



DEPARTMENT OF THE ARMY  
ASSISTANT SECRETARY OF THE ARMY  
(RESEARCH, DEVELOPMENT AND ACQUISITION),  
WASHINGTON, D.C. 20310-0105

---

# ARMY SCIENCE BOARD

## AD HOC SUBGROUP Final Report

on

### “A SYSTEM FOR SOLICITING AND PROCESSING NEW IDEAS/CONCEPTS/TECHNOLOGIES”

19961120 023

May 1994

Distribution Unlimited

DTIC QUALITY INSPECTED 1

**DISCLAIMER**

**This report is the product of the Army Science Board (ASB). The ASB is an independent, objective advisory group to the Secretary of the Army (SA) and the Chief of Staff, Army (CSA). Statements, opinions, recommendations and/or conclusions contained in this report are those of the Ad Hoc Study Group on "A System for Soliciting and Processing New Ideas/Concepts/Technologies" and do not necessarily reflect the official position of the United States Army or the Department of Defense (DoD).**

**CONFLICT OF INTEREST STATEMENT**

**Conflicts of interest did not become apparent as a result of the Panel's recommendations.**

# REPORT DOCUMENTATION PAGE

*Form Approved*  
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis HWY, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

<b>1. AGENCY USE ONLY (Leave Blank)</b>		<b>2. REPORT DATE</b> March 1994	<b>3. REPORT TYPE AND DATES COVERED</b> Army Science Board Ad Hoc Subgroup	
<b>4. TITLE AND SUBTITLE</b> "A System for Soliciting and Processing Proposals for New Ideas/Concepts/Technologies"			<b>5. FUNDING NUMBERS</b> N/A	
<b>6. AUTHOR(S)</b> Mr. John D. Johnston, Chair MG Vern B. Lewis, Jr., (USA Ret.) Dr. Jay R. Sculley Mr. Fred H. Dietrich			Mr. Frederick E. Hartman Mr. John J. Todd Dr. Robert E. Weigle	
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> ARMY SCIENCE BOARD (SARD-ASB) RESEARCH DEVELOPMENT AND ACQUISITION 103 ARMY PENTAGON WASHINGTON, DC 20310-0103			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b> N/A	
<b>9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b> OFFICE DEPUTY ASSISTANT SECRETARY FOR RESEARCH & TECHNOLOGY(SARD-ZT) RESEARCH DEVELOPMENT AND ACQUISITION 103 ARMY PENTAGON WASHINGTON, DC 20310-0103			<b>10. SPONSORING/MONITORING AGENCY REPORT NUMBER</b> N/A	
<b>11. SUPPLEMENTARY NOTES</b> N/A				
<b>12a. DISTRIBUTION/AVAILABILITY STATEMENT</b> Distribution Unlimited. Date of determination is June 6, 1993.			<b>12b. DISTRIBUTION CODE</b>	
<b>13. ABSTRACT (Maximum 200 words)</b>  Pursuant to formal and informal guidance provided by the Honorable Stephen K. Conner the Assistant Secretary of the Army (RDA) (ASA(RDA)) in his letter and informal note dated June 22, 1992, the Army Science Board was directed to review the system the Army has in place to recognize and support good ideas that come to the Army from unsolicited proposals or other procurement vehicles. An ASB ad hoc subgroup was duly established; the initial report was dated April 1993. This final report fulfills all ASB responsibilities indicated in the Terms of Reference and informal handwritten notes of the ASA (RDA) dated January 23, 1992. As a result of the ASB study, four main areas were investigated: 1) system/program for soliciting and processing innovations (new ideas/concepts/technologies), 2) procurement vehicles for processing these innovations, 3) private sector support towards participating/submitted innovations to the Department of the Army, and 4) in-house support towards participating and the new innovations program. As a result of the study, findings and recommendations were identified in each of the four areas. In response to the recommendations, the ASA(RDA) has reorganized programs and has issued new policy guidance for the Army Small Business Innovative Research (SBIR) and ACT programs.				
<b>14. SUBJECT TERMS</b> Procurement, science and engineering, and research.			<b>15. NUMBER OF PAGES</b> 31	
			<b>16. PRICE CODE</b> N/A	
<b>17. SECURITY CLASSIFICATION OF REPORT</b> Unclassified	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> Unclassified	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b> Unclassified	<b>20. LIMITATION OF ABSTRACT</b> None	

