(ii) Is in addition to all other remedies for noncompliance that are available to us under this award.

(3) You must include the requirements of paragraph a.1 of this award term in any subaward you make to a private entity.

(d) Definitions. For purposes of this award term:

(1) "Employee" means either:

(i) An individual employed by you or a subrecipient who is engaged in the performance of the project or program under this award; or

(ii) Another person engaged in the performance of the project or program under this award and not compensated by you including, but not limited to, a volunteer or individual whose services are contributed by a third party as an in-kind contribution toward cost sharing or matching requirements.

(2) "Forced labor" means labor obtained by any of the following methods: the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.

(3) "Private entity":

(i) Means any entity other than a State, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 CFR 175.25.

(ii) Includes:

(A) A nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 CFR 175.25(b).

(B) A for-profit organization.

(4) "Severe forms of trafficking in persons," "commercial sex act," and "coercion" have the meanings given at section 103 of the TVPA, as amended (22 U.S.C. 7102).

2.020 TERM OF THE AGREEMENT (APR 2000) (TAILORED)

The term of this agreement for this effort is 51 months, 48 months for technical effort and 3 months for completing the final report, commencing on the effective date shown on the first page of this agreement. The technical effort will be complete on XX Month 20XX, and the final report will be due XX Month 20XX. If all funds are expended prior to the end of the term (including recipient contributions, both cash and in-kind), the parties have no obligation to continue and may elect to cease performance at that point. Articles in this agreement which by their express terms or by necessary implication, apply for periods of time other than as specified in this article shall be given effect, notwithstanding this article.

2.021 SCOPE OF THE AGREEMENT (SEP 2005)

(a) Overall Project Intent. The Parties recognize that the ultimate intent of the project is to XXXXXXXX. The Parties agree that this effort could potentially continue using a phased (spiral) execution approach. Furthermore, the value of the Agreement may increase over time depending upon the successful completion of phases. If additional phases are determined necessary, additional phases will be negotiated, and will require the Agreements Officer's approval. Phases may overlap and run concurrently so as to finish any unfinished work from a previous phase. The Parties recognize the recipient will demonstrate a level of continued commitment in the project. A portion of this continued commitment supports the Title III objective of economic viability and takes the form of strategic business planning, technical marketing support, and the Recipient's cost share investment. The Recipient will designate the company's existing strategic business plan as the current strategy business baseline with the intention of developing and implementing an enhanced strategic business plan and technical marketing effort that recognizes the increased business and marketing opportunities that result from this agreement.

(b) Commitment . If additional phases are awarded, the Agreement will continue to be a Technology Investment Agreement.

2.030 TERMINATION (APR 2000) (TAILORED)

(a) The Agreements Officer may terminate this agreement by written notice to the recipient upon a finding that the recipient has failed to comply with the material provisions of this agreement.

(b) Additionally, this agreement may be terminated by either Party upon written notice to the other Party. Such written notice shall be preceded by consultation between the Parties. If the Recipient initiates the termination, written notification shall be provided to the Agreements Officer at least 30 days prior to the requested effective date. The notification shall state the reasons for the termination, the requested effective date, and, if a partial termination, the portion to be terminated. If the Agreements Officer determines, in the case of a partial termination, that the reduced or modified portion of the award will not accomplish the purpose for which the award was made, the Agreements Officer may terminate the award in its entirety.

(c) The Government and the Recipient will negotiate in good faith an equitable reimbursement for work performed toward accomplishment of program goals. The Government will allow full credit to the Recipient for the Government share of the obligations properly incurred by the Recipient prior to termination, and those noncancellable obligations that remain after the termination not to exceed the amount of funds obligated to the agreement at the time of termination. The cost principles and procedures described in the article entitled "Cost Principles" shall govern all costs claimed, agreed to, or determined under this article.

(d) If this agreement is incrementally funded, it may be terminated in the absence of additional government funding as set forth in the article entitled "Incremental Funding".

(e) In the event of a termination, the Government shall have a paid-up Government purpose license in any subject invention, copyright work, and data made or developed under this agreement.

2.040 EXTENDING THE TERM (APR 2000) (TAILORED)

If the Parties agree, the term of this agreement may be extended if funds are available and research and development opportunities reasonably warrant. Any extension shall be formalized through modification of the agreement by the Agreements Officer and the Recipient.

3.010 SCOPE AND MANAGEMENT OF THE PROGRAM (JUN 2001) (TAILORED)

(a) The Government and the Recipient are bound to each other by a duty of good faith and best effort to achieve the goals of this agreement. This agreement is not intended to be, nor shall it be construed as, by implication or otherwise, a partnership, a corporation, or other business organization.

(b) The Recipient shall perform a coordinated program effort carried out in accordance with the Statement of Work, dated XX Month 20XX, entitled "Title III Program Statement of Work", as Attachment 1 to this agreement. Attachment 2 provides the Stellar Technical Goals. The Recipient shall submit all documentation required by Part 7, Technical and Financial Reporting.

(c) The overall management, including technical, programmatic, reporting, financial and administrative matters, of the coordinated program established under this agreement shall be accomplished by the Recipient. The Government Program Manager will interact with the Recipient to promote effective collaboration between the Recipient and the Government. Changes to this agreement that would result in (1) a change in the scope or the objective of the project or program or (2) a need for additional federal funding must be approved by the Agreements Officer, and the agreement modified in accordance with the article entitled "Modifications".

(d) The Recipient will establish a schedule of quarterly technical meetings, to be held at alternating locations between the Recipient's facility and the Program Manager's office. The Government Program Manager may participate in all technical meetings. Other Government and non-government personnel, as deemed appropriate, may also participate. Non-government personnel will be required to maintain nondisclosure agreements with the Government that prohibits those employees from disclosing any information submitted by any other contractor/recipient. Bi-weekly teleconferences will also be held between the scheduled quarterly meetings.

3.020 PROGRAM MANAGEMENT PLANNING PROCESS (APR 2000) (TAILORED)

(a) The Program Plan provides a detailed schedule of project activities, commits the Recipient to use its best efforts to meet specific performance objectives, includes forecasted expenditures and describes the payable milestones if applicable. The Program Plan will consolidate all prior adjustments in the program schedule, including revisions/modifications to payable milestones if applicable.

(b) For the first agreement year, the Recipient will follow the plan as set forth in the Statement of Work.

(c) The Plan shall be updated, with Government Program Manager involvement, in each subsequent agreement year to reflect any changes necessary for completing the program.

3.031 MODIFICATIONS (APR 2000) (TAILORED)

(a) Modifications to this agreement may be proposed by either Party. Recipient recommendations for any modifications to this agreement, including justifications to support any changes to the Statement of Work or Recipient's proposal as incorporated by reference and/or the payable milestones, shall be submitted in writing to the Government Program Manager with a copy to the Agreements Officer. The Recipient shall detail the technical, chronological, and financial impact of the proposed modification to the program. Changes are effective only after the agreement has been modified. Only the Agreements Officer has the authority to act on behalf of the Government to modify this agreement.

(b) The Agreements Officer or Administrative Agreements Officer may unilaterally issue minor or administrative agreement modifications (e.g., changes in the paying office or appropriation data, or changes to Government personnel identified in the agreement, etc.)

3.041 PROPERTY (APR 2000) (TAILORED)

(a) Recipients may purchase real property or equipment in whole or in part with federal funds or, in whole or in part with recipient funding under an award only with the prior approval of the Agreements Officer (except that additional approval is not required for such items included in the proposed/negotiated budget at the time of award). If the recipient purchases real property (other than land) or equipment with their own funding, and designates the real property or equipment as recipient cost share, the Government will have a financial interest in the real property or equipment. The financial interest of the Government is determined by the Federal participation in the project.

(b) Equipment is defined as tangible nonexpendable personal property charged directly to the award having a useful life of more than one year and an acquisition cost of \$5,000.00 or more per unit.

(c) Title to all real property or equipment purchased by the recipient with federal funds under this agreement will vest with the Government throughout the agreement. The Government may elect to transfer title to all (or some) of the real property or equipment to the recipient at the end of the agreement, if the recipient's performance is satisfactory, and subject to compliance with the criteria listed below in subparagraphs (c)(1), (c)(2), and (c)(3).

(1) Use the real property or equipment for the authorized purposes of the project until funding for the project ceases, or until the property is no longer needed for the purposes of the project.

(2) Not encumber the property without approval of the Agreements Officer.

(3) Use and dispose of the property in accordance with paragraphs (e), (f) and (g) of this article.

(d) Title to all real property or equipment purchased by the recipient with recipient funds and designated as recipient cost share under this agreement, will vest with the recipient subject to subparagraphs (c)(1), (c)(2), and (c)(3) above. As stated in paragraph (a) above, the Government will have a financial interest in the real property or equipment. The Government may relinquish all financial interest in the recipient purchased equipment at the end of the agreement, provided the recipient's performance is satisfactory, and the recipient provides:

Guaranteed, ongoing responsiveness to DoD requirements for products and services that require use of the equipment. If the recipient's performance is not satisfactory, the provisions listed above in paragraph (c)(1) through (c)(3) will apply.

(e) During the time the real property or equipment is used on this program, the recipient shall make it available for use on other projects or programs, if such other use will not interfere with the work on this program. Use of the real property or equipment on other projects will be in the following order of priority:

(1) Activities sponsored by DoD Components' grants, cooperative agreements, or other assistance awards;

(2) Activities sponsored by other Federal agencies' grants, cooperative agreements, or other assistance awards;

(3) Activities under Federal procurement contracts.

(4) Activities not sponsored by any Federal agency. If so used, use charges shall be assessed to those activities. For real property or equipment, the use charges shall be at rates equivalent to those for which comparable real property or equipment may be leased. The use charges shall be treated as program income.

(f) After Federal funding for the project ceases, or when the real property or equipment is no longer needed for the purposes of the project, the recipient may use the real property or equipment for other projects, insofar as:

(1) There are Federally sponsored projects for which the real property or equipment may be used. If the only use for the real property or equipment is for projects that have no Federal sponsorship, the recipient shall proceed with disposition of the real property or equipment, in accordance with paragraph (g) of this section.

(2) The recipient obtains written approval from the Agreements Officer to do so. The Agreements Officer shall ensure that there is a formal change of accountability for the real property or equipment to a currently funded, Federal award.

(3) The recipient's use of the real property or equipment for other projects is in the same order of priority as described in paragraph (e) of this section.

(g) Disposition. When an item of real property or equipment is no longer needed for Federally sponsored projects, the recipient shall proceed as follows:

(1) If the property that is no longer needed is equipment (rather than real property), the recipient may wish to replace it with an item that is needed currently for the project. In that case, the recipient may use the original equipment as trade-in or sell it and use the proceeds to offset the costs of the replacement equipment, subject to the approval of the Agreements Officer.

