

**BAA 06-01
Proposers' Information Pamphlet (PIP)**

for

**Defense Advanced Research Projects Agency (DARPA)
Advanced Technology Office (ATO)**

Mission Adaptable Chemical Sensor (MACS) Program

Technical POC: Dr. Frank Patten, DARPA/ATO

This BAA will be open for one (1) year from the date of its publication in www.FedBizOps.gov and www.FedGrants.gov.

NOTE: Although this BAA will be open for one (1) year from the date of its publication, the Government anticipates that the majority of initial funding for this program will be committed during Initial Selections. To be considered for funding during Initial Selections, full proposals must be received no later than 12:00 noon EST on 5 December 2005.

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1. INTRODUCTION

The Defense Advanced Research Projects Agency's (DARPA) Advanced Technology Office (ATO) is soliciting proposals under this BAA for the performance of research, development, design, and demonstration to support the Mission Adaptable Chemical Sensor (MACS) program.

1.1. APPROACH

This BAA affords offerors the choice of submitting proposals for the award of a Procurement Contract, Grant, Cooperative Agreement, Technology Investment Agreement, or Other Transaction for Prototype Agreement. The type of procurement or assistance vehicle is subject to negotiation. The Government reserves the right to negotiate the type of award instrument determined appropriate under the circumstances.

1.2. PROPOSERS AND ELIGIBILITY

This BAA is extended to all capable and qualified sources, including but not limited to institutes of higher education, private or public companies, Government laboratories, and Government research organizations.

The Government encourages responses to this BAA by non-traditional defense contractors, nonprofit organizations, educational institutions, small businesses, small disadvantaged business concerns, Historically-Black Colleges and Universities (HBCU), Minority Institutions (MI), large businesses and Government laboratories. Teaming arrangements between and among these groups are encouraged. However, no portion of this BAA will be set aside for organizations of a specific business classification due to the impracticality of preserving discrete or severable areas of research in the technologies sought. Government/National laboratory proposals may be subject to applicable direct competition limitations, though certain Federally Funded Research and Development Centers are excepted per PL 103-337 § 217 and PL 05-261 § 3136. Any responsible and otherwise qualified organization is encouraged to respond.

1.3. PROGRAM SCOPE AND FUNDING

The Government anticipates issuing one or more awards under this BAA. The Government intends to issue awards based on the optimum combination of proposals that offers the best overall value to the Government. The Government reserves the right to make award (s) without discussion. In addition, the Government may select for award some portion(s) of the proposals. In that event, the Government may select for negotiation all, or portions, of a given proposal. The Government may incrementally fund any award issued under this BAA.

1.4. PERIOD OF PERFORMANCE

It is anticipated that performance of contracts resulting from initial proposal selections will begin February 2006 and continue through January 2009, and consist of a Base Period (Phase I) not to exceed 18 months followed by a single Option Period (Phase II) not to exceed 18 months.

1.5. TECHNICAL AND ADMINISTRATIVE SUPPORT

It is the intent of this office to use contractor support personnel in the administration of all responses to this BAA. The Government intends to use non-government employees and their subcontractors, including but not limited to Booz Allen Hamilton, Inc. to assist in administration and, if needed, provide technical expertise on portions of the proposals. These personnel will have signed and be subject to the terms and conditions of non-disclosure agreements. By submission of its proposal, a Proposer agrees that its proposal information may be disclosed to employees of these organizations for the limited purpose stated above. If you do not send notice of objection to this arrangement, the Government will assume you

consent to use the subject personnel in review of all submittals under this BAA. Only Government personnel will make technical evaluations and award decisions under this BAA.

1.6. INSTRUCTIONS AND POINTS OF CONTACT

Unclassified technical questions pertaining to this BAA may be submitted to DARPA at the following e-mail address: BAA06-01@darpa.mil. Classified technical questions must be submitted in accordance with the instructions provided in section 4.1.3.

Refer contractual questions to the following:

Patricia Matyskiela
Contracting Officer
DARPA/CMO
3701 Fairfax Drive
Arlington, VA 22203-1714
703-465-1075 fax
Patricia.Matyskiela@darpa.mil

2. PROGRAM OVERVIEW

The objective of the program is to successfully demonstrate a portable (< 1 cubic foot, < 30 lbs), ultra-sensitive (parts-per-trillion detection capability) chemical sensor based upon submillimeter/terahertz rotational spectroscopy. This technology takes advantage of the quantized nature of rotational motion for gas phase materials, and provides unique chemical spectra for multiple analytes in parallel, with very little interference from background atmospheric clutter. Further, it allows detection of many chemicals simultaneously, in a single sample, over a wide range of concentrations, without significant compromise in probability of detection or increase in false alarm rate.

The Mission Adaptable Chemical Sensor (MACS) will be capable of sampling the local atmosphere and determining the presence of chemical, biological, and explosives threats by means of their gaseous signatures. This program asserts that unambiguous identification of such threats can be accomplished only by the rapid, simultaneous identification of the suite of gaseous chemicals that constitute their “signature”; accordingly, the sensor must be capable of identifying at least 300 molecular species in a single sample of the local atmosphere, within 10 minutes. The sensor must have a 0.9999 probability of threat detection and 0.0001 probability of false alarm.