## TABLE OF CONTENTS

Executive Summary . . . . .	i
Problem Statement . . . . .	1
Terms of Reference . . . . .	1
Scope of Study . . . . .	2
Participants . . . . .	3
Background . . . . .	4
Findings . . . . .	4
Recommendations . . . . .	13
The System/Program . . . . .	13
The Procurement Vehicle . . . . .	13
The Private Sector Support . . . . .	14
In-House Support . . . . .	15
Other Considerations . . . . .	15

### APPENDICES

Formal Terms of Reference . . . . .	A
Informal Terms of Reference . . . . .	B
Locations Visited . . . . .	C
Glossary . . . . .	D
Distribution . . . . .	E

## EXECUTIVE SUMMARY

The primary issue identified for this ad hoc study is the "Army needs to have a system in place that recognizes and supports innovation in technology from the private sector." In other words, "What should the Army do to have an effective system in place to attract innovation in technology from the private sector."

The study group identified four main areas to focus the study:

1. System/program for soliciting and processing innovations (new ideas/concepts/technology).
2. Procurement vehicle for processing innovation.
3. Private sector support toward participating/submitting innovation to the Department of the Army.
4. In-house support towards participating and supporting the new innovation program.

As a result of the study, the study group identified findings and recommendations in each of the four main focus areas.

The private sector firms we visited would like to participate in the "New Ideas Program," but find the government contract process to be too costly and cumbersome. Several firms stated that it costs a private sector firm as much as \$30,000 to prepare a proposal for a government unsolicited or Broad Agency Announcement (BAA). A typical contract between two private sector firms is frequently done simply (one to three pages in length), negotiated by phone, faxed for review/signature, and the work often starts within a 24-hour period. On the other hand, government awards to the private sector may take up to ten months to process with an average award rate of 10%. The message from the private sector is loud and clear -- streamline the system to reduce time and cost for private sector firms to participate. Many private sector firms want to participate, but the procedure must be cost effective (affordable) in their scheme of business.

The process can be streamlined so that the Army can solicit and process new ideas in a cost effective and timely manner. In particular, we recommend:

1. An Army-wide system be established at the Secretariat level (Assistant Secretary of the Army (Research, Development and Acquisition) (ASA(RDA))) to solicit and process new ideas/concepts/technologies.

2. The funds be maintained at the Secretariat level and distributed to the laboratories based on their percent share of budget.
3. The Army laboratories prepare general descriptions of the areas of Army research needs, and manage the contracts.
4. The on-going Advanced Concepts and Technology (ACT) program be combined with the new ideas program.
5. The Small Business Innovative Research (SBIR) program be managed and coordinated out of the same Secretariat office.
6. The formal unsolicited proposal process not be used for the new ideas program.
7. A modified BAA be used for soliciting inputs to the new ideas program:
  - a. The modified BAA add a new first step (Phase 0) to the process. The Army requires that a proposal abstract (two page technical/white paper) be submitted in advance of the actual proposal. The proposal abstract be reviewed within 30 days. This procedure is intended to minimize unnecessary effort in proposal preparation and review. It would streamline the process and make it affordable for the private sector to participate.
  - b. Full proposal (Phase I) be submitted within 30 days after being advised that the abstract proposal is of interest. Evaluation of Phase I would take 60 to 90 days. Phase II of the current process does not change and is available for second year funding of on-going efforts.
  - c. The modified BAA be prepared by the ASA(RDA) with input from the laboratories and announced Army-wide by the Secretariat on October 1 with abstracts due within a 90 day window.
8. The Secretariat level office have prime responsibility to make the new ideas program known to the private sector.
9. The in-house personnel at the laboratory level support the new ideas program.
10. Clean lines of communications be established between the lab/centers with the Secretariat on the new ideas program. In addition, a feedback system be provided to all proposers.