(2) The recipient may elect to retain title, without further obligation to the Federal Government, by compensating the Federal Government for that percentage of the current fair market value of the real property or equipment that is attributable to the Federal participation in the project, or

(3) The recipient may have an opportunity to retain title to the equipment provided the Government agrees to an exchange for financial resources, technical support, and/or deliverables that are of commensurate value to the Government. Examples include, but are not limited to the following:

- Direct purchase of the equipment by the contractor, with the terms and process for pricing the purchase established.
- Ongoing maintenance and insurance of the equipment.
- Guaranteed, continued government access to the equipment.
- Guaranteed, ongoing responsiveness to DoD requirements for products and services that require use of the equipment.
- Periodic reporting and data relating to the contractor's production capabilities and continued economic viability.

(4) If the recipient does not elect to retain title to real property or equipment (see paragraph (g)(2) of this section), or request approval to use equipment as trade-in or offset for replacement equipment (see paragraph (g)(1) of this section), the recipient shall request disposition instructions from the Agreements Officer.

3.042 INSURANCE COVERAGE (MAR 2007)

The Recipient shall insure and be liable for the loss, damage, and/or destruction of all real property and equipment acquired under this agreement with Federal funds. The Recipient shall, at a minimum, provide the equivalent insurance coverage for real property and equipment acquired under this agreement, as provided to real property and equipment owned by the Recipient. The Recipient will immediately notify the Agreements Officer and DCMA authorities, as appropriate, in the event there is an incident of loss, damage, or destruction of the property.

3.050 PROPERTY MANAGEMENT (JUN 2001) (TAILORED)

The recipient's property management system shall include the following for property that is Federally owned, and for equipment that is acquired in whole or in part with Federal funds. Attachment 7, Property Control List, shall be utilized for the tracking of property under this agreement and shall be submitted quarterly to the Government Program Manager identified in Article 1.020, Administrative Responsibilities:

(a) Property records shall be maintained, to include the following information:

- (1) A description of the property.
- (2) Manufacturer's serial number, model number, Federal stock number, national stock number, or any other identification number.
- (3) Source of the property, including the award number.

(4) Whether title vests in the Recipient or the Federal Government.

(5) Acquisition date (or date received, if the property was furnished by the Federal Government) and cost.

(6) Information from which one can calculate the percentage of Federal participation in the cost of the property (not applicable to property furnished by the Federal Government).

(7) The location and condition of the property and the date the information was reported.

(8) Ultimate disposition data, including date of disposal and sales price or the method used to determine current fair market value where a recipient compensates the Federal Government for its share.

(b) Federally owned equipment shall be marked, to indicate Federal ownership.

(c) A physical inventory shall be taken and the results reconciled with the property records at least once every two years. Any differences between quantities determined by the physical inspection and those shown in the accounting records shall be investigated to determine the causes of the difference. The Recipient shall, in connection with the inventory, verify the existence, current utilization, and continued need for the property.

(d) A control system shall be in effect to insure adequate safeguards to prevent loss, damage, or theft of the property. Any loss, damage, or theft of property shall be investigated and fully documented; if the property was owned by the Federal Government, the Recipient shall promptly notify the Federal agency responsible for administering the property.

(e) Adequate maintenance procedures shall be implemented to keep the property in good condition.

3.062 PHASE AUTHORIZATION AND CRITERIA (JUL 2005)

The parties recognize that before entering additional phases for this effort, the Government will perform an assessment of the Recipient's performance, commitment, and viability. This assessment will take into account information obtained from agreement deliverables, program management reviews, technical interchange meetings, and cognizant DCMA/DCAA Offices. These assessments are meant to provide an overall review of the performance occurring in the current phase prior to negotiating the succeeding phase. Authorization to proceed to the next phase will be accomplished by a formal, written modification to the agreement. It is the intent of the Government for this program to be a success. Therefore, when issues arise that yield a negative assessment, and subsequently impede phase authorization, all attempts to mitigate the issue and establish a corrective action plan will be made in order to facilitate phase authorization.

4.011 COST PRINCIPLES - COMMERCIAL (APR 2000) (TAILORED)

Federal funds and funds counted as the Recipient's cost share or match shall be used only for costs that:

(a) A reasonable and prudent person would incur, in carrying out the project contemplated by this agreement; and

(b) Are consistent with the purposes stated in the governing Congressional authorizations and appropriations.

4.021 STANDARDS FOR FINANCIAL MANAGEMENT SYSTEMS (APR 2000) (TAILORED)

The Recipient shall establish or use existing financial management systems that comply with Generally Accepted Accounting Principles (GAAP) and DoDGARs 34.11.

4.030 AUDIT (JUL 2003) (TAILORED)

(a) If the Recipient expends \$500,000 or more in one year under Federal awards they shall have an audit performed for that year by an independent auditor, in accordance with DoDGARs 34.16. The audit should be made a part of the regularly scheduled, annual audit of the Recipient's financial statements. However, the Recipient may have Federal awards separately audited, if it elects to do so unless prohibited by Federal laws or regulations.

(b) The Recipient shall provide a copy of the auditor's report to the Agreements Officer and the agreements administration office within 60 days after audit.

4.035 FIXED INDIRECT COST AGREEMENT (JAN 2008)

(a) The parties mutually agree to establish a cap for indirect costs utilizing DCMA's accepted billing rates at time of award. Notwithstanding Article 4.011 Cost Principles of this agreement, indirect costs applicable to this award shall be obtained by applying the DCMA accepted billing rates, but shall not result in total Government expenditures exceeding the total Government cost share amount of \$XXX

(b) The DCMA accepted billing rates shall be utilized for billing and reporting costs against performance of this effort.

(1) If, after DCAA has conducted the final incurred indirect cost audit, it is determined that the final negotiated indirect rates incurred are lower than those used by the Recipient for billing purposes, the Recipient shall provide a credit to the Government for the difference under the monthly voucher within 60 days of final determination of the revised amount.

(2) If, after DCAA has conducted the final incurred indirect cost audit, it is determined that the final negotiated indirect rates incurred are higher than those used by the Recipient for billing purposes, those additional costs are to be added to the Recipient's cost share agreement amount. The Government shall not reimburse the Recipient for indirect costs resulting in total Government expenditures in excess of the Government approved cost share amount of \$XXX for the period established herein.

(c) This indirect cost ceiling agreement shall not change the total monetary ceiling for the Government, funding obligation or specific direct cost allowance or disallowance provided for in this TIA, or modify either parties' obligations and limitations specified in the TIA.

(d) The intent of this article is to place a ceiling on the Government's cost share amount in order to prevent contingent liabilities for the Government and to help the Title III program office manage their programs and maintain the program budget.

4.040 RETENTION AND ACCESS TO RECORDS - INCORPORATED BY REFERENCE (AUG 2001) (TAILORED)

Recipient's financial records, supporting documents, statistical records, and all other records pertinent to an award shall be retained and access to them permitted in accordance with DoDGARs 34.42.

4.050 ALLOTTED FUNDING - INCREMENTALLY FUNDED (OCT 2001)

The following funds are allotted to this agreement:

ACRN	FUND CITATION(S)	AMOUNT
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PAYMENT INSTRUCTIONS FOR MULTIPLE ACCOUNTING CLASSIFICATION CITATIONS:

This is a multiple funded agreement and additional ACRNs will be assigned and payment instructions revised when new accounting classifications are available. Pay in the following order up to the limit specified for each ACRN:

ACRN	AMOUNT
------	--------

4.070 PAYMENT - REIMBURSEMENT (APR 2000) (TAILORED)

(a) The Recipient's Billing Voucher shall be submitted on a monthly basis via a Standard Form (SF) 270 available at: <<http://www.whitehouse.gov/omb/grants/sf270.pdf>> The initial voucher submission should occur within 25 calendar days after the close of the Recipient's monthly accounting period - nearest the end of the first Government fiscal year quarter after award. One copy of the SF270 (being submitted) shall be provided to each of the following persons as listed in the article entitled Administrative Responsibilities: Government Program Manager, Agreements Negotiator Point of Contact, Financial Management, and the Agreements Administrative Office. The SF 270 should be submitted through a Government electronic process (where possible). If not possible, submit the SF 270 via email and should contain:

(1) A detailed breakout of costs by category and Statement of Work tasks for the reporting period covered under the submission.

(2) The cumulative total amount of funds that have been billed to the Government by the Recipient to include this submission.

(3) The cumulative total amount of funds paid by the Government to the Recipient to include this submission.

(4) The amount of recipient cost share (if applicable) being contributed under this submission.

(5) The cumulative total amount of cost share contributed by the Recipient (if applicable) by the Recipient to include this submission.

Distribution Statement: In addition to any other required legend, make all data delivered under this agreement with the distribution statement located in Article 7.058.

(b) This award is subject to the electronic funds transfer (EFT) payment method. To be paid, the Recipient must submit a Payment Information Form (Standard Form (SF) 3881) to the payment office identified in the article entitle Administrative Responsibilities unless that payment office currently has the information (e.g. bank name and account number) needed to pay the Recipient by EFT. The SF-3881 is available at [http://contacts.gsa.gov/webforms.nsf/0/3772EB5D69D1B58085256A73005BE887/\\$file/sf3881.pdf](http://contacts.gsa.gov/webforms.nsf/0/3772EB5D69D1B58085256A73005BE887/$file/sf3881.pdf).

(c) Final payment will not be made until after receipt of an acceptable final report by the Government Program Manager.

4.080 PROGRAM INCOME - OTHER THAN RESEARCH (APR 2000) (TAILORED)

(a) Other than any program/project income excluded pursuant to DODGARS Part 34.14, paragraphs (a), (b), and (c), program/project income earned during the Title III project period shall be retained by the recipient and used in one or more of the following ways, as specified in program/project regulations or the terms and conditions of the award.

(1) Added to funds committed to the program/project by the DoD Component and recipient and used to further eligible program/project objectives.

(2) Used to finance the recipient cost share (non-Federal share) portion of the program/project.

(b) The Recipient has no obligation to the Government for program/project income earned after the end of the program/project period.

(c) The Recipient will have no obligation to the Government for program/project income earned from license fees and royalties for copyrighted material, patents, patent applications, trademarks and inventions produced under the grant.

(d) The Recipient may deduct costs associated with generating program/project income from gross income to determine program/project income, provided these costs are not charged to the grant.

4.090 COST SHARING (AUG 2001) (TAILORED)

(a) The parties estimate that the research and development work under this agreement can only be accomplished with the recipient aggregate resource contribution of \$0.00 throughout the term of this grant. The recipient agrees to provide the resources in the manner shown in the attached Cost Sharing Summary and Schedule. Failure of either party to provide its respective total contribution may result in a unilateral modification to the grant by the grants officer to reflect a proportional reduction in funding for the other party.

(b) The recipient's contributions may count as cost sharing only to the extent that they comply with DoDGARS 34.13.

4.093 CONSIDERATION (JUN 2006)

(a) The Recipient agrees that the selling price to Federal agencies for XXX will not exceed the price paid by any of the Recipient's other customers for the same or similar product or component sold in the same quantities.

(b) If the Government purchases XXXs that the Recipient currently has in quantity production, the Recipient will charge the Government the lowest price paid by any purchaser of such XXX regardless of the quantity actually purchased by the Government.

(c) In no event shall such price be in excess of the Recipient's sale price to any other of their customers for the same item in like quantity, or the current market price, whichever is lower.