Pursuant to the program objectives, this BAA solicits proposals that include (but are not limited to) the following technology areas: (1) Technologies and systems to fabricate a portable chemical sensor, enabling the detection and identification of multiple threats (explosives, chemical, biological) to ground personnel; (2) Spectroscopic techniques that sensitively detect, discriminate, and identify chemicals characteristic of particular threats, in an atmospheric background; (3) Radio-frequency sources and detectors, in the submillimeter regime, that are sufficiently small for portable instrumentation, and with adequate operating power; (4) Gas sampling and micro-pumping systems to acquire, process, and move chemical and biological materials; and (5) Signal processing and analytical technologies to enable the detection and accurate identification of components of an atmospheric sample containing threat gases. The Government strongly encourages proposals for the full scope of the development (i.e., an end-to-end system that is designed by a team of multidisciplinary research organizations plus an integrator for coordination and implementation support). The Government also encourages proposals for more narrowly-focused technology maturation that has a potential to enhance the objective system dramatically.

In the first phase of the program, performers will demonstrate the proof-of-concept for the MACS program by producing a “breadboard” table-top prototype exhibiting all the important components for (1) sample processing, in preliminary design and capability, (2) sensitivity development to achieve the final capability required by the specifications given below, and (3) signal processing and spectral analysis needed for the target identification goals. A final demonstration will be required for this phase, in which the components in a gas mixture (test sample provided by a DoD monitor) must be identified correctly in a blind test encompassing more than 30 candidate gases in an atmospheric clutter background. Performers must work within the demonstration parameters and provide data to a review team, who will verify that they have met specifications, and determine the resulting receiver operating characteristic (ROC) for the system.

The second phase of the program will involve fabrication of the portable sensor, containing an all-solid-state THz core spectrometer that will demonstrate all the performance benchmarks set forth in Section 2.2.2, below. By this phase of the program, the system must have the capability to quickly identify all relevant chemical weapon agents (CWAs) and toxic industrial chemicals (TICs), in the presence of a cluttered background.

General classes of requirements are:

- Explosive detection
- Chemical agent detection
- Nerve agent detection
- General toxic agent detection

2.1. PHASE I

2.1.1. Target Specifications

The objective of this first phase (Phase I) of the program is to demonstrate the capability of achieving a final product that could be usable in the field -- as a portable sensor with broad capability for sensitive detection of broad classes of threats (Phase II objective), and as a miniaturized sensor (possible Phase III objective) with further refinements in size/weight/power reduction and an expansion of the capabilities of the prior phase.

2.1.2. Technical Milestone

The following simultaneous achievements must be demonstrated upon completion of Phase I, and constitute a go/no-go determination to the next phase of the program.

- Sensitivity < 100 PPT in atmospheric background clutter characterized by NOAA as “New York typical” (collected with assistance from NOAA)
- Probability of Detection (PD) > 0.9999 (in atmospheric clutter described above)
- Probability of False Alarm (PFA) < 0.0001 (in atmospheric clutter described above)
- False alarm rate < 0.1 event per day, based upon multiple sampling of diffuse chemical threats (to be defined) spreading over 100 feet within minutes of release (in atmospheric clutter described above)
- Simultaneous Analyte Assays > 30
- Size < 1 m³ (table top unit)
- Weight < 100 lbs
- Power Consumption < 100 watts (size, weight, and power are considered to be rough indicators of a “breadboard” construction, that can convince evaluators that technologies have been exhibited that will meet the needs of the final program)

- Mission life: indeterminate at present
- Analysis time < 10 minutes
- Required Demonstration: Correctly identify components of a mixture provided by a DoD monitor, in a blind test, out of a list of 30 candidates, without false identifications, according to a test regimen given mid-way through Phase I of the program

2.1.3. Deliverables

- Breadboard-level system capable of demonstrating a chemical analysis performance capability according to the milestone criteria listed above; test sample to be provided by the Government for real-time analysis as part of the proof-of-concept requirement
- Phase I Final Report, including:
 - ROC curve characterization of system performance, to include target analyte in cluttered background
 - Signal processing of provided sample spectra depicting systems performance capability
 - All design specifications and documentation

2.2. PHASE II

2.2.1. Target Specifications

Upon completion of Phase II of the program, the system must have the capability to quickly identify all relevant CWAs and TICs, in the presence of a cluttered background as found in an environment typical of military operations.