## **PROBLEM STATEMENT**

The Department of the Army laboratory system is in the process of consolidation and downsizing. In this environment of limited dollars, it is important that the Army have access to the best and newest ideas, concepts, and technology available in the private sector. Therefore, the Army should have mechanisms in place that solicit, evaluate, and support good ideas/concepts/technologies that come from the private sector. The system must be timely and cost effective to maximize private sector participation in an Army-wide system.

## **TERMS OF REFERENCE**

### **TERMS OF REFERENCE (TOR):**

Formal guidance provided by the Honorable Stephen K. Conner in his letter dated June 23, 1992 (Appendix A).

- a. Review current Army processes for tracking, reviewing, evaluating and acting on Unsolicited and BAA proposals.
- b. Develop standard guidance and procedures for evaluating and selecting proposals for award using a BAA.
- c. Recommend changes, if necessary to the Army system of planning and budgeting for product improvements to include whether and how funds should be reserved for unforeseen opportunities, i.e., unsolicited proposals.

Informal guidance provided by Mr. Conner's handwritten note dated June 23, 1992 (Appendix B).

"We need to have a system in place that recognizes and supports good ideas that come to us in the form of unsolicited proposals. This has not always been the case, I believe, because of the 'not invented here' syndrome and because of problems in funding these ideas. We need to do better on this end, while this is different from the usual ASB study, I believe you can help."

## SCOPE OF STUDY

The study group reviewed both the formal and informal TOR. The primary issue identified for this study group is "the Army needs to have a system in place that recognizes and supports innovation in technology (new ideas/concept/technologies) from the private sector." The study group determined that the scope of the study is in four main areas.

- a. System/Program for soliciting and processing new ideas, concepts and technologies. Identify current Army systems for soliciting and processing new ideas/concepts/technologies. Evaluate these systems and recommend changes which would establish a workable and timely mechanism.
- b. Procurement Vehicles for processing new ideas/concepts/technologies. Identify current Army procurement vehicles for soliciting and processing new ideas/concepts/technologies. Evaluate vehicles and recommend changes which would streamline the process.
- c. Private Sector Support (attitude) toward participating in or submitting new ideas/concepts/technologies to the Department of the Army. Conduct lab/center visits and determine attitudes towards current program and solicit changes to make the system more workable.
- d. In-house Support (attitude) towards participating in and supporting a new ideas/concepts/technology program. What problems exist with the current program and obtain recommendations to make it streamline, workable, and useful to their mission.

Therefore, the study group will concentrate on:

1. The system/program.
2. The procurement vehicles.
3. Private sector support.
4. In-house support.



## PARTICIPANTS LIST

Ad Hoc Subgroup  
on  
"A System for Soliciting and Processing  
New Ideas/Concepts/Technologies"

**Study Chair**  
Mr. John D. Johnston  
President  
Applied Solutions International

### ARMY SCIENCE BOARD MEMBERS:

MG Vernon B. Lewis, Jr. (USA Ret.)  
President and CEO  
Military Professional Resources, Inc.

Dr. Jay R. Sculley  
President  
Allied Research Corporation

Mr. Frederick E. Hartman  
Executive Vice President  
Applied Solutions International

Mr. John J. Todd  
Corporate Vice President  
Business Planning & Analysis  
Smith Industries Aerospace

Dr. Robert E. Weigle  
Director  
Physical Science Laboratory  
New Mexico University

ASB CONSULTANT  
Mr. Fred H. Dietrich  
President  
Dietrich Research Inc.

### SPONSOR

Mr. Stephen K. Conver  
Assistant Secretary of the Army  
(Research, Development and Acquisition)  
Washington, DC. 20310

### COGNIZANT DEPUTY

Mr. George T. Singley III  
Deputy Assistant Secretary for  
Research and Technology  
OASA(RDA)  
Washington, DC 20310

### SENIOR ARMY STAFF ASSISTANT

Dr. Charles H. Church  
Director for Advanced Concepts  
and Technology Assessments  
OASA(RDA)  
Washington, DC 20310

### ALTERNATE ARMY STAFF ASST.

Mr. Robert Worrall  
Army Research Lab  
2800 Powder Mill Road  
Adelphi, Maryland 20783-1197

## BACKGROUND

The Army should have a system in place that recognizes and supports good ideas and works in a timely and cost effective manner. First, the Army should create a system that has the full support of both:

- the in-house organization, and
- the private sector.