(d) The above stated stipulations shall remain in effect for a period of five years from the conclusion of this grant.

5.010 CLAIMS, DISPUTES AND APPEALS (JUN 2001) (TAILORED)

(a) General. Parties shall communicate with one another in good faith and in a timely and cooperative manner when raising issues under this article. The Department of Defense's policy is to try to resolve all issues concerning agreements by mutual agreement at the Agreements Officer's level.

(b) Alternative Dispute Resolution (ADR): A mutually agreeable form of ADR may be utilized at any time to facilitate resolution of issues submitted under this article. ADR procedures are any voluntary means used to resolve issues in controversy without resorting to formal administrative appeals or litigation. ADR procedures may be initiated in lieu of submission of a written claim to the Agreements Officer or an appeal to the Grant Appeal Authority (GAA), or at any appropriate time during a dispute.

(c) Claims Resolution Process.

(1) Recipient Claims: Whenever disputes, disagreements, or misunderstandings arise, the parties shall attempt to resolve the issue(s) involved by discussion and mutual agreement as soon as practicable. Failing resolution by mutual agreement, the Recipient may submit to the Agreements Officer, in writing, the relevant facts, including all data that supports the claim, identifying unresolved issues and specifying the clarification or remedy sought. Within 60 days of receipt of the written claim or issue in dispute, the Agreements Officer shall either:

(i) Prepare a written decision on the issue, including the basis for the decision, or

(ii) Notify the Recipient of a specific date when he or she will render a written decision, if more time is required to do so. The notice will include the reason for delaying the decision.

(2) Government Claims: Government claims against a Recipient shall be the subject of a written decision by the Agreements Officer.

(3) Appeals: In the event the Recipient decides to appeal the decision of the Agreements Officer, they must do so within 90 days of receipt of the decision. The appeal must be submitted, in writing, to the Grant Appeal Authority (GAA). The GAA is AFRL/RX. The GAA shall conduct a review of the matter and render a decision in writing within 30 days of receipt of the written appeal. Any such decision is not subject to further administrative review and shall be final and binding.

(4) Non-exclusivity of Remedies. Nothing in this article is intended to limit a Recipient's right to any remedy under the law.

5.020 OMBUDSMAN (APR 2008)

(a) An ombudsman has been appointed to hear and facilitate the resolution of concerns from offerors, potential offerors, and others for this agreement. When requested, the ombudsman will maintain strict confidentiality as to the source of the concern. The existence of the ombudsman does not affect the authority of the program manager, Agreements Officer, or source selection official. Further, the ombudsman does not participate in the evaluation of proposals, the source selection process, or the adjudication of protests or formal contract disputes. The ombudsman may refer the party to another official who can resolve the concern.

(b) Before consulting with an ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the Agreements Officer for resolution. Consulting an ombudsman does not alter or postpone the timelines for any other processes (e.g., agency level bid protests, GAO bid protests, requests for debriefings, employee-employer actions, contests of OMB Circular A-76 <http://www.whitehouse.gov/omb/circulars/a076/a76_rev2003.pdf> competition performance decisions).

(c) If resolution cannot be made by the Agreements Officer, concerned parties may contact the AFRL ombudsmen, Ms. Karen Sue Hunter, Director of Contracting, AFRL/PK, at (937) 255-0432, or by e-mail to Karen.Hunter@wpab.af.mil <<mailto:Karen.Hunter@wpab.af.mil>>. Concerns, issues, disagreements, and recommendations that cannot be resolved at the AFRL level, may be brought by the concerned party for further consideration to the Air Force ombudsman, Associate Deputy Assistant

Secretary (ADAS) (Contracting), SAF/AQC, 1060 Air Force Pentagon, Washington DC 20330-1060, phone number (703) 588-7004, facsimile number (703) 588-1067.

(d) The ombudsman has no authority to render a decision that binds the agency.

(e) Do not contact the ombudsman to request copies of the solicitation, verify offer due date, or clarify technical requirements. Such inquiries shall be directed to the Agreements Officer.

6.010 PATENT INFRINGEMENT (APR 2000) (TAILORED)

The Recipient agrees not to hold the U.S. Government responsible for any and all patent infringement cases that may arise under any research projects conducted under this agreement. In addition, the Recipient shall indemnify the Government against all claims and proceedings for actual or alleged direct or contributory infringement of, or inducement to infringe, any U.S. or foreign patent, trademark, or copyright arising under this agreement and the Recipient shall hold the Government harmless from any resulting liabilities and losses provided the Recipient is reasonably notified of such claims and proceedings.

6.020 INVENTIONS (JUN 2001) (TAILORED)

(a) Definitions

(1) "Invention" means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code, or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.).

(2) "Subject invention" means any invention of the Recipient conceived or first actually reduced to practice in the performance of work under this agreement, provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d)) must also occur during the period of agreement performance.

(3) "Practical Application" means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms.

(4) "Made" when used in relation to any invention means the conception or first actual reduction to practice of such invention.

(5) "Small Business Firm" means a small business concern as defined at section 2 of Pub. L. 85-536 (15 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this article, the size standards for small business concerns involved in Government procurement and subcontracting at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.

(6) "Nonprofit Organization" means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c) and exempt from taxation under section 501(a) of the Internal Revenue Code (25 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a state nonprofit organization statute.

(b) Allocation of Principal Rights

The Recipient may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this article and 35 U.S.C. 203. With respect to any subject

invention in which the Recipient retains title, the Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

(c) Invention Disclosure, Election of Title and Filing of Patent Application by Recipient

(1) The Recipient will disclose each subject invention to the Government within 2 months after the inventor discloses it in writing to Recipient personnel responsible for patent matters. The disclosure to the Government shall be in the form of a written report and shall identify the agreement under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the Government, the Recipient will promptly notify the Government of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the Recipient.

(2) The Recipient will elect in writing whether or not to retain title to any such invention by notifying the Government within 2 years of disclosure to the Government. However, in any case where publication, on sale or public use has initiated the one year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the Government to a date that is no more than 60 days prior to the end of the statutory period.

(3) The Recipient will file its initial patent application on a subject invention to which it elects to retain title within 1 year after election of title or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The Recipient will file patent applications in additional countries or international patent offices within either 10 months of the corresponding initial patent application or 6 months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.

(4) Requests for extension of the time for disclosure, election, and filing under subparagraphs (1), (2), and (3) may, at the discretion of the Government, be granted.

(d) Conditions When the Government May Obtain Title

The Recipient will convey to the Government, upon written request, title to any subject invention--

(1) If the Recipient fails to disclose or elect title to the subject invention within the times specified in (c), above, or elects not to retain title; provided that the Government may only request title within 60 days after learning of the failure of the Recipient to disclose or elect within the specified times.

(2) In those countries in which the Recipient fails to file patent applications within the times specified in (c) above; provided, however, that if the Recipient has filed a patent application in a country after the times specified in (c) above, but prior to its receipt of the written request of the Government, the Recipient shall continue to retain title in that country.

(3) In any country in which the Recipient decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in reexamination or opposition proceeding on, a patent on a subject invention.

(e) Minimum Rights to Recipient and Protection of the Recipient Right to File

(1) The Recipient will retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, except if the Recipient fails to disclose the invention within the times specified in (c), above. The Recipient's license extends to its domestic subsidiary and affiliates, if any, within the corporate structure of which the Recipient is a party and includes the right to grant sublicenses of the same scope to the extent the Recipient was legally obligated to do so at the time the agreement was awarded. The license is transferable only with the approval of the Government except when transferred to the successor of that party of the Recipient's business to which the invention pertains.

(2) The Recipient's domestic license may be revoked or modified by the Government to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR part 404 and Government licensing regulations (if any). This license will not be revoked in that field of use or the geographical areas in which the Recipient has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the Government to the extent the Recipient, its licensees, or the domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, the Government will furnish the Recipient a written notice of its intention to revoke or modify the license, and the Recipient will be allowed 30 days (or such other time as may be authorized by the Government for good cause shown by the Recipient) after the notice to show cause why the license should not be revoked or modified. The Recipient has the right to appeal, in accordance with applicable regulations in 37 CFR part 404 and Government regulations (if any) concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of the license.

(f) Recipient Action to Protect the Government's Interest

(1) The Recipient agrees to execute or to have executed and promptly deliver to the Government all instruments necessary to (i) establish or confirm the rights the Government has throughout the world in those subject inventions to which the Recipient elects to retain title, and (ii) convey title to the Government when requested under paragraph (d) above and to enable the Government to obtain patent protection throughout the world in that subject invention.

(2) The Recipient agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the Recipient each subject invention made under an agreement in order that the Recipient can comply with the disclosure provisions of paragraph (c), above, and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by (c)(1), above. The Recipient shall instruct such employees through employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The Recipient will notify the Government of any decisions not to continue the prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than 30 days before the expiration of the response period required by the relevant patent office.

(4) The Recipient agrees to include, within the specification of any United States patent applications and any patent issuing thereon covering a subject invention, the following statement, "This invention was made with Government support under (identify the agreement) awarded by (identify the Federal Agency). The Government has certain rights in the invention."

(g) Lower Tier Agreements

The Recipient will include this article, suitably modified to identify the parties, in all lower tier agreements, regardless of tier, for experimental, developmental or research work. Each subrecipient will retain all rights provided for the Recipient in this article, and the Recipient will not, as part of the consideration for awarding a subrecipient award, obtain rights in a subrecipient's subject inventions.

(h) Reporting on Utilization of Subject Inventions

The Recipient agrees to submit, on request, periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the Recipient or its licensees or assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Recipient, and such other data and information as the Government may reasonably specify. The Recipient also agrees to provide additional reports as may be requested by the Government in connection with any march-in proceeding undertaken by the Government in accordance with paragraph (j) of this article. As required by 35 U.S.C. 202(c)(5), the Government agrees it will not disclose such information to persons outside the Government without permission of the Recipient.

(i) Preference for United States Industry

Notwithstanding any other provision of this article, the Recipient agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject inventions in the United States unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Government upon a showing by the Recipient or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

(j) March-in Rights

The Recipient agrees that with respect to any subject invention in which it has acquired title, the Government has the right in accordance with the procedures in 37 CFR 401.6 and any supplemental regulations of the Government to require the Recipient, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the Recipient, assignee, or exclusive licensee refuses such a request the Government has the right to grant such a license itself if the Government determines that:

(1) Such action is necessary because the Recipient or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use.

(2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the Recipient, assignee or their licensees;

(3) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the Recipient, assignee or licensees; or

(4) Such action is necessary because the agreement required by paragraph (i) of this article has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

(k) Special Provisions for Agreements with Nonprofit Organizations

If the Recipient is a nonprofit organization, it agrees that:

(1) Rights to a subject invention in the United States may not be assigned without the approval of the Government, except where such assignment is made to an organization which has as one of its primary functions the management of inventions, provided that such assignee will be subject to the same provisions as the Recipient;

(2) The Recipient will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when the Government deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202(e) and 37 CFR 401.10;

(3) The balance of any royalties or income earned by the Recipient with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, will be utilized for the support of scientific research or education; and

(4) It will make efforts that are reasonable under the circumstances to attract licensees of subject invention that are small business firms and that it will give a preference to a small business firm when licensing a subject invention if the Recipient determines that the small business firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not small business firms; provided, that the Recipient is also satisfied that the small business firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the Recipient. However, the Recipient agrees that the Secretary may review the Recipient's licensing program and decisions regarding small business applicants, and the Recipient will negotiate changes to its licensing policies, procedures, or practices with the Secretary when the Secretary's review discloses that the Recipient could take reasonable steps to implement more effectively the requirements of this paragraph (k)(4).