2.2.2. Technical Milestone

The following simultaneous achievements must be demonstrated at the end of Phase II:

- Sensitivity ≤ 1 PPT
- $P_D > 0.9999$
- $P_{FA} < 0.0001$
- False alarm rate of < 0.1 event/day
- Simultaneous Analyte Assays > 300
- Size < 1 ft³
- Weight < 30 lbs
- Power Consumption < 25 watts (size, weight, and power are considered roughly typical of a “portable” sensor that could be employed in the field)
- Mission life > 2 years
- Analysis time < 10 minutes

2.2.3. Deliverables

- Two (2) prototype-level systems that will be field-demonstrated for chemical analysis; test sample to be provided by the Government
- Phase II Final Report, including:
 - ROC curve characterization of system performance, to include target analyte in cluttered background
 - Signal processing of provided sample spectra depicting systems performance capability
 - All design and manufacturing documentation, including all part numbers and source information, operating and maintenance manuals

3. GENERAL INFORMATION

3.1. LIMITATIONS ON OTHER TRANSACTION FOR PROTOTYPE PROJECTS

Proposers are advised that an Other Transaction for Prototype Agreement will only be awarded if there is:

1. At least one nontraditional defense contractor participating to a significant extent in the prototype project, or
2. No nontraditional defense contractor is participating to a significant extent in the prototype project, but at least one of the following circumstances exists:
 - a. At least one third of the total cost of the prototype project is to be paid out of funds provided by the parties to the transaction other than the federal Government. The cost share should generally consist of labor, materials, equipment, and facilities costs (including allocable indirect costs).
 - b. Exceptional circumstances justify the use of a transaction that provides for innovative business arrangements or structures that would not be feasible or appropriate under a procurement contract.

Although use of one of these options is required to use an Other Transaction for Prototype agreement as the procurement vehicle, no single option is encouraged or desired over the others.

NOTE: For purposes of determining whether or not a participant may be classified as a nontraditional defense contractor and whether or not such participation is determined to be participating to a significant extent in the prototype project, the following definitions are applicable:

“Nontraditional defense contractor” means a business unit that has not, for a period of at least one year prior to the date of the Other Transaction Agreement, entered into or performed on:

1. any contract that is subject to full coverage under the cost accounting standards prescribed pursuant to section 26 of the Office of Federal Procurement Policy Act (41 USC 422) and the regulations implementing such section; or
2. Any other contract in excess of \$500,000 to carry out prototype projects or to perform basic, applied, or advanced research projects for a Federal agency that is subject to the Federal Acquisition Regulation.

“Participating to a significant extent in the prototype project” means that the nontraditional defense contractor is supplying a new key technology or product, is accomplishing a significant amount of the effort wherein the role played is more than a nominal or token role in the research effort, or in some other way plays a significant part in causing a material reduction in the cost or schedule of the effort or an increase in performance of the prototype in question.

NOTE: Proposers are cautioned that if they are classified as a traditional defense contractor, and propose the use of an Other Transaction for Prototype Agreement, the Government will require submittal of both a cost proposal under the guidelines of the FAR/DFARS, and a cost proposal under the proposed Other Transaction for Prototype Agreement, so that an evaluation may be made with respect to the cost tradeoffs applicable under both situations. The Government reserves the right to negotiate either a FAR based procurement contract, or Other Transaction for Prototype Agreement as it deems is warranted under the circumstances.

3.2. PROCUREMENT INTEGRITY, STANDARDS OF CONDUCT, AND ETHICAL CONSIDERATIONS

Certain post-employment restrictions on former federal officers and employees may exist, including special Government employees (Section 207 of Title 18, United States Code). If a prospective Proposer believes that a conflict of interest exists, the situation should be raised to the DARPA Contracting Officer specified in Section 1.6 (Instructions and Points of Contact) before time and effort is expended in preparing a proposal. All Proposers and proposed sub-contractors must therefore affirm whether they are providing scientific, engineering, and technical assistance (SETA) or similar support to any DARPA technical office(s) through an active contract or subcontract. All affirmations must state which office(s) the Proposer supports and identify the prime contract numbers. Affirmations shall be furnished at the time of proposal submission. All facts relevant to the existence or potential existence of organizational conflicts of interest (FAR 9.5.) must be disclosed. The disclosure shall include a description of the action the Proposer has taken or proposes to take to avoid, neutralize, or mitigate such conflict.

3.3. INTELLECTUAL PROPERTY

3.3.1. Noncommercial Items: Technical Data and Computer Software

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS, shall identify all noncommercial technical data, and noncommercial computer software that it plans to generate, develop, and/or deliver under any proposed award instrument in which the Government will acquire less than unlimited rights, and to assert specific restrictions on those deliverables. Proposers shall follow the format under DFARS 252.227-7017 for this stated purpose. In the event that Proposers do not submit the list, the Government will assume that it automatically has “unlimited rights” to all noncommercial technical data and noncommercial computer software generated, developed, and/or delivered under any award instrument, unless it is substantiated that development of the noncommercial technical data and noncommercial computer software occurred with mixed funding. If mixed funding is anticipated in the development of noncommercial technical data, and noncommercial computer software generated, developed, and/or delivered under any award instrument, then Proposers should identify the data and software in question, as subject to Government Purpose Rights (GPR). In accordance with DFARS 252.227-7013 Rights in Technical Data - Noncommercial Items, and DFARS 252.227-7014 Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation, the Government will automatically assume that any such GPR restriction is limited to a period of five (5) years in accordance with the applicable DFARS clauses, at which time the Government will acquire “unlimited rights” unless the parties agree otherwise. Proposers are admonished that the Government may use the list during the source selection evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the Proposer, as may be necessary, to evaluate the Proposer’s assertions. If no restrictions are intended, then the Proposer should state “NONE.”