Second, the system must be non-disruptive to the individual laboratory program and complementary to their goals. For the process to work, it must become an integral part of their planning and programming system and not an "after thought" program. It must be viewed as a major resource to their Research and Development (R&D) program, not as "yet another burden from higher headquarters."

Results in the past have not demonstrated the full potential of the new ideas program. Programs that solicit new ideas for the Army are not widely known. Further, the process is cumbersome and costly. The award rate is about 10% and award time takes an average of ten months. Few private sector companies participate in proposal activities and not many new ideas are generated for the Army. Thus, the Army's current system does not obtain the best new ideas/concepts/technologies available in the private sector.

## FINDINGS

The findings of the study group for the four main areas are:

### The System/Program

One system (Advanced Concepts and Technology (ACT)) used by the Army, has a goal to attract new concepts from the private sector. The ACT program founded in 1974, is operated by the Army Research Laboratory (ARL) (previously the U.S. Army Laboratory Command (LABCOM)) in support of the U.S. Army Materiel Command (AMC), and the U.S. Army Chief of Engineers (COE). Selection of tasks for the program is made by an Army-wide ACT committee. During its first seven years, over 1,000 concepts were received and 12% of the concepts were funded. Funding for ACT in FY92 was \$2.2 million. Many of the private sector firms visited indicated that they would not participate in such a program since turning in a full proposal, costing \$30,000 or more to prepare, with only a 12% win rate is not a good return on their scarce and costly business development resources. The award period is about ten months. In spite of a good staff with a can-do attitude, the ACT program does not attract and process new concepts in a cost effective and timely manner. This, in great part, explains the low private sector participation in the program.

If the Army desires to correct the problems of the past and establish a new system that operates in a cost effective and timely manner, we believe the following problem areas should be considered:

- a. The program should be Army-wide.
- b. The program should be managed/coordinated at the Headquarters, Army Secretariat level.
- c. The Secretariat should serve as a clearinghouse for submissions. That is, as a submission comes in, the technical area of expertise would be determined and the submission would immediately be forwarded to the appropriate laboratory for evaluation and award. (Offerors would still have the option to send the submissions directly to the laboratories.)
- d. The funds should be set aside at the Secretariat level so they can be centrally protected. The funds should be allocated to each laboratory by the Secretariat based on a percentage of the total of all science and technology funds for each laboratory. Once the project is approved and funded, it is then managed at laboratory level.
- e. Technical review, contract award, and day-to-day management should be made at the lab/center level.
- f. The procurement vehicle selected by the program office must be able to process new ideas/concepts/technology in a timely and cost effective manner to meet both the government and private sector requirements.
- g. The program must be pro-active in convincing the private sector to participate in the new program and the in-house laboratories to support the program.
- h. Lines of communication to and from the private sector must be open and unrestricted at the Secretariat and lab/center levels regarding areas of new technology interest.

#### The Procurement Vehicle

There appears to be two procurement vehicles which could be used for creative and innovative research:

- a. Unsolicited Proposals (UPs)
- b. BAA's

From the Department of the Army perspective, the two procurement vehicles may be more than adequate to process new and innovative research. From the private sector perspective, UP and, in some instances, the laboratory specific BAA are not adequate vehicles to process new ideas because they are not timely and/or cost effective.

A discussion of each program follows:

- a. UPs -- in the ARL Procurement Manual, Volume 2, Page 90, ARL policy and rationale for UPs is stated:

"The ARL will actively encourage unsolicited proposals as a means of promoting creativity and innovation in research. A management system will be established so that unsolicited proposals meet with fair and prompt evaluation by all appropriate technical staff."

They further state the rationale:

"Unsolicited proposals represent a valuable tool and tap the creativity of the private sector to meet the ARL's mission."

As one reads the above policy on UPs all the right words are used. However, in reality, unsolicited proposals *just don't work* because processing of these proposals is not timely or cost effective for private sector companies.