(l) Communication

The point of contact on matters relating to this article will be the servicing Staff Judge Advocate's office identified in the article entitled Administrative Responsibilities.

6.022 DATA RIGHTS (AUG 2001) (TAILORED)

(a) Definitions

"Government purposes", as used in this article, means any activity in which the United States Government is a party, including cooperative agreements with international or multinational defense organizations, or sales or transfers by the United States Government to foreign governments or international organizations. Government purposes include competitive procurement, but do not include the rights to use, modify, reproduce, release, perform, display, or disclose data for commercial purposes or authorize others to do so.

"Government purpose rights", as used in this article, means the right to -

(1) Use, modify, reproduce, release, perform, display, or disclose technical data within the Government without restriction; and

(2) Release or disclose technical data outside the Government and authorize persons to whom release or disclosure has been made to use, modify, reproduce, release, perform, display, or disclose that data for United States government purposes.

"Unlimited rights", as used in this article, means rights to use, modify, reproduce, perform, display, release, or disclose data in whole or in part, in any manner, and for any purpose whatsoever, and to have or authorize others to do so.

"Data", as used in this article, means recorded information, regardless of form or method or recording, which includes but is not limited to, technical data, software, trade secrets, and mask works. The term does not include financial, administrative, cost, pricing or management information and does not include subject inventions included under the article entitled Inventions.

"Practical application", as used in this article, means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or government regulations, available to the public on reasonable terms.

(b) Allocation of Principal Rights

(1) Ownership rights to data generated under this agreement shall vest in the Recipient. This agreement shall be performed with mixed Government and Recipient funding and the parties agree that in consideration for Government funding, the Recipient intends to reduce to practical application items, components and processes developed under this agreement.

(2) The Recipient agrees to retain and maintain in good condition until 3 years after completion or termination of this agreement, all data necessary to achieve practical application. In the event of exercise of the Government's march-in rights as set forth under the Article entitled Inventions, the Recipient agrees, upon written request from the Government, to deliver at no additional cost to the Government, all data necessary to achieve practical application within 60 days from the date of the written request. The Government shall have unlimited rights to this delivered data.

(3) With respect to data delivered pursuant to Part 7 of this agreement, Technical and Financial Reporting, the Government shall receive Government purpose rights.

(c) Marking of Data.

(1) Pursuant to subparagraph (b)(3) above, any data delivered under this agreement shall be marked with the following legend:

Government Purpose Rights

Agreement No.:

Recipient's Name:

Recipient's Address:

The Government may use, modify, reproduce, release, perform, display or disclose these data within the Government without restriction, and may release or disclose outside the Government and authorize persons to whom such release or disclosure has been made to use, modify, reproduce, release, perform, display or disclose that data for United States Government purposes, including competitive procurement.

(2) Any trade secrets and commercial or financial information the recipient wishes to protect from release under Freedom Of Information Act (FOIA) requirements must be marked with a legend identifying it as privileged or confidential information.

(d) Lower Tier Agreements. The Recipient shall include this article, suitably modified to identify the parties, in all subcontracts or lower tier agreements, regardless of tier, for experimental, developmental, or research work.

6.030 FOREIGN ACCESS TO TECHNOLOGY (APR 2000) (TAILORED)

(a) Definitions

"Foreign firm or institution" means a firm or institution organized or existing under the laws of a country other than the United States, its territories, or possessions. The term includes, for purposes of this agreement, any agency or instrumentality of a foreign government, and firms, institutions or business organizations which are owned or substantially controlled by foreign governments, firms, institutions, or individuals.

"Know-how" means all information including, but not limited to, discoveries, formulas, materials, inventions, processes, ideas, approaches, concepts, techniques, methods, software, programs, documentation, procedures, firmware, hardware, technical data, specifications, devices, apparatus and machines.

"Technology" means discoveries, innovations, know-how and inventions, whether patentable or not, including computer software, recognized under U.S. law as intellectual creations to which rights of ownership accrue, including, but not limited to, patents, trade secrets, mask works, and copyrights developed under this agreement.

(b) General. The Parties agree that technology developments involving
XXXXXXXXXXXXXXXXXXXX may constitute a significant enhancement to the national defense, and to the economic vitality of the United States. Accordingly, access to important technology developments under this agreement by foreign firms or institutions must be carefully controlled. The controls contemplated in this article are in addition to, and are not intended to change or supersede, the provisions of the International Traffic in Arms Regulation (22 CFR pt. 120 et seq.), the DOD Industrial Security Regulation (DOD 5220.22-R) and the Department of Commerce Export Regulation (15 CFR pt. 770 et seq.)

(c) Restrictions on Sale or Transfer of Technology to Foreign Firms or Institutions.

(1) In order to promote the national security interests of the United States and to effectuate the policies that underlie the regulations cited above, the procedures stated in subparagraphs C.2, C.3, and C.4 below shall apply to any transfer of technology. For purposes of this paragraph, a transfer includes a sale of the company, and sales or licensing of technology. Transfers do not include:

- (i) sales of products or components, or
- (ii) licenses of software or documentation related to sales of products or components, or
- (iii) transfer to foreign subsidiaries of the recipient (recipient participants) for purposes related to this agreement, or
- (iv) transfer which provides access to technology to a foreign firm or institution which is an approved source of supply or source for the conduct of research under this agreement provided that such transfer shall be limited to that necessary to allow the firm or institution to perform its approved role under this agreement.

(2) The Recipient shall provide timely notice to the Government of any proposed transfer from the recipient of technology developed under this agreement to foreign firms or institutions. If the Government determines that the transfer may have adverse consequences to the national security interests of the United States, the Recipient, its vendors, and the Government shall jointly endeavor to find alternatives to the proposed transfer which obviate or mitigate potential adverse consequences of the transfer but which provide substantially equivalent benefits to the Recipient.

(3) In any event, the Recipient shall provide written notice to the Agreements Officer and Government Program Manager of any proposed transfer to a foreign firm or institution at least 60 days prior to the proposed date of transfer. Such notice shall cite this article and shall state specifically what is

to be transferred and the general terms of the transfer. Within 30 days of receipt of the Recipient's written notification, the Agreements Officer shall advise the Recipient whether it consents to the proposed transfer. In cases where the Government does not concur or 60 days after receipt and the Government provides no decision, the Recipient may utilize the procedures under the article entitled Claims, Disputes and Appeals. No transfer shall take place until a decision is rendered.

(4) Except as provided in subparagraph C.1 above and in the event the transfer of technology to foreign firms or institutions is not approved by the Government, but the transfer is made nonetheless, the Recipient shall (a) refund to the Government the funds paid for the development of the technology and (b) negotiate a license with the Government to the technology under terms that are reasonable under the circumstances.

(d) Lower Tier Agreements. The Recipient shall include this article, suitably modified to identify the Parties, in all subcontracts or lower tier agreements, regardless of tier, for experimental, development, or research work.

(e) This article shall remain in effect during the term of the agreement and for five years thereafter.

7.035 REPORTING SUBAWARDS AND EXECUTIVE COMPENSATION (MAY 2011)

Reporting Subawards and Executive Compensation, is hereby added in its entirety.

(a) Reporting of first-tier subawards.

(1) Applicability. Unless you are exempt as provided in paragraph d. of this award term, you must report each action that obligates \$25,000 or more in Federal funds that does not include Recovery funds (as defined in section 1512(a)(2) of the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5) for a subaward to an entity (see definitions in paragraph e. of this award term).

(2) Where and when to report.

(i) You must report each obligating action described in paragraph a.1. of this award term to <http://www.fsrs.gov>.

(ii) For subaward information, report no later than the end of the month following the month in which the obligation was made. (For example, if the obligation was made on November 7, 2010, the obligation must be reported by no later than December 31, 2010.)

(3) What to report. You must report the information about each obligating action that the submission instructions posted at <http://www.fsrs.gov> specify.

(b) Reporting Total Compensation of Recipient Executives.

(1) Applicability and what to report. You must report total compensation for each of your five most highly compensated executives for the preceding completed fiscal year, if-

(i) the total Federal funding authorized to date under this award is \$25,000 or more;

(ii) in the preceding fiscal year, you received-

((a)) 80 percent or more of your annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and

((b)) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and

(iii) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>)

(2) Where and when to report. You must report executive total compensation described in paragraph b.1. of this award term:

(i) As part of your registration profile at <http://www.ccr.gov>.

(ii) By the end of the month following the month in which this award is made, and annually thereafter.

(c) Reporting of Total Compensation of Sub-recipient Executives.

(1) Applicability and what to report. Unless you are exempt as provided in paragraph d. of this award term, for each first-tier subrecipient under this award, you shall report the names and total compensation of each of the subrecipient's five most highly compensated executives for the subrecipient's preceding completed fiscal year, if-

(i) in the subrecipient's preceding fiscal year, the subrecipient received-

((a)) 80 percent or more of its annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and

((b)) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts), and Federal financial assistance subject to the Transparency Act (and subawards); and

(ii) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>)

(2) Where and when to report. You must report subrecipient executive total compensation described in paragraph c.1. of this award term:

(i) To the recipient.

(ii) By the end of the month following the month during which you make the subaward. For example, if a subaward is obligated on any date during the month of October of a given year (i.e., between October 1 and 31), you must report any required compensation information of the subrecipient by November 30 of that year.

(d). Exemptions. If, in the previous tax year, you had gross income, from all sources, under \$300,000, you are exempt from the requirements to report:

(1) Subawards, and

(2) The total compensation of the five most highly compensated executives of any subrecipient.

(e). Definitions. For purposes of this award term:

(1) Entity means all of the following, as defined in 2 CFR part 25:

(i) A Governmental organization, which is a State, local government, or Indian tribe;

(ii) A foreign public entity;

(iii) A domestic or foreign nonprofit organization;

(iv) A domestic or foreign for-profit organization;

(v) A Federal agency, but only as a subrecipient under an award or subaward to a non-Federal entity.

(2) Executive means officers, managing partners, or any other employees in management positions.

(3) Subaward:

(i) This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.

(ii) The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, see Sec. __.210 of the attachment to OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations").

(iii) A subaward may be provided through any legal agreement, including an agreement that you or a subrecipient considers a contract.

(4) Subrecipient means an entity that:

(i) Receives a subaward from you (the recipient) under this award; and

(ii) Is accountable to you for the use of the Federal funds provided by the subaward.

(5) Total compensation means the cash and noncash dollar value earned by the executive during the recipient's or subrecipient's preceding fiscal year and includes the following (for more information see 17 CFR 229.402(c)(2)):

(i) Salary and bonus.