A sample list for complying with this request is as follows:

NONCOMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

3.3.2. Commercial Items: Technical Data and Computer Software

Proposers responding to this BAA requesting a procurement contract to be issued under the FAR/DFARS, shall identify all commercial technical data, and commercial computer software that may be embedded in any noncommercial deliverables contemplated under the research effort, along with any applicable

restrictions on the Government’s use of such commercial technical data and/or commercial computer software. In the event that Proposers do not submit the list, the Government will assume that there are no restrictions on the Government’s use of such commercial items. The Government may use the list during the source selection evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the Proposer, as may be necessary, to evaluate the Proposer’s assertions. If no restrictions are intended, then the Proposer should state “NONE.”

A sample list for complying with this request is as follows:

COMMERCIAL			
Technical Data Computer Software To be Furnished With Restrictions	Basis for Assertion	Asserted Rights Category	Name of Person Asserting Restrictions
(LIST)	(LIST)	(LIST)	(LIST)

3.3.3. Noncommercial Items and Commercial Items: Technical Data and Computer Software

Proposers responding to this BAA requesting a Technology Investment Agreement or Other Transaction for Prototype shall follow the applicable rules and regulations governing these various award instruments, but in all cases should appropriately identify any potential restrictions on the Governments use of any Intellectual Property contemplated under those award instruments in question. This includes both Noncommercial Items and Commercial Items. Although not required, Proposers may use a format similar to that described in Paragraphs 3.4.1 and 3.4.2 herein. The Government may use the list during the source selection evaluation process to evaluate the impact of any identified restrictions, and may request additional information from the Proposer, as may be necessary, to evaluate the Proposer’s assertions. If no restrictions are intended, then the Proposer should state “NONE.”

3.4. REPORT REQUIREMENTS

The number and types of reports will be specified in the award document, but will include as a minimum quarterly funds status reports and test planning and conduct reports. The reports shall be prepared and submitted in accordance with the procedures contained in the Sample R&D Status Report (provided at the end of this document), which will be incorporated into any resultant award documents.

3.5. REQUIRED REVIEW AND INTERCHANGE MEETINGS

Awardees under this BAA will be required to present an overview of their proposed work at a Program Kick-off Meeting. Thereafter, quarterly progress review and technical interchange meetings will be held. The location of these meetings will alternate between the contractor facility and a Government selected site in the Washington DC area. Attendance at quarterly review meetings is mandatory for key personnel identified in the award.

3.6. SUBCONTRACTING

Pursuant to Section 8(d) of the Small Business Act (15 USC 637(d)), it is the policy of the Government to enable small business and small disadvantaged business concerns to be considered fairly as subcontractors to contractors performing work or rendering services as prime contractors or subcontractors under Government contracts, and to assure that prime contractors and subcontractors carry out this policy. Each Proposer who submits a contract proposal and includes subcontractors is required to submit a subcontracting plan IAW FAR 19.702(a) (1) and (2) should do so with their proposal. The plan format is outlined in FAR 19.704.

3.7. EXPORT LICENSES

The following provision will be incorporated into any resultant contract:

Export Licenses

- (1) The contractor shall comply with all U. S. export control laws and regulations, including the International Traffic in Arms Regulations (ITAR), 22 DFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, in the performance of this contract. In the absence of available license exemptions/exceptions, the Contractor shall be responsible for obtaining the appropriate licenses or other approvals, for obtaining the appropriate licenses or other approvals, if required, for exports of hardware, technical data, and software, or for the provision of technical assistance.
- (2) The Contractor shall be responsible for obtaining export licenses, if required, before utilizing foreign persons in the performance of this contract, including instances where the work is to be performed on-site at any Government installation, where the foreign person will have access to export-controlled technical data or software.
- (3) The Contractor shall be responsible for all regulatory record keeping requirements associated with the use of licenses and license exemptions/exceptions.
- (4) The Contractor shall be responsible for ensuring that the provisions of this clause apply to its subcontractors.

3.8. PUBLIC RELEASE OR DISSEMINATION OF INFORMATION

The following provision will be incorporated into any resultant contract:

Public Release or Dissemination of Information

- (a) There shall be no dissemination or publication, except within and between the Contractor and any subcontractors, of information developed under this contract or contained in the reports to be furnished pursuant to this contract without prior written approval of the COR. All technical reports will be given proper review by appropriate authority to determine which Distribution Statement is to be applied prior to the initial distribution of these reports by the Contractor. Papers resulting from unclassified contracted fundamental research are exempt from prepublication controls and this review requirement, pursuant to DoD Instruction 5230.27 dated October 6, 1987.
- (b) When submitting material for clearance for open publication, the Contractor must furnish DARPA Technical Information Officer, 3701 Fairfax Drive, Arlington VA 22203-1714, telephone (703) 526-4163 with five copies and allow four weeks for processing. Viewgraph presentations must be accompanied with a written text. Whenever a paper is to be presented at a meeting, the Contractor must indicate the exact dates of the meeting or the Contractor's date deadline for submitting the material.