AMC and other laboratory contracting personnel reported that UPs take an average of nine to ten months to process. During the period October 1, 1991 to March 30, 1992, AMC had 256 UPs under review. Thirteen were accepted, 117 were rejected, and 126 are still under review. About 40% of the 117 rejected (52) were rejected as not valid. The average value of the contracts awarded was \$167,000 for 13 awards out of 130 proposals (10% award rate). The long evaluation time of nine or more months and an award rate of only 10% clearly indicates that this vehicle is neither timely nor cost effective for either the Army or private sector companies who want to compete for Army technology business. Firms visited by this study team indicated that full proposals cost \$30,000 or more to prepare. This means that private industry may have spent over \$3.5 million to get only \$2.2 million in contracts.

b. The BAA is an excellent vehicle which can be used to solicit new and innovative research. The BAA is organized into six parts:

- Part I Contains the scientific and technical areas of interest.
- Part II Provides guidance and requirements for the preparation of a proposal.
- Part III Provides guidance in addressing safety, MANPRINT and contract data requirements/considerations.
- Part IV Covers requirements for cost proposal.
- Part V Covers proposal evaluation information.
- Part VI Contains attachments and certifications that may be required.

Offerors for specific BAA's are encouraged to contact labs for technical discussions with the applicable technical POC before preparing a BAA proposal. If an offeror has a novel research approach within an area of interest covered by this BAA, a BAA proposal is prepared. The proposal should address, 1) the major research thrust, 2) the technical approach, and 3) the research goals and military relevancy. Evaluation of BAA proposals is conducted within 90 days of receipt.

BAA's may have a single submission date or a window period. Informal discussions should be held on any proposed research before the submission of a formal proposal since the BAA is written in broad terms to cover a wide variety of technical areas. Various contract types are available to the government and contractors and they "vary according to 1) the degree and timing of the responsibility assumed by the contractor for the cost of performance, and 2) the amount and nature of the proposed incentive offered to the contractor for achieving or exceeding standards and goals" (FAR 16.101 (a)). Offerors, when proposing, will select the type of contract arrangement they feel is best suited to the proposed effort and offer accordingly to ensure complete and proper disclosure in the cost proposal and SF1411. The selection of the contract type is negotiated. The type of contract and price are closely related and, as such, they are considered together.

The majority of the contracts which result from a BAA are as follows:

1. Firm fixed price (FFP) contract.
2. Cost reimbursement (CR) contracts.
  - a. Cost contract.
  - b. Cost sharing (CS) contract.
  - c. Cost plus fixed fee (CPFF) completion contract.

BAA's as discussed above are timely for they are awarded on average within 90 days after submission. However, they appear not to be cost effective for the private sector. AMC reports that for the six month period of October 1, 1991 through March 30, 1992, 2,301 BAA proposals were in the process of being evaluated. During this period 357 contracts were awarded (\$185,860 value), and 899 proposals were rejected (yielding a 28% award rate). This 28% award rate is an improvement over the 10% unsolicited proposals award rate for the same period. A 28% return on investment for small dollar contracts was still not cost effective for many private sector contractors.

Dr. Roger McCarthy, President of Failure Analysis, Inc., suggests that one might modify the proposal process for new ideas by creating a BAA with a three-phase system. Phase 0 would require that a two-page technical paper on the new idea/concept/technology be submitted with no other information provided at that time. Since a two page white paper is submitted with no dollars involved, legal and procurement personnel need not be involved in this phase and only a technical evaluation of the two page proposal would be made. For timely review, Phase 0 should be completed in 30 days and the private sector participants would be advised if the government had interest in their project.

If the government has no interest in a technical paper, the offeror would not continue the process. However, investment to this point would be quite small -- this single point will get a lot of private sector firms involved in the process who would never follow the bureaucratic process required in UPs or other full BAA proposals. If an offeror's white paper is selected, the offeror would proceed to Phase I. In this phase, the offeror could talk to the government contractor and technical experts interested in the project and proceed to submit a full proposal for evaluation. The big difference here is that the firms not qualifying have been eliminated and a firm's likelihood of receiving a funded contract in phase I is in the 70% plus range. Now it becomes worthwhile to invest in preparing a full proposal. This is the heart of the problem in many programs -- preparation of a full proposal in the private sector is such a burden and having a 10% opportunity to win makes it too costly to participate. However, reducing the burden in Phase 0 to preparing a two page technical paper makes it possible for almost everyone to participate and compete. The key to making the system work is reducing the red tape and keeping the evaluation time to the minimum -- 30 days in Phase 0 and 60 to 90 days in Phase I.