(ii) Awards of stock, stock options, and stock appreciation rights. Use the dollar amount recognized for financial statement reporting purposes with respect to the fiscal year in accordance with the Statement of Financial Accounting Standards No. 123 (Revised 2004) (FAS 123R), Shared Based Payments.

(iii) Earnings for services under non-equity incentive plans. This does not include group life, health, hospitalization or medical reimbursement plans that do not discriminate in favor of executives, and are available generally to all salaried employees.

(iv) Change in pension value. This is the change in present value of defined benefit and actuarial pension plans.

(v) Above-market earnings on deferred compensation which is not tax-qualified.

(vi) Other compensation, if the aggregate value of all such other compensation (e.g. severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.

7.040 FINAL REPORT (JUN 2001) (TAILORED)

(a) The Final Report shall be submitted within 90 days of the end of the technical effort. Two copies of the report shall be provided to the following person(s) listed in the article entitled Administrative Responsibilities: Government Program Manager. The technical portion of the report should be suitable for publication and is to provide a recap of the program and program accomplishments. With the approval of the Government Program Manager, reprints of published articles may be submitted or attached to the technical portion of the Final Report. The business portion of the report shall contain separate discussion of total cost incurred, total costs contributed by each Recipient member with an explanation for any deviation from the original business plan.

(b) The report shall be tailored to include the official Title III / OSD emblem to be placed in the upper right hand corner of the front cover with affected entries adjusted as required (AFRL will supply a copy of the emblem). Draft report shall be unbound, in standard size type, double-spaced and singlesided. Reproducible shall be 1) camera ready, unbound, suitable for offset reproduction, and 2) on 3.5" floppy disk (or CD-ROM, or ZIP drive disk) compatible with MS-Office for Windows, and both shall incorporate all changes made in the corrected draft. All photos shall be glossy finished. Submit the reproducible(s) with the final corrected version only.

(c) The Recipient is reminded that the National Industrial Security Program Operating Manual, DOD 5220.22-M, Chapter 4, Paragraph 4-208(a), dated January 1995 requires that records be maintained when documents derive classified from multiple sources.

(d) The Recipient shall receive approval/disapproval by letter from the Air Force Program Manager within 30 days after receipt of Air Force comments. Disapproval requires correction/resubmission within 30 days after receipt of Air Force comments.

(e) The Final Report submission to the Government is exempt from disclosure requirements of 5 U.S.C. 552 (Freedom of Information Act - Exemption 4 thereunder) for a period of five years from the date identifying the documents as being submitted on a confidential basis.

Distribution Statement. In addition to any other required legend, mark all data delivered under this agreement with the distribution statement located in Article 7.058 below.

7.050 FUNDS AND MANHOUR EXPENDITURE REPORT (SEP 2005)

(a) The Funds Manhour Expenditure Report shall be submitted on a monthly basis. First submission shall commence at the close of the recipient's monthly accounting period. One copy of the Report shall be provided to the following persons listed in the article entitled Administrative Responsibilities: Government Program Manager, Agreements Negotiator, Financial Management, and Agreements Administration Office. Report may be submitted via e-mail.

This report shall contain the following:

(1) A tabular listing of funding and man-hour expenditures inclusive of the reporting period compared to original baseline values, including to-completion estimates,

(2) A graphical plot of planned versus actual funding expenditures to include Government and Cost Share Funding, and

(3) A graphical plot of planned and actual percentage of work completed.

(b) Each task, job-order, sub-task, or unit of work will be separately addressed. If schedule or milestone reporting is also a reporting requirement under the agreement, the breakdown of work task elements should be consistent with that reporting. Attachment 4, entitled "Funds and Manhour Report" is provided for use in meeting this requirement.

(c) The report identified in paragraph a. above, shall contain the following data elements:

(1) Original Negotiated Agreement - A summary of all cost elements associated with the original negotiated agreement. This is defined as the Recipient's original cost proposal, as negotiated and accepted by the Government. It is that cost as it appears on the original award document. Its elements shall contain that cost estimate breakdown by category (i.e., direct labor (Sr. Engineer, Jr. Engineer, draftsman, engineering shop, etc), burden/overhead, material/parts, travel, subsistence, fringe, General and Administrative (G&A) fee, outstanding commitments, etc.), as provided in the accepted proposal. Items and amounts specified in this entry shall remain constant on successive reports during the term of the award.

(2) Latest Negotiated Agreement Changes - A summary of the latest negotiated agreement changes. It shall be a recapitulation of the Original Negotiated Agreement data elements provided above reflecting all subsequent changes resulting from agreement modifications. Breakdown by category shall be as provided in Original Negotiated Agreement unless altered by a agreement modification. Indicate "none" if revised proposals have no effect.

(3) Reporting Period Expenditures - Expenditure data for the current reporting period for the work task categories used in Original Negotiated Agreement and Latest Negotiated Agreement Changes (as applicable), and covering man hours, funds, and the change (new orders minus fulfilled orders) in outstanding commitments.

(4) Cumulative Expenditure to Date - Cumulative man hour, funds and outstanding commitments expenditure data through the current reporting period for the work task categories used in Original Negotiated Agreement and Latest Negotiated Agreement Changes (as applicable). Additionally, show the cumulative costs as a percentage of those costs.

(5) Estimated Cost-to-Complete - The estimated costs required to complete the work task from the reporting date to the date of completion. This estimate shall be defined by categories as the appear in Original Negotiated Agreement and Latest Negotiated Agreement Changes. All estimates shall be justified.

(6) Latest cost estimate - An estimate of the final total cost at completion of the work effort. This is derived from Cumulative Expenditure to Date and Estimated Cost-to-Complete. Deviations between the original award and/or latest negotiated award change shall be justified/explained in footnote remarks.

(d) The Funds Expenditure Graph identified in paragraph b. above, shall contain the following:

The graph shall be reproducible to enable periodic changes reflecting current award funding status to be entered. The graph shall portray, on a periodic basis, the planned versus actual total dollar expenditures and the percentage of the total award dollars that the expenditure represents.

(e) The Work Completed Graph identified in paragraph c. above, shall contain the following:

A Work Completed Graph shall reflect the percentage of work completed by the awardee through the current reporting period. The graph shall plot actual completion versus planned completion, and shall be maintained current and be fully legible and reproducible.

Distribution Statement. In addition to any other required legend, mark all data delivered under this agreement with the distribution statement located in Article 7.058 below.

7.052 RECIPIENT'S PROGRESS, STATUS AND MANAGEMENT REPORT (SEP 2005)

The Recipient's Progress, Status and Management Report shall be submitted on a monthly basis. First submission shall commence at the close of the Recipient's monthly accounting period. The report can be tailored to allow Recipient's format. One copy each shall be provided to the following persons as listed in the article entitled, Administrative Responsibilities: Government Program Manager. Report may be submitted via e-mail.

This report shall contain the following:

(a) A front cover sheet, which includes the Recipient's name and address, the agreement number, the name of the program, the date of the report, the period covered by the report, the title of the report, the security classification and the name of the issuing Government activity.

(b) Description of the progress made against milestones during the reporting period.

(c) Results, positive or negative, obtained related to previously identified program areas, with conclusions and recommendations.

(d) Any significant changes to the Recipient's organization or method of operation, to the project management network, or to the milestone chart.

(e) Problem areas affecting technical or scheduling elements, with background and any recommendations for solutions beyond the scope of the agreement.

(f) Problem areas affecting cost elements, with background and any recommendations for solutions beyond the scope of the agreement.

(g) Any trips and significant results.

(h) Agreement schedule status.

(i) Plans for activities during the following reporting period.

(j) Name and telephone number of preparer of the report.

(k) Appendices for any necessary tables,, references, photographs, illustrations, and charts.

(l) A Gantt chart in Microsoft Project or other available software to include:

(i) Tasks and subtasks

(ii) Milestones,

(iii) Equipment milestones on material delivery, payment schedule, and installation dates,

(iv) Percent of work complete for each task and subtask.

Distribution Statement. In addition to any other required legend, mark all data delivered under this agreement with the distribution statement located in Article 7.058 below.

7.054 STRATEGIC BUSINESS PLAN (SEP 2005)

(a) The Strategic Business Plan shall be submitted 90 days after award and every 12 months thereafter for the life of the agreement. Attachment 3 may be used as an outline for the topic areas to be addressed in the report. The report can be tailored to allow the Recipient's format. One copy of the report shall be provided to the following persons listed in the article entitled Administrative Responsibilities: Government Program Manager.

(b) Report may be submitted via e-mail. The Recipient shall receive approval or disapproval by letter from the Air Force Program Manager within 30 days after receipt. Disapproval requires correction/resubmission within 30 days after receipt of Air Force comments. Submit reproducible on media compatible with MS-Office for Windows.

(c) Strategic Business Plan submissions to the Government are exempt from disclosure requirements of 5 U.S.C. 552 (Freedom of Information Act - Exemption 4 thereunder) for a period of five years from the date the Department receives the information. The Recipient shall mark such information with a legend identifying the documents as being submitted on a confidential basis.

Distribution Statement: In addition to any other required legend, mark all data delivered under this agreement with the distribution statement located in Article 7.058 below.

7.055 PROPERTY CONTROL LIST (JAN 2009)

Attachment 7, Property Control List, shall be utilized for the tracking of property under this agreement and shall be submitted quarterly to the Government Program Manager identified in Article 1.020, Administrative Responsibilities. Report may be submitted via e-mail. This list shall track: 1) Federally owned equipment, 2) equipment acquired in whole or in part with Federal funds, and 3) equipment provided by the recipient as their non-federal share (cost share) contribution.

Distribution Statement: In addition to any other required legend, mark all data delivered under this agreement with the distribution statement located in Article 7.058 below.

7.057 PRESENTATION MATERIAL (APR 2005)

Presentation Material shall be submitted after each briefing or review as appropriate. The maximum quantity of view graphs shall not exceed 250 per presentation. If requested, the Government may remove any Recipient insignia, trade names or symbols from presentation material. One electronic copy (via email or CD) shall be provided to the following persons as listed in the article entitled Administrative Responsibilities: Government Program Manager. Submit reproducible in a PowerPoint file on media compatible with MS-Office for Windows.

If requested, some presentation material shall include text information in sufficient detail to explain key points pertaining to the individual chart(s). The text shall include the following statement: "The publication of this material does not constitute approval by the Government of the findings or conclusion herein. Wide distribution or announcement of this material shall not be made without specific approval by the sponsoring Government activity."

Distribution Statement: In addition to any other required legend, mark all data delivered under this grant with the distribution statement located in Article 7.058 below.

7.058 DISTRIBUTION STATEMENT (AUG 2007)

DISTRIBUTION STATEMENT B. Distribution authorized to U.S Government agencies and approved DoD contractors functioning as technical advisors to the Government Title III program team. The approved contractors are Northrop Grumman Technical Services and its subcontractors. Other requests shall be referred to AFRL/RXME, 2977 Hobson Way, Building 653, Wright-Patterson AFB, OH 45433-7739.

All non-government personnel having access to data obtained/created/developed under this agreement will be required to sign non-disclosure agreements.

This statement may be used on unclassified and classified technical documents.