3.9. AWARD ADMINISTRATION

- (1) Central Contractor Registration. Selected offerors not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to any award under this BAA. Information on CCR registration is available at <http://www.ccr.gov>.

(2) Representations and Certifications. In accordance with Federal Acquisition Regulation 4.1201, prospective Proposers shall complete electronic annual representations and certifications at <http://orca.bpn.gov>.

4. PREPARATION OF PROPOSALS

4.1. GENERAL GUIDANCE FOR PROPOSAL PREPARATION

Offerors must submit a single, comprehensive proposal addressing all of the technology areas described in the BAA and Section 2 (Program Overview) above. Proposals must address both Phase I and Phase II.

All proposals submitted must follow the instructions in this Proposers' Information Pamphlet (PIP) and include only the information requested to avoid delays in evaluation or disqualification. It is anticipated that within 30 days of completing the evaluation, each Proposer will be notified that: 1) their proposal has been selected for award consideration, or 2) their proposal has not been selected for funding. Proposals not accepted will be destroyed; however, a copy of non-accepted proposals may be retained and filed.

4.1.1. Restrictive Markings on Proposals

All proposals should clearly indicate limitations on the disclosure of their contents. Further, Proposers should mark the specific information that requires limited disclosure, vice marking the entire document for limited disclosures. Those sections should be marked as "Proprietary" or words to that effect. Markings like "Company Confidential" or other phrases that may be confused with national security classifications shall be avoided. Typical phrases used to indicate the proprietary nature of submitted documentation includes the following: "SOURCE SELECTION INFORMATION – See FAR 2.101 and 3.104".

4.1.2. Confidentiality

It is the policy of DARPA to treat all proposals as competitive information and to disclose their contents only for the purpose of evaluation. No proposals will be returned. The original of each proposal received will be retained at DARPA and all other copies of non-accepted proposals destroyed.

4.1.3. Proposal Submittal Instructions

In order to be considered during the initial round of funding, full proposals must be submitted to DARPA by the date and time specified in this BAA. Responses shall be submitted in accordance with the following guidance:

Unclassified responses shall be delivered in hardcopy to DARPA/ATO, Attn: BAA06-01, 3701 Fairfax Drive, Arlington VA 22203-1714.

Classified responses shall be submitted in accordance with the following guidance:

Collateral Classified Information: Responders must use classification and marking guidance provided by previously issued security classification guides, the Information Security Regulations (DoD 5200.1-R) and the National Industrial Security Program Operating Manual (DoD 5220.22-M) when marking and transmitting information previously classified by another original classification authority. Classified information at the Confidential and Secret level may be mailed via US Postal Service (USPS) Registered Mail or USPS Express Mail. All classified information must be enclosed in opaque inner and outer covers and double wrapped. The inner envelope must be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope shall be addressed to:

DARPA/ATO
ATTN: BAA06-01
3701 Fairfax Drive
Arlington, VA 22203-1714

The outer envelope shall be sealed with no identification as to the classification of its contents and addressed to:

Defense Advanced Research Projects Agency
Security & Intelligence Directorate
Attn: CDR
3701 Fairfax Drive
Arlington, VA 22203-1714

All Top Secret materials must be hand carried via an authorized, two-person courier team to the address identified immediately above.

Special Access Program (SAP) Information: Responders must contact the DARPA Program Security Support Center (PSSC) at 703-812-1962/1970 for further guidance and instructions prior to transmitting SAP information to DARPA. All Top Secret SAP must be transmitted via approved methods for such material. Responders must consult the DoD Overprint to the National Industrial Security Program Operating Manual for further guidance. Coordinating the transmission of SAP material and information with the DARPA PSSC prior to transmission is strongly recommended.

Sensitive Compartmented Information (SCI) Data: Responders must contact the DARPA Special Security Contact Office (SSCO) at 703-812-1993/1994 for the correct SCI courier address and instructions. All SCI must be transmitted through your servicing Special Security Officer (SSO)/Special Security Contact Officer (SSCO). All SCI data must be transmitted through SCI channels only (i.e., approved SCI Facility to SCI facility via secure fax).

Proprietary Data: All responses containing proprietary data should be appropriately marked. It is the respondent's responsibility to clearly define to the Government what they consider to be proprietary data.

4.2. PROPOSAL FORMATTING CHARACTERISTICS

All proposals must be in the following format. Nonconforming proposals may be rejected without further review. Proposals must be on single-sided pages, written in English, with fonts no smaller than 12 point and with 1-inch margins (left, right, top, and bottom) in each page. A page is defined as being no larger than 8.5" by 11.0". (Accordion-style foldouts will be counted as multiple pages equivalent to the expanded size.) Paper copies of proposals should be stapled or submitted in loose-leaf binder, not bound.

4.2.1. Proposal Format

Proposals shall consist of two volumes. Volume I, Technical and Management Proposal, may include an attached bibliography of relevant technical papers or research notes (published and unpublished), which document the technical ideas and approach upon which the proposal is based. Copies of not more than three (3) relevant papers can be included with the submission. The bibliography and attached papers (in Section III of Volume I) are not included in the page counts given below. The submission of other supporting materials along with the proposal is strongly discouraged and will not be considered for review. Sections I and II of Volume I shall not exceed 50 pages. The page limitation for proposals includes all figures, tables (except the table of contents), and charts. Restrictions on the page length of

any specific section are shown in braces { } below. All pages that exceed the maximum page limit specified will be removed and not be reviewed or considered in evaluation.