Dr. McCarthy reports that his major clients come in with a requirement in the morning, a three page response is made, and the next day acceptance is initialed by the processing company -- this is an example of the whole process for doing business in some private sector companies.

Army laboratory field personnel further suggest small purchase orders for \$100,000 be authorized for Phase I to expedite the process and minimize the workload for the procurement office. The majority of the projects in Phase I are expected to be in the range of \$50,000 to \$100,000.

We checked other government agencies to determine what procurement vehicles are being used for new ideas. It was a pleasant surprise to find that the Advanced Research Project Agency (ARPA) is using a BAA with a similar process which Dr. McCarthy recommended. ARPA proposers are strongly encouraged to submit a proposal abstract in advance of actual proposals. This ARPA procedure is intended to minimize unnecessary effort in proposal preparation and review. ARPA advises that this process works quite well and expedites the process significantly. It also attracts more private sector participants.

Another important procurement issue for this new ideas program is the protection of intellectual property rights. All government personnel must exercise extreme care to ensure that information in a proposal is not disclosed to any individual who have not been authorized access to such data, and that said data will not be duplicated, used, or disclosed in whole or in part for any purpose other than evaluation of a proposal without the written permission of the offeror. Should a contract be awarded based on a proposal, terms of the contract shall control disclosure and use. However, this protection does not limit the government's right to use information contained in a proposal if it is obtainable from another source without restriction.

#### Private Sector Support

To access the private sector support (attitude towards participants submitting new ideas/concepts/technologies to the Department of the Army), we made several field trips which purposely included a wide range of businesses: small and large firms; prime Defense contractors; private sector firms that conduct little or no business with Defense; and think tanks. We made three field trips to the following private sector firms:

#### Trip 1: Silicon Valley area firms:

<u>NAME:</u>	<u>DEFENSE BUSINESS:</u>
Tandem Computer	None
Oracle Corporation	Significant
Electric Power Research Institute	None
Hoover Institution	None
Spectra Diode Laboratories	Significant
System Control Tech, Inc.	Significant
Failure Analysis Associates, Inc.	Minor
Ray Chem Corporation	Minor

Trip 2: The Boston area firms:

<u>NAME:</u>	<u>DEFENSE BUSINESS:</u>
Loral Infrared and Imaging System	Significant
Textron Defense System	Significant
M/A-COM Inc.	Significant
GTE Corporation	Significant
Lockheed Sanders Inc.	Significant

Trip 3: New Jersey area firms:

<u>NAME:</u>	<u>DEFENSE BUSINESS:</u>
Bell Laboratory	Significant
Bellcore	Minor

Trip 4: Orlando area firms

<u>NAME:</u>	<u>DEFENSE BUSINESS:</u>
Martin-Marietta	Major
Land and Sea, Research Division of Epcot Center	Minor

We were most impressed with the warm reception given by each company, the interest in understanding and working our ASB problem, the openness in sharing corporate information (pro and con) that would be useful to our task, and the time senior personnel of these institutions spent with us in our discussions.

As Americans, the study group took great pride in what we saw on these trips. It is clear that a segment of our high tech business base is successfully competing in the world market and, in several instances, setting the standards.

The general view shared by all the firms we visited is that it is quite difficult to do business with the government. The two major problems mentioned is timing, the red tape and the cost to compete for business with the government. Timing to obtain a contract in the private sector may take an average of one day to two weeks depending on whether it is a new or old client. Contracts in the private sector are, for the most part, simple, a few pages in length and are often done by fax machine. Firms reported that in the government it normally takes six to nine months to get a contract and a protest could further delay a final award. The cost to prepare a full proposal for the private sector is minor compared to the government. Due to the huge investment a government contract requires, many firms believe the win ratio needs to be high or they won't compete. Therefore, many of the high tech firms visited will not compete for government contracts unless the process is streamlined and made more cost effective.