7.060 MARKETING PLAN (JUN 2006)

(a) The Marketing Plan shall be submitted 180 days after award and every 12 months thereafter for the life of the agreement, if additional phases are awarded. Timing for submission of the annual reports shall coincide with the established annual corporate market planning. The report can be tailored to allow Recipient's desired format. Attachment 6 hereto is provided to guide the Recipient in the level of detail required. One copy each shall be provided to the following persons as listed in the article entitled Administrative Responsibilities: Government Program Manager.

(b) The report may be submitted via e-mail. The Recipient shall receive approval or disapproval by letter from the Air Force Program Manager within 30 days after receipt. Disapproval requires correction/resubmission within 30 days after receipt of Air Force comments. Submit reproducible on media compatible with MS-Office for Windows.

(c) Marketing Plan submissions to the Government are exempt from disclosure requirements of 5 U.S.C. 552 (Freedom of Information Act - Exemption 4 thereunder) for a period of five years from the date the Department receives the information. The Recipient shall mark such information with a legend identifying the documents as being submitted on a confidential basis.

Distribution Statement: In addition to any other required legend, mark all data delivered under this agreement with the distribution statement located in Article 7.058 above.

7.061 DISCLOSURE OF INFORMATION (MAY 2005)

(a) The Recipient shall not release to anyone outside the Recipient's organization any unclassified information, regardless of medium (e.g., film, tape, document, media announcements, etc.), pertaining to any part of this agreement or any program related to this agreement unless-

(1) The Agreements Officer has given prior written approval; or

(2) The information is otherwise in the public domain before the date of release.

(b) Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the release. The Recipient shall submit its request to the Agreements Officer at least 65 days before the proposed date for release.

(c) The Recipient agrees to include a similar requirement in each sub-agreement under this agreement. Sub-recipients shall submit requests for authorization to release through the prime Recipient to the Agreements Officer.

7.070 HARDWARE DELIVERABLES (JUN 2011)

The recipient shall deliver 60 devices mounted in commercially available packages. Hardware shall be delivered to:

(Address will be included in the Agreement)

Delivery shall be no later than XX MONTH XXXX.

7.091 BILLING VOUCHER (JUN 2009)

The Recipient's Billing Voucher shall be submitted on a monthly basis via a Standard Form (SF) 270, Request for Advance or Reimbursement. One copy of the SF270 (being submitted) shall be provided to each of the following persons as listed in the article entitled Administrative Responsibilities: Government Program Manager, Agreements Negotiator Point of Contact, Financial Management, and the Agreements Administrative Office. The report can be submitted via email and should contain:

(a) A detailed breakout of costs by category and Statement of Work tasks for the reporting period covered under the submission.

(b) The cumulative total amount of funds that have been billed to the Government by the Recipient to include this submission.

(c) The cumulative total amount of funds paid by the Government to the Recipient to include this submission.

(d) The amount of recipient cost share (if applicable) being contributed on this voucher. under this submission.

(e) The cumulative total amount of cost share contributed (if applicable) by the recipient to include this submission.

Distribution Statement: In addition to any other required legend, make all data delivered under this agreement with the distribution statement located in Article 7.058.

8.020 ADMINISTRATIVE REQUIREMENTS FOR SUBAWARDS AND CONTRACTS (APR 2000) (TAILORED)

(a) The Recipients shall apply to each subaward the administrative requirements of the DoDGARs applicable to the type of subrecipient. DoDGARs Part 32 shall be applied to awards to universities or other nonprofit organizations, DoDGARs Part 33 shall be applied to awards to state and local governments, and DoDGARs Part 34 shall be applied to for-profit entities.

(b) Recipients awarding contracts under this agreement shall assure that contracts awarded contain, as a minimum, the provisions in Appendix A to DoDGARs Part 34.

8.031 PROCUREMENT STANDARDS (AUG 2001) (TAILORED)

The Recipient will:

(a) Follow basic principles of business intended to produce rational decisions and fair treatment in all contracts entered into under this agreement.

(b) Comply with federal statutes, executive orders, regulations, and other legal requirements applicable to contracts entered into under this agreement.

8.041 CLOSEOUT (AUG 2001) (TAILORED)

(a) The cognizant Administrative Agreements Officer shall, at least 60 days prior to the expiration date of the award, contact the Recipient to establish:

(1) All steps needed to close out the award, including submission of financial and performance reports, liquidation of obligations, and decisions on property disposition.

(2) A schedule for completing those steps.

(b) The following provisions shall apply to the closeout:

(1) The responsible Agreements Officer and payment office shall expedite completion of steps needed to close out awards and make prompt, final payments to a Recipient for allowable reimbursable costs under the award being closed out.

(2) The Recipient shall promptly refund any unobligated balances of cash that the DoD Component has advanced or paid and that is not authorized to be retained by the Recipient for use in other projects. For unreturned amounts that become delinquent debts see DoDGARs 22.820.

(3) The Agreements Officer may make a settlement for any downward adjustments to the Federal share of costs after closeout reports are received.

(4) The Recipient shall account for any real property and personal property acquired with Federal funds or received from the Federal Government in accordance with the terms of the agreement.

(5) If a final audit is required and has not been performed prior to the closeout of an award, the DoD Component shall retain the right to recover an appropriate amount after fully considering the recommendations on disallowed costs resulting from the final audit.

(c) The closeout of an award does not affect any of the following:

(1) The right of the Department of Defense to disallow costs and recover funds on the basis of a later audit or other review.

(2) The obligation of the Recipient to return any funds due as a result of later refunds, corrections, or other transactions.

(3) Any specified audit requirements.

(4) Any specified property management requirements.

(5) Records retention as required by the agreement.

(d) After closeout of an award, a relationship created under an award may be modified or ended in whole or in part with the consent of the Agreements Officer and the Recipient, provided the responsibilities of the Recipient referred to in the agreement, including those for property management as applicable, are considered and provisions made for continuing responsibilities of the Recipient, as appropriate.

8.050 UPDATES OF INFORMATION REGARDING RESPONSIBILITY MATTERS (DEVIATION) (OCT 2010) (DEC 2010)

(a) Reporting Requirements

(1) The Recipient shall update the information in the Federal Awardee Performance and Integrity Information System (FAPIIS) on a semi-annual basis, throughout the life of the contract, by posting the required information in the Central Contractor Registration database at <http://www.ccr.gov> (see 52.204-7).

(2) At the first semi-annual update on or after April 15, 2011, the Recipient shall post again any required information that the Recipient posted prior to April 15, 2011.

(b) Recipient Notification

(1) The Recipient will receive notification when the Government posts new information to the Recipient's record.

(2) The Recipient will have an opportunity to post comments regarding information that has been posted by the Government. The comments will be retained as long as the associated information is retained, i.e., for a total period of 6 years. Recipient comments will remain a part of the record unless the Recipient revises them.

(3) Public access to information in FAPIIS.

(i) Public requests for system information that was posted prior to April 15, 2011, will be handled under Freedom of Information Act procedures, including, where appropriate, procedures promulgated under E.O. 12600.

(ii) As required by section 3010 of Public Law 111-212, all information posted in FAPIIS on or after April 15, 2011, except past performance reviews, will be publicly available.

9.013 ASSURANCES (FEB 2001) (TAILORED)

(a) By signing or accepting funds under the agreement, the Recipient assures that it will comply with applicable provisions of the following National policies on:

(1) Prohibiting discrimination:

(i) On the basis of race, color, or national origin, in Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d, et seq.), as implemented by DoD regulations at 32 CFR part 195;

(ii) On the basis of age, in the Age Discrimination Act of 1975 (42 U.S.C. 6101, et seq.) as implemented by Department of Health and Human Services regulations at 45 CFR part 90;

(iii) On the basis of handicap, in Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794), as implemented by Department of Justice regulations at 28 CFR part 41 and DoD regulations at 32 CFR part 56;

(2) The Clean Air Act (42 U.S.C. 7401, et seq.) and Clean Water Act (33 U.S. 1251, et seq.), as implemented by Executive Order 11738 (3 CFR, 1971-1975 Comp., p. 799).

(b) The Recipient shall obtain assurances of compliance from contractors and recipients at lower tiers.

9.020 U.S. FLAG AIR CARRIERS (NOV 1999) (TAILORED)

Travel supported by U.S. Government funds under this agreement shall use U.S.-flag air carriers (air carriers holding certificates under 49 U.S.C. 41102) for international air transportation of people and property to the extent that such service is available, in accordance with the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 40118) and the interpretative guidelines

issued by the Comptroller General of the United States in the March 31, 1981, amendment to Comptroller General Decision B138942. (See General Services Administration amendment to the Federal Travel Regulations, Federal Register (Vol 63, No. 219, 63417-63421.))

<u>ATTACHMENTS</u>	<u>PGS</u>	<u>DATE</u>	<u>TITLE</u>
ATTACHMENT 1	TBD		STATEMENT OF WORK
ATTACHMENT 2	11	16 DEC 2010	STELLAR TECHNICAL GOALS
ATTACHMENT 3	4		STRATEGIC BUSINESS PLAN OUTLINE
ATTACHMENT 4	1		FUNDS AND MANHOUR REPORT
ATTACHMENT 5	1		COST SHARING SUMMARY AND SCHEDULE
ATTACHMENT 6	1		PROPERTY CONTROL LIST
ATTACHMENT 7	3		MARKETING PLAN OUTLINE

Statement of Work

Advanced Complementary Metal Oxide Semiconductors (CMOS) Focal Plan Arrays (FPA) for Visible Sensors for Star Trackers (VSST) Project

To be determined

STELLAR Technical Goals (U)

16 Dec 2010
Version 13

STELLAR Technical Goals (U)

The Staring Technology for Enhanced Linear Line-of-sight Angular Recognition (STELLAR) program is designed to push the state-of-the art for visible sensors for application in radiation hardened star trackers. The goal of this program is the development of high-performance, high-functionality visible sensor chip assemblies (SCA) for applications against very low backgrounds. Desired features of this SCA include high conversion gain, and large format. On-chip A/D conversion is optional. This document details the performance capabilities and goals of the STELLAR program. Key features are discussed below.

Requirements specifying the configuration of the STELLAR SCA are listed in table 1. Performance goals for the STELLAR SCA are listed in table 2. Performance goals are to be met under the conditions of the nominal temperature, nominal frame rate, and nominal integration time specified in table 1 at end-of-life (*i.e.* after exposure to ionizing radiation total dose specified).

Tables 1, 2, and 3 list requirements and goals for two different SCA configurations: a base configuration and an optional advanced configuration. Design, fabrication, and testing of the base configuration is the basic task of the STELLAR program. The design, fabrication, and testing of the advanced configuration is a separate priced option.

For both the base and advanced configurations, the ability to accurately and predictably centroid star images is essential. Therefore, all design precautions should be taken to avoid cell-to-cell variations in layout. In particular, adjacent unit cell layouts should not be mirrored imaged.

1 Digital Command Interface

A digital command interface is required. This interface will allow external programming of most biases, integration times, and windowing modes. The digital command interface shall be capable of changing operating mode or conditions on a frame-by-frame basis. This capability may be provided by a side-car support integrated circuit.