Technical and cost proposals should conform to the guidance provided in Paragraphs 1.3. (Program Scope and Funding), 1.4. (Period of Performance for Scope) and Section 2 (Program Overview) of this PIP. Proposers should refer to those sections for information on how to scope and segment their technical and costs proposals.

Proposers must submit:

- One (1) original of the full proposal and four (4) copies of the full proposal; plus
- One (1) electronic copy of the full proposal
 - Electronic copies must be on a single 3.5 inch High Density MS-DOS formatted 1.44 Megabyte (MB) diskette, a single 100 or 250 MB Iomega Zip disk, or a single CD-ROM.
 - Each disk must be clearly labeled with BAA06-01, Proposer organization, and proposal title (short title recommended).
 - Electronic copies must be in MS-Word or .pdf readable application. Cost proposal spreadsheets should be submitted in an MS Excel or .pdf readable format.

4.2.2.1. Volume I, Technical and Management Proposal

Section I. Administrative

1. {1} Cover sheet to include:
 - a. BAA number
 - b. Lead Organization Submitting proposal
 - c. Type of business, selected among the following categories: "LARGE BUSINESS," "SMALL DISADVANTAGED BUSINESS," "OTHER SMALL BUSINESS," "HBCU," "MI," "OTHER EDUCATIONAL," or "OTHER NONPROFIT"
 - d. Contractor's reference number (if any)
 - e. Other team members (if applicable) and type of business for each
 - f. Proposal title
 - g. Technology Demonstration Area
 - h. Technical point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available)
 - i. Administrative point of contact to include: salutation, last name, first name, street address, city, state, zip code, telephone, fax (if available), electronic mail (if available)
 - j. Funds requested from DARPA for the Base Effort, each option and the total proposed cost; and the amount of cost share (if any)
 - k. Date proposal was prepared.
2. {1} Official transmittal letter.
3. {Not included in page count} Table of Contents. The Table of Contents should be keyed to the page numbers of the proposal sections.
4. {1} A one slide summary of the proposal in PowerPoint that quickly and succinctly indicates the main objective, key innovations, expected impact, and other unique aspects of the proposal.

Section II. Detailed Proposal Information:

This section provides the detailed discussion of the proposed work necessary to enable an in-depth review of the specific technical and managerial issues. Specific attention must be given to addressing both risk and payoff of the proposed work that make it desirable to DARPA.

1. {1} Executive Summary of the proposal: This section should succinctly describe the uniqueness and benefits of the proposed approach relative to the current state-of-art and alternate approaches. Identify the technology development area that this innovative claim will address and the effort's technical goals. Explain how this proposal addresses this technology demonstration area differently than current approaches and the significant gains due to its uniqueness.
2. {3} Innovative claims for the proposed technology or concept. This section is the centerpiece of the proposal. It should succinctly describe the uniqueness and benefits of the proposed approach relative to current state-of-the-art and alternate approaches. Specifically address, quantitatively if possible, the gains afforded by the proposed technology on submarine infrastructure cost.
3. {3} Deliverables associated with the proposed technology demonstration and the plans and capability to accomplish technology transition and commercialization will clearly address how the proposed effort will meet the goals of the program. Include in this section all proprietary claims to results, prototypes, intellectual property, or systems supporting and/or necessary for the use of the research, results, and/or prototype. (SEE SECTION 3.4, INTELLECTUAL PROPERTY.) If there are no proprietary claims, this should be stated. NOTE: For purposes of completing section 3.4, Intellectual Property, this information will not be counted in the Proposer's page count.
4. {3} Statement of Work (SOW) written in plain English, outlining the scope of the effort and citing specific tasks to be performed and specific contractor requirements.
5. {3} Cost, schedule and milestones for the proposed technology demonstration, including estimates of cost for each task in each year of the effort, for each phase, and total cost and company cost share, if applicable. Please note: cost-sharing is neither required nor encouraged.
6. {21} Detailed technical rationale, technical approach, and constructive plan for accomplishment of the technical demonstration in support of innovative claims and deliverable production. Includes a thorough quantitative discussion of the relevant technical information and underlying physics, and a detailed milestone plan. The proposal should clearly describe the technology development and demonstration path that leads to a credible proof-of-concept. This section should clearly explain: What you are proposing (and how it works); why you are proposing this approach; why you believe it can be done now; and the importance or affect if successful (who will care and why).
7. {5} Comparison with other ongoing research indicating advantages and disadvantages of the proposed effort.
8. {3} Discussion of Proposer's previous accomplishments and work in this or closely related research areas with emphasis on the development of fielded military systems.
9. {2} Description of the facilities that would be used for the proposed effort. If conducted with operational forces, what agreements/coordination has been made or will be required to meet this requirement.
10. {3} Formal teaming agreements that are required to execute this program and a brief synopsis of all key personnel. Specifically address the use of Government laboratory personnel as team members and the nature of the teaming arrangement, as applicable. A clearly defined organization chart for the program team that includes, as applicable the:
 - a. programmatic relationship of team members;
 - b. unique capabilities of team members;
 - c. task responsibilities of team members;
 - d. teaming strategy among the team members; and
 - e. key personnel along with the amount of effort to be expended by each person during each year.