Additionally, a small business indicated that there is great difficulty in getting a new idea/concept/technology considered by the government. This small firm had discovered a new technology with high military relevancy, but did not know how to market it to Defense and the operators they visited did not know how to handle or process it. The firm has tried to break the code for the past nine months with no success. What is disturbing is that these people were Defense old timers and yet they still could not get to the right office for a hearing!

Another deviation, one firm's objective is to make 60% profit on their products, and that's exactly what they do. Such high profits are not acceptable on a government contract and that's why they don't pursue government business. They reinvest significant monies for the next generation of new products and technologies and they manage to sustain high profit as they have a unique niche markets with no competition. Both private sector firms and government buy these products as they tend to solve problems and save significant monies.

Proposals for research, advancement of technology, and new ideas by the private sector are submitted to the government in order to:

- a. Acquire funding which otherwise may be inadequate or not available.
- b. Provide exposure of expertise for future source considerations.
- c. Tie into a marketing strategy:
  - for subsequent incorporation into more encompassing proposals (i.e., customers don't buy surprises in response to Request for Proposals (RFPs).
  - for either government referral or sponsorship to other sources.
  - for dual use applications (commercial/military).
- d. Acquire a free, independent evaluation of proposals and potentials.
- e. Qualify for potential follow-on efforts that may include:
  - continued funding by labs.
  - phase-over to funding by a system development program or the associated prime/sub contractor structure.
  - conversion to venture capital (commercial) financing for dual use products or services.

### In-House Support

To access the in-house support, we visited:

- Natick Laboratories
- Electronics and Power Source Directorate, ARL
- U.S. Communications and Electronics Command (CECOM)

Several of the lab/centers were initially skeptical and did not immediately embrace all of the new program findings and proposed recommendations of the group with enthusiasm. Their concerns were many:

1. Funding: Will the lab/centers be taxed for these funds, the money held at the Secretariat, and then eventually returned to them? That may be the case. However, the advantage of holding the funds at the Secretariat was for protection during the downsizing/consolidation period.
2. Role of Secretariat: The lab/centers do not like meddling in their programs from any level. We indicated that the Secretariat was the advocate office for the private sector and clearing house of proposals for the labs.
3. Day-to-day Management: The lab/centers want complete control of the program from evaluation and award to completion. We indicated that was our recommendation.
4. Turn Around Time: The lab/centers were concerned about procurement support in awarding the contract in Phase 1 in a timely manner (60 to 90 days). It was recommended that we might consider using a small purchase order and have its limit raised from \$25,000 to \$100,000 for this program. The majority of the awards would be in the \$50,000 to \$100,000 range. The procurement office could handle these small purchase orders in a timely manner.
5. BAA Task: There was some discussion on whether there should be an Army-wide BAA or many local BAA's. It was decided that an Army-wide BAA made the best sense for the purpose of communicating to the widest section of the private sector. The Army-wide BAA task would be prepared at the laboratory level and assembled into a single BAA at the Secretariat.

In general we found the lab/center discussions to be constructive and candid with sincere interest shown in making the new system workable and a success.

The in-house Army laboratory managers are likely to value this program as it will:

- a. Fence funds for innovative work which cannot be anticipated in the budget cycle.
- b. Provide a mechanism to direct ideas received anywhere in the Army to the appropriate laboratory.
- c. Provide a central organization to promote the Army program.
- d. Significantly increase the number of innovative ideas presented to the Army.

- e. Provide a new means of integrating the Army into the private industry and academic communities doing similar work.
- f. Provide a new avenue to investigate dual use technology.

## **RECOMMENDATIONS**

The study group recommends:

### The System/Program

1. An Army-wide system/program be established at the Army Secretariat level for soliciting and processing new ideas/concepts/technologies submissions.
2. The Secretariat serves as a clearinghouse for submissions. That is, as a submission comes in, the technical area of expertise be determined and the submission be immediately forwarded to the appropriate lab for evaluation, award, and management.
3. Funds be set aside at the Secretariat level so they can be centrally protected for this purpose. Ten percent of the funds be retained to fund joint laboratory programs. The Secretariat allocate the remaining funds to each laboratory based on an approximate percentage of the laboratory's share of the total budget.