2 Windowing

Operation in a windowing mode shall be provided. In windowing mode, multiple blocks of rows will be readout. The position of each block shall be command-able by the Digital Command Interface. In window mode, all simultaneous windows will have the same frame time and integration time. Frame time and integration time will be set by the Digital Command Interface. Details of window operation are listed in table 3.

3 On Chip A/D Conversion

On chip A/D conversion is an optional feature. Different requirements are listed in the tables depending on whether or not on-chip A/D conversion is present.

The minimum number of bits of A/D resolution is specified in Table 2. For test and other reasons, the SCA shall have optional analog output drivers. It shall be possible to turn off the

analog output drivers for power savings purposes. The A/D converter may be provided on a separate integrated circuit that can be mounted within very close proximity to the SCA.

A/D conversion capability maybe provided by a side-car integrated circuit.

4 Standby Mode

The STELLAR SCA shall have a standby mode. In standby mode, non-essential functions will be powered off, reducing power consumption. The goal is to reduce power consumption in the standby mode by at least 50% from normal operating mode. Transition from standby mode to normal operating mode with stable response ($< 1\%$) shall be within 5 frames.

Parameter	Base Requirement	Advanced Requirement	Units	Ref.
Detector Pitch	12	12	μm	1
Array Configuration	1024×1024	2048×2048		2
Non-operating Temperature Range	-50 to 70	-50 to 70	Centigrade	3
Nominal Operating Temperature	0	0	Centigrade	4
Operating Temperature Range	-50 to 60	-50 to 60	Centigrade	5
Spectral Band	0.4 - 0.9	0.4 - 0.9	μm	6
Integration Mode	Snapshot	Snapshot		7
Nominal Integration Time	70	70	msec	8
Integration Time Range	0.5 - 1000	0.2 - 1000	msec	9
Nominal Full Frame Rate	10	10	frames/sec	10
Full Frame Rate Range	0.2 - 10	0.2 - 10	frames/sec	11

Table 1: Configuration requirements of the STELLAR program.

Table 1 References

1. Detector Pitch
Center-to-center spacing of pixels. Since requested devices are square, and have square pixels, the center-to-center spacing should be the same in both directions.
2. Array Configuration
Layout of pixels on the SCA. Number of outputs and output ordering are not specified.
3. Non-operating Temperature Range
This is the range of temperatures to which the SCA may be exposed over the system's lifetime. The SCA must survive non-operational storage for indefinite periods at these temperatures.
4. Nominal Operating Temperature
All measurements and specifications are for an SCA operating at the specified temperature.
5. Operating Temperature Range
This is the range of temperatures over which the SCA must function. It is not required to meet radiometric goals over the full temperature range of operation.

6. Spectral Band

This is the spectral band over which device performance is to be evaluated.

7. Integration Mode

The SCA shall operate in snapshot mode. Either integrated-then-read or integrate-while-read operation is acceptable.

8. Nominal Integration Time

This is the integration time at which all radiometric measurements are to be made. Read noise, *etc*, are to be evaluated at this integration time.

9. Integration Time Range

The SCA shall be capable of operating over the specified range of integration times. Some longer integration times may only be possible at longer frame times.

10. Nominal Full Frame Rate

Frame time is defined as the time between successive data integration and read out of the same pixel. Frame rate is the inverse of frame time. The full frame rate is a frame rate when all pixels on the array are integrating photons and being read out. The nominal full frame rate is the nominal rate for data integration and readout when operating at the nominal integration time and is the rate at which radiometric characteristics (dark current, read noise, linearity, *etc*) are to be measured.

11. Full Frame Rate Range

This is the range frame rates over which the SCA must be capable of operating in full frame mode.

Parameter	Base Goal	Advanced Goal	Units	Ref.
Fill Factor	> 95	> 99	%	1
Solar Weighted Quantum Efficiency	≥ 70	≥ 70	%	2
Detector Thickness	≤ 30	≤ 30	μm	3
Full Well Capacity	100K	100K	electrons	4
Read Noise	≤ 25	≤ 15	electrons/sample	5
Read Noise Non-Uniformity (1σ)	≤ 8	≤ 5	electrons/sample	6
Dark Current @23°C	≤ 30	≤ 15	pA/cm ²	7
Dark Current Non-Uniformity (1σ)	≤ 30	≤ 15	pA/cm ²	8
Total Dose Hardness	≥ 100	≥ 100	Krad(Si)	9
Proton Fluence	6.3×10^{11}	6.3×10^{11}	protons/cm ²	10
Single-Event Latch-up	None	None		11
Popcorn Pixels	< 500	< 2000	pixels	12
Power Consumption [†]	≤ 200	≤ 800	mW	13
Power Consumption [‡]	≤ 150	≤ 600	mW	14
Effective A/D Resolution [†]	≥ 13	≥ 13	bits	15
Differential Non-Linearity [†]	$\frac{1}{2}$	$\frac{1}{2}$	LSB	16
Integral Non-Linearity [†]	< 25	< 25	LSB	17
Missing A/D Code [†]	None	None		18
Responsivity Non-uniformity (1σ)	< 10	$< \pm 10$	%	19
Response Non-linearity	< 5	< 5	%	20
Operability	> 99.5	> 99.9	%	21
Inoperable Sub-Windows	≤ 1	≤ 3	Sub-Windows	22
Crosstalk	< 5	< 5	%	23
Anti-blooming	100×	100×	Max Signal	24
Saturation Recovery	≤ 3	≤ 3	Frame	25
Frame-to-Frame Crosstalk	< 3	< 1	%	26
Global Flatness	$< \pm 10$	$< \pm 10$	μm	27
Thermal Cycles	50	50	cycles	28

Table 2: Goals of the STELLAR program.

†: With optional A/D conversion on chip or with side-car A/D converter

‡: Without on-chip or side-car A/D conversion

Table 2 References

1. Fill Factor
This is the fraction of the detector pitch area that is optically sensitive.
2. Solar Weighted Quantum Efficiency
This is the band averaged quantum efficiency of the SCA within the specified spectral band. The average is weighted by the spectrum of a 5800K black body (*i.e.* the sun).
3. Detector Thickness
To minimize crosstalk, and the number and amplitude of proton events, it is desirable to minimize the thickness of the detector sensitive layers. This specifies the desired maximum detector sensitive layer thickness.
4. Full Well Capacity
This is the number of photo-electrons that can be integrated per integration period with the response function still meeting the linearity requirements.
5. Read Noise
When operated at nominal conditions with minimal visible irradiance and no net detector bias, the read noise from the SCA shall be less than or equal to the stated goal. The read noise goal can be with either on-chip or off-chip correlated double sampling (CDS).
6. Read Noise Non-Uniformity
This is the standard deviation of read noise spatial non-uniformity.
7. Dark Current Density
The detector dark current density, when measured at 23°C and nominal bias conditions, shall be less than the stated value. This is an EOL (end-of-life) requirement.
8. Dark Current Density Non-Uniformity
This is the spatial standard deviation of the dark current when measured at 23°C and nominal bias conditions.
9. Total Dose Hardness
After accumulating the specified total dose ionizing radiation, the SCA shall still meet the other requirements in this document.
10. Proton Fluence
After irradiation with the specified fluence of 63 MeV protons, the SCA shall still be functional, shall meet dark noise requirements, and shall still operate over the specified irradiance levels.

11. Single-Event Latch-up

No single-event latch-up shall occur to an LET threshold of 100 MeV-cm²/mg.

12. Popcorn Pixels

A pixel is considered a popcorn pixel if it exhibits popcorn noise (also known as burst noise or random telegraph noise). The criterion for popcorn noise is a kurtosis of > 5 (TBR) for a contiguous stream of at least 2048 frames of data. The kurtosis of pixel p , γ_p , is defined as

$$\gamma_p = \frac{1}{N} \sum_{i=1}^N \frac{(x_{i,p} - \hat{x}_p)^4}{\hat{\sigma}_p^4} - 3$$

where $x_{i,p}$ is the i^{th} reading of pixel p , $\hat{x}_p$ is the temporal mean of pixel p , and $\hat{\sigma}_p$ is the temporal standard deviation for pixel p .

13. Power Consumption (with on chip A/D)

This is the steady state power consumption of the SCA. This goal is for SCA's with on-chip A/D conversion.

14. Power Consumption (off chip A/D)

This is the steady state power consumption of the SCA. This goal is for SCA's without on-chip A/D conversion.

15. Effective A/D Resolution

The number of bits of resolution of the on-chip A/D converters shall be greater than or equal to the specified number. This only applies if the optional on-chip A/D converter is present.

16. Differential Non-Linearity

Differential non-linearity is defined as the maximum value of

$$DNL(d) = \left| \frac{(V_{d+1} - V_d)}{V_{LSB}} - 1 \right|$$

over all output bit codes, d , where $DNL(d)$ is the differential non-linearity, V_d is the analog input to the A/D converter that gives digital code d , and V_{LSB} is the ideal voltage corresponding to $1LSB$.

17. Integral Non-Linearity

Integrated non-linearity is defined as

$$INL = \left| \frac{(V_N - V_0)}{V_{LSB}} - N \right|$$

where INL is the integrated non-linearity at for full scale output of N bits, V_N is the analog input to the A/D converter that gives digital code N , V_0 is the analog input to the A/D converter that gives digital code of 0, and V_{LSB} is the ideal voltage corresponding to $1LSB$.

18. Missing A/D Code

When ramping the A/D output from 0 counts to full scale counts, there will be no missing A/D codes.

19. Response Non-uniformity

For all operable pixels, their responsivity shall be within the specified range of the responsivity of the median pixel. For this requirement, responsivity shall be measured as specified over the range from 5 times the dark noise floor to the maximum irradiance at which the non-linearity requirement is met.

20. Response Non-linearity

Non-linearity is measured by the maximum difference between the measured response and the best fit straight line versus integrated irradiance. Non-linearity is measured as a percentage of full scale response.

21. Operability

Operability is defined as the number of pixels that meet the goals for dark noise, the responsivity uniformity goals, and the linearity goals. A pixel exhibiting popcorn noise classified as a popcorn pixel is not an operable pixel.

22. Inoperable Sub-Windows

For the purpose of measuring clustering of inoperable pixels, conceptually dividing the SCA into 16×16 sub-windows. Any sub-window with more than three non-adjacent inoperable pixels, or with two or more adjacent inoperable pixels, is considered inoperable.

23. Crosstalk

Crosstalk is defined as the fraction of signal induced in a another pixel by a point source re-imaged to the center of a pixel. Measurements are to be made at wavelengths of 400 nm, 633 nm, and 905 nm with a point source much smaller than a pixel dimension. The specification is for any pixel on the SCA, except the illuminated pixel.

24. Anti-blooming

When illuminated with a point source from the Maximum Irradiance to the specified level above saturation, the SCA shall not exhibit blooming. Blooming is defined as crosstalk in excess of crosstalk measured in the above non-saturated specification.

25. Saturation Recovery

After removal of a saturating source up to $1000\times$ saturation, the SCA shall recover to normal operation within the time specified.