Section III. Additional Information

A brief bibliography of relevant technical papers and research notes (published and unpublished) which document the technical ideas upon which the proposal is based. Copies of not more than three (3) relevant papers can be included in the submission. These papers are not included in the fifty (50) page limit.

4.2.2.2. Volume II, Cost Proposal – {No page limit}

1. A cover sheet to include:
 - a. Name and address of Proposer (include zip code);
 - b. Name, title, and telephone number of Proposer's point of contact;
 - c. Award instrument requested: cost-plus-fixed-fee (CPFF), cost, cost sharing contract, or other type of procurement contract (specify), or other award instrument;
 - d. Place(s) and period(s) of performance;
 - e. Funds requested from DARPA for the Base Effort, each option and the total proposed cost; and the amount of cost share (if any);
 - f. Name, mailing address, telephone number and Point of Contact of the Proposer's cognizant Government administration office (i.e., Office of Naval Research/Defense Contract Management Agency (DCMA)) (if known);
 - g. Name, mailing address, telephone number, and Point of Contact of the Proposer's cognizant Defense Contract Audit Agency (DCAA) audit office (if known);
 - h. Any Forward Pricing Rate Agreement, other such Approved Rate Information, or such other documentation that may assist in expediting negotiations (if available);
 - i. Contractor and Government Entity (CAGE) Code,
 - j. Dun and Bradstreet (DUN) Number;
 - k. North American Industrial Classification System (NAICS) Number [NOTE: This was formerly the Standard Industrial Classification (SIC) Number]; and,
 - l. Taxpayer Identification Number (TIN).
 - m. All subcontractor proposal backup documentation to include items a. through l. above, as is applicable and available).

2. Detailed cost breakdown to include:
 - a. Total program cost broken down by month and Government Fiscal Year (GFY) [Note: Government Fiscal Year runs from October 1st to September 30th] and Base and Options; further broken down by major cost items as follows:
 - (1) Direct Labor – Individual labor category or person, with associated labor hours and unburdened direct labor rates;
 - (2) Indirect Costs – Fringe Benefits, Overhead, General and Administrative Expense, Cost of Money, etc. (Must show base amount and rate);
 - (3) Travel – Number of trips, number of days per trip, departure and arrival destinations, number of people, etc.
 - (4) Subcontract – A cost proposal as detailed as the Proposer's cost proposal will be required to be submitted by the subcontractor. The subcontractor's cost proposal can be provided in a sealed envelope with the Proposer's cost proposal or will be requested from the subcontractor at a later date;
 - (5) Consultant – Provide consultant agreement or other document which verifies the proposed loaded daily/hourly rate;
 - (6) Materials – Should be specifically itemized with costs or estimated costs. An explanation of any estimating factors, including their derivation and application, shall be provided. Please include a brief description of the Proposer's procurement method to be used;

- (7) Other Direct Costs – Should be itemized with costs or estimated costs. Backup documentation should be submitted to support proposed costs.
 - b. Costs of major program tasks and major cost items by year and month;
 - c. A summary of projected funding requirements by month; and
 - d. The source, nature, and amount of any industry cost sharing, if applicable. Where the effort consists of multiple phases that could reasonably be partitioned for purposes of funding, these should be identified as options with separate cost estimates for each.
3. Supporting cost and pricing information in sufficient detail to substantiate the summary cost estimates above. Include a description of the method used to estimate costs and supporting documentation. Provide the basis of estimate for all proposed labor rates, indirect costs, overhead costs, other direct costs and materials, as applicable.

5. PROPOSAL EVALUATION

Proposals will be evaluated using the following criteria, in descending order of importance: (a) Technical Approach; (b) Prior experience and performance in this technology area; (c) Depth and breadth of the applied personnel; (d) Potential contribution and relevance to the DARPA mission; and (e) Cost reasonableness and realism. Since no common work statement exists, each proposal will be evaluated on its own merit as it relates to the program, rather than against other proposals for research in the same general area.

Proposals may be evaluated as they are received, or they may be collected and periodically reviewed. The following are descriptions of the above listed criteria:

5.1. TECHNICAL APPROACH

The proposed technical approach must be feasible, achievable, complete, and supported by a proposed technical team that has the expertise and experience to accomplish the proposed tasks. Task descriptions and associated technical elements provided are complete and in a logical sequence with all proposed deliverables clearly defined such that a final product that achieves the goal can be expected as a result of award. The proposal identifies major technical risks and planned mitigation efforts are clearly defined and feasible. In particular, the following items will be considered and evaluated:

- Understanding of the Problem
- Approach to Demonstration
- Scalability
- Reasonableness of Schedule and Milestones

5.2. PRIOR EXPERIENCE AND PERFORMANCE IN THIS TECHNOLOGY AREA

The Proposer's prior experience in similar efforts must clearly demonstrate an ability to deliver products that meet the proposed technical performance within the proposed budget and schedule. The proposed team must have the expertise to manage the cost and schedule. Similar efforts completed/ongoing by the Proposer in this area should be fully described including identification of other Government sponsors.