26. Frame-to-Frame Crosstalk

Frame-to-frame crosstalk is the fraction of pixel's signal which persists in the succeeding frame after the source of that signal has been removed.

27. Global Flatness

After assembly, the SCA shall have a peak-to-peak flatness less than the specified amount across the entire array.

28. Thermal Cycling

The SCA shall be capable of being thermally cycled between room temperature and -50C over the specified number of cycles without any degradation in performance.

Parameter	Base Goal	Advanced Goal	Units	Ref.
Width of Each Window	4 - 16	4 - 32	rows	1
Number of Simultaneous Windows	1 - 8	1 - 32	Non-overlapping Windows	2
Positional Placement of Each Window	1	1	row	3
Maximum Window Frame Rate	30	30	Frames / sec	4
Switching Time Between Window Modes	2	2	Frame	5

Table 3: Window Mode Operation

Table 3 References

1. Width of Each Window
In windowing mode, each window shall integrate and read out signal in all rows of the specified number of contiguous columns. Pixels not in a window are not read out in windowing mode.
2. Number of Simultaneous Windows
In windowing mode, the SCA shall be capable of operating from 1 to the maximum number specified of row windows. The windows do not have to overlap, but may be contiguous.
3. Positional Placement of Each Window
In windowing mode, the placement of each window shall be to within the specified number of columns. Knowledge of window position shall be exact.
4. Maximum Window Frame Rate
In windowing mode, all active windows shall be readout at the specified number number of frames per second.
5. Switching Time Between Window Modes
The maximum time allowed to switch between full frame made and window mode, or between window mode and full frame mode, or between window modes with different numbers or positions or timing shall be the specified number of frames. The number specified is the maximum number of frames of lost or corrupted data between window mode switches.

STRATEGIC BUSINESS PLAN OUTLINE

This document outlines topics that should be addressed within the strategic business plan. Bulleted sub-topics provide additional guidance regarding areas that may be included, as deemed appropriate, by the author(s) of the strategic business plan. For guidance purposes only, representative page length information has been included adjacent to each topic area.

EXECUTIVE SUMMARY - brief introduction to the business plan [1-3 pgs]

- Mission Statement
- Objectives, Expected Accomplishments (top-level)
- Highlights of Business Plan (“bottom line”)

BUSINESS OVERVIEW - overview of the company presenting the business plan [2-4 pgs]

- History of the Business (also include any new developments of the business, e.g., mergers, acquisitions, etc.)
- Description of the Business
- Legal Form (sole proprietorship, corporation, etc.)
- Location and Facilities (size, accessibility, own/lease, etc.)

BUSINESS GOALS - discussion of the short and long term goals of the company [2-4 pgs]

- One Year/Near-Term Goals (specific goals including gross sales, profit margins, market share, expansion plans, new product development, etc.)
- Longer-Term Goals (Return on Investment, net worth, etc.)

INDUSTRY ANALYSIS - assessment of the industry in general (without specific regard to the company itself other than its competitive role in the industry) [4-10 pgs]

- History of Industry
- Market Need for the Business
- Industry Size (current and future projections in unit and dollar measures)
- Industry Outlook and Growth Potential (trends, new product developments, etc.)
- Customer Analysis (types, requirements, power, etc.)
- Competition Analysis (market share, strengths and weaknesses, profitability, quality, performance, technology, marketing strategy, pricing, etc.)
- Degree of Competitive Rivalry
- Integration Analysis (forward, backward, partial)
- Distribution Patterns
- Mobility Barriers (economies of scale, product differentiation, capital requirements, cost disadvantages independent of size, access to distribution channels, government policy, etc.)
- Supplier Relationships
- Availability of Substitute Products/Materials
- Critical Success Factors

ENVIRONMENTAL ANALYSIS - assessment of current and future environments [2-5 pgs]

- Economic/Business Cycles
- Cultural/Social Factors
- Political Issues
- Demographic Issues
- Technological Issues
- Intellectual Property Rights (patents, proprietary status, etc.)
- Regulatory Issues
- International Business Issues
-

PRODUCT ANALYSIS - discussion of the company's product offering(s) and related issues [3-5 pgs]

- Product Description (brief)
- Product Advantages and Disadvantages
- Sourcing
- Quality Control
- Technology and R&D
- Intellectual Property (patents, proprietary status, etc.)
- Product Performance Data
- Competitive Comparison (cost structure, features, price, etc.)
- Value-Added Considerations
- Product Line Profitability Analysis (sensitivity analysis of product line costs, expense element relationships, trend analysis)
- Future Products/Services

MARKETING ANALYSIS - strategic summary of the company's marketing plan (3-5 pgs]

- Overall Objectives and Strategy
- Your Company Image
- Product Strategy
- Pricing Strategy
- Promotion Strategy
- Sales Strategy
- Distribution Strategy
- Guarantees, Warranties, and Services

SALES FORECAST - current and future sales projections [3-5 pgs]

- Monthly Forecast for Coming Year (units and dollars)
- Annual Forecast for Coming and Future Years (units and dollars)
- Assumptions and Sources for Forecasts

MANUFACTURING ANALYSIS - strategic summary of the company's manufacturing operations and related issues [3-6 pgs]

- Description of Process (brief)

- Physical Facilities Requirements
- Minimum Efficient Scale Facilities
- Machinery and Equipment Requirements
- Raw Materials Requirements (availability, quality, sources, etc.)
- Inventory Requirements (method of control, turnover rates, levels, etc.)
- Personnel Required (full/part-time, skill level, availability, training level, etc.)
- Experience/Learning Curve Analysis
- Resource Utilization Analysis

MANAGEMENT ANALYSIS - strategic summary of the company's management and related issues [2-5 pgs]

- Organizational Structure
- Organizational Chart with Reporting Relationships
- Duties and Responsibilities of Key Personnel
- Management Team with Background of Key Management Personnel
- Management Team Gaps
- Personnel Plan with Future Human Resource Requirements

FINANCIAL ANALYSIS - detailed analysis of the company's financial position [3-6 pgs]

- Discounted Cash Flow Analysis
- Break-Even Analysis
- Balance Sheets (monthly for coming year, annual for following two years)
- Income Statements (monthly for coming year, annual for following two years)
- Comparative Ratio Analysis

FINANCIAL PLAN - strategic summary of the company's financial position [2-5 pgs]

- Summary of Financial Position
- Industry Comparison
- Sources and Uses of Capital (Current and Future)
- Assumptions

STRATEGIC PLAN SUMMARY- overall strategy the company intends to pursue [2-5 pgs]

- Action Plan for Achieving Short and Long Term Goals
- Method and Schedule for Measuring Progress
- Applicable Programs
- Relevant Policies

RISK ANALYSIS – Identification of possible threats to the company's plan with analysis describing mitigation options [2-5 pgs]

- Description of Risks
 - * competitive actions and reactions
 - * external factors (strikes, recession, new technology, natural disaster, new competition, supplier problems, etc.)

- * internal factors (sales much higher or lower than anticipated, loss of key personnel, etc.)
- Contingency Plans

APPENDICES - Exhibits, charts, graphs, spreadsheets, etc. detailing information presented in the body of the strategic business plan

- Management Team Resumes/Biographies
- Duties and Responsibilities of Key Positions
- Price Lists
- Inventory Listing
- List of Fixed Assets
- Annual Report
- Promotional Materials
- Media, Articles, etc.

Recipient _____
Date: _____

Agreement Number: FA8650-11-2-5513

Funds and Manhour Expenditure Report - Attachment 4

Dated: _____

[illegible]

ATTACHMENT 5**Cost Sharing Summary and Schedule**

The recipient agrees to cost share or match as shown below. This Schedule may be amended annually to reflect changes or updates resulting from the annual program planning process.

1. Contributions Summary:

Cash	\$	0
In-Kind	\$	0
IR&D	\$	0
Total Cost Share	\$	0

2. Cost Share Contribution Schedule

	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>Total</u>
Cash:	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
In-Kind:	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Total Cost Share	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

[illegible]

MARKETING PLAN OUTLINE

This document outlines topics that should be addressed within the strategic marketing plan. Bulleted sub-topics provide additional guidance regarding areas that may be included as deemed appropriate by the author(s) of the marketing plan.

MARKETING ANALYSIS

MARKET SEGMENTATION AND PRODUCT LINE ANALYSIS

- Description of Market Segments
- Identification of Products in each Segment
- Problems in Marketing to each Segment
- Plans for Overcoming these Problems
- Identification of Target Market Segments

CUSTOMER ANALYSIS

- Customer/Program Identification
- Customer Profile – Including user Volume Levels
- Methodology used to Forecast user Volume Levels
- Customer Acceptance
- Customer's Changing Needs
- User Survey

MARKET DEMAND FORECAST

- Market Surveys/Studies
- Time-Phased Projections
- Methodology
- Market Sensitivity
- Major Assumptions

EXTERNAL ENVIRONMENTAL ANALYSIS

COMPETITON ANALYSIS

- Description of Existing and Potential Competition
- Patents and Proprietary Processes
- Competitor's Strengths and Weaknesses
- Competitor's Position in Market
- Competitor's Strategies and Expected Counteractions

COMPETITIVE THREAT ANALYSIS

- Impact of New Entrants
- Rivalry Among Existing Firms
- Threat of Substitute Products/Alternate Materials
- Bargaining Power of Suppliers
- Bargaining Power of Customers

MARKETING PLANNING

PRODUCT DESCRIPTION/FEATURES

- Specifications
- Patents and Proprietary Processes
- Packaging
- Marketing Results of Testing and Qualification
- Customer Needs and Feedback
- Product Differentiation
- Product Augmentation
- Use/User Benefits
- Technical/Process Problems

MARKETING STRATEGY

- Overall Long-Term Strategy
- Detailed Strategy
- Market Entry Qualifications
- Contingency Plans
- Customer Attitudes/Feedback
- Customer partnering Relationships
- Marketing Channels
- Phase I Material Qualification
- Decision Analysis
- Test and Qualification Data Bases
- Distribution and Logistics
- Promotion and Advertising Marketing/Sales Milestones and Schedules
- Detailed Marketing/Sales Budget

VOLUME ANALYSIS

- Objective
- Market Share
- Market Sensitivity
- Sales Projections (Growth Trends) (Optimistic and Pessimistic)
- Production Capability

PRICING ANALYSIS

- Pricing Practices
- Product Pricing
- Unit Cost Analysis

MARKET POSITION

- Strengths and Weaknesses
- Risk Factors

INTERNAL MARKETING STRUCTURE AND FUNCTION

- Corporate Marketing Objectives
- Marketing Philosophy
- Marketing Organization
- Marketing Personnel/Job Functions/Responsibilities
- Marketing Training
- Marketing Programs
- Team Marketing Approaches
- Marketing Function Strengths and Weaknesses
- Corporate Procedures
- Corporate Resources
- Service/Warranty Policies

GOVERNMENT DISTRIBUTION OF MATERIAL

- Provide your ideas and views on how you envision the Government distributing to potential users/Government organizations any material, which it takes possession of during the course of this agreement.

ACCOUNTING AND REPORTING

MARKETING PROBLEMS, ISSUES, AND RISKS