5.3. DEPTH AND BREADTH OF THE APPLIED PERSONNEL

The Proposer's prior experience in similar efforts must clearly demonstrate an ability to deliver products that meet the proposed technical performance within the proposed budget and schedule. The proposed team has the expertise to manage the cost and schedule. Similar efforts completed/ongoing by the Proposer in this area are fully described including identification of other Government sponsors.

5.4. POTENTIAL CONTRIBUTION AND RELEVANCE TO THE DARPA MISSION

DARPA's mission is to maintain the technological superiority of the US military and prevent technological surprise by sponsoring revolutionary, high-payoff research that bridges the gap between fundamental discoveries and their military use. The potential contributions of the proposed effort to the enhancement of national security through innovative research and development will be evaluated.

5.5. COST REASONABLENESS AND REALISM

The objective of this criterion is to establish that the proposed costs are reasonable and realistic for the technical and management approach offered, as well as to determine the Proposer's practical understanding of the effort. This will be principally measured by cost per labor-hour and number of labor-hours proposed. The evaluation criterion recognize that undue emphasis on cost may motivate Proposers to offer low-risk ideas with minimum uncertainty and to staff the effort with junior personnel in order to be in a more competitive posture. DARPA discourages such cost strategies. Cost reduction approaches that will be received favorably include innovative management concepts that maximize direct funding for technology and limit diversion of funds into overhead.

NOTE: PROPOSERS ARE CAUTIONED THAT EVALUATION SCORES MAY BE LOWERED AND/OR PROPOSALS REJECTED IF SUBMITTAL INSTRUCTIONS ARE NOT FOLLOWED.

6. SECURITY INFORMATION

The Government anticipates that proposals submitted under this BAA will be unclassified. In the event that a Proposer chooses to submit a classified proposal or submit any classified documentation, the following information is applicable.

No DD Form 254 "Contract Security Classification Specification" will be issued in association with this BAA. Contract award is expected to result in access to classified (Secret-Collateral) information; therefore, a DD Form 254 will be issued at that time

If you choose to submit a classified proposal you must first receive permission of the Original Classification Authority (OCA) to use their information in replying to this BAA and submit the applicable OCA classification guide(s) to ensure that the proposal is protected appropriately.

Classified submissions shall be in accordance with the following guidance:

Collateral Classified Data: Use classification and marking guidance provided by previously issued security classification guides, the Information Security Regulation (DoD 5200.1-R), and the National Industrial Security Program Operating Manual (DoD 5220.22-M) when marking and transmitting information previously classified by another original classification authority. Classified information at the Confidential and Secret level may only be mailed via US Postal Service (USPS) Registered Mail or US Postal Service Express Mail. All classified information will be enclosed in opaque inner and outer covers and double wrapped. The inner envelope shall be sealed and plainly marked with the assigned classification and addresses of both sender and addressee. The inner envelope shall be addressed to:

Defense Advanced Research Projects Agency (DARPA)
ATTN: BAA06-01, DARPA/ATO, Dr. Frank Patten
3701 Fairfax Drive, Suite 832
Arlington, VA 22203-1714

The outer envelope shall be sealed with no identification as to the classification of its contents and addressed to:

Defense Advanced Research Projects Agency (DARPA)
Security & Intelligence Directorate, Attn: CDR
3701 Fairfax Drive, Suite 832
Arlington, VA 22203-1714

No Top Secret, Special Access Program or Sensitive Compartmented Information material will be accepted, nor shall be forwarded.

Proposers must have existing and in-place prior to execution of an award, approved capabilities (personnel and facilities) to perform research and development at the classification level they propose.

ATTACHMENT 1 – SAMPLE R&D STATUS REPORT

(1) R&D STATUS REPORT

This brief narrative, not to exceed five pages in length, shall contain the following:

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

**R&D STATUS REPORT
PROGRAM FINANCIAL STATUS**

Work Breakdown	Cumulative to Date			At Completion
Structure or Planned Task Element Estimate	Actual Expend	% Budget Expend	At Compl	Latest Revised Compl
Remarks				

Subtotal: _____

Management Reserve: _____

Or Unallocated Resources: _____

TOTAL: _____
=====

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

Based on currently authorized work:

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

YES NO

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

\$ _____

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

YES NO

(2) FINAL REPORT

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

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

The Final Technical Report summary shall include:

Task Objectives
Technical Problems
General Methodology (i.e., literature review, laboratory experiments, surveys, etc.)
Technical Results
Important Findings and Conclusions
Significant Hardware Development
Special Comments
Implications for Further Research
Standard Form 298, September 1988

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

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

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

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

Sponsored by:
Defense Advanced Research Projects Agency (DARPA)
Advanced Technology Office (ATO)
Program: Mission Adaptable Chemical Sensor (MACS)
ARPA Order No. XXX, Program Code: XXX
Issued under Contract No.: XXX

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

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

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