### The Procurement Vehicle

1. A BAA Army-wide be prepared annually by the Secretariat with the assistance of all participating labs. The BAA be opened on 1 October and submissions be permitted for six months with the window closing on 31 March.
2. The BAA contain three phases:
  - a. Phase 0:
    - A proposal abstract (two page technical/white paper) be submitted in advance of the actual proposal.

- Technical papers be submitted to the Secretariat and forwarded to the appropriate laboratory for review within 30 days with the following action:
  - Approved for Phase I submission If the paper is in the "approved" box, then the private sector firm can proceed to Phase I.
  - Not approved for Phase I submission If the paper is in the "not approved" box, then the government has no interest in the technology and the firm should not proceed to Phase I.

b. Phase I:

- If the private sector company receives an "approved for Phase I", discussions on the two page technical paper may be held with the contractor representative and the technical personnel. After these discussions, the contractor will be advised if there is Army interest and a full proposal will be expected to be submitted to the Army within 30 days. Review of Phase I proposal should take 60 to 90 days.

- c. Phase II of the revised BAA process provides the possibility of second year funding for the project. This would be used if the laboratory wanted to continue the project into the laboratory's regular R&D program.

6. All government personnel exercise care to ensure the protection of intellectual property rights.

The Private Sector Support

1. The Secretariat level office have the prime responsibility for making the system/program known to the private sector companies, think tanks, universities, and foreign establishments as appropriate:
  - a. A brochure on the proposal should be prepared and circulated through several avenues to include the Army, academic and industry conferences.
  - b. An annual meeting should be conducted by the Army when the BAA is announced and interested parties of the private sector could interface with the technical sponsors of the BAA individual tasks. It's another attempt to start the dialogue and attract the best to the Army.
2. The Secretariat prepare an annual report highlighting some of the new ideas (technologies that have surfaced and appear to be promising).

### In-House Support

1. In-house personnel at the lab level must be oriented to become totally supportive of the program and view the effort as an asset and not another bureaucratic burden.
2. Establish clean lines of communication from the lab/centers to the Secretariat in order to keep this program simple and not encumbered with red tape. If problems evolve, they must quickly surface at the Secretariat level and be corrected.

### Other Considerations

It appears there are three programs similar in nature:

1. The ACT program -- a program established in 1974 to evaluate new concepts in technology or new uses of current technology.
2. SBIR and Technology Program -- this program has the same goal of soliciting new concepts or technologies from the small business community.
3. The new system/program for soliciting and processing new ideas/concepts/technologies.

We recommend that the ACT program and the new System/Program be merged into one program and that the SBIR and Technology Program be managed out of the same office.

APPENDIX A

FORMAL TERMS OF REFERENCE



DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
WASHINGTON, DC 20310-0103



23 JUN 1992

Mr. James Jacobs  
Chair, Army Science Board  
Director of Facilities  
Sandia National Laboratories  
Organization 7100  
Post Office Box 5800  
Albuquerque, New Mexico 87185

Dear Mr. Jacobs:

You are requested to initiate an Army Science Board (ASB) Ad Hoc Study on "Evaluating and Selecting Proposals." This study should address, as a minimum, the Terms of Reference (TOR) below; however, the ASB members appointed should consider the TOR as guidelines and may include in their discussions related issues deemed important by the sponsor. Modifications to the TOR must be coordinated with the ASB office.

I. BACKGROUND:

In the December 12, 1991 "Draft Report of Audit of Unsolicited and Broad Agency Announcement Proposal Processes," the U.S. Army Audit Agency, SAAG-AFA, identified five weaknesses in processes used by Army activities for processing and evaluating unsolicited proposals, which are as follows:

- A. Establishing and tracking proposals through the process;
- B. Performing and documenting technical evaluations;
- C. Conducting oversight reviews of technical evaluations;
- D. Querying DOD technical research information databases; and,
- E. Providing offerors written notification that explains results of evaluations.

Even though all the activities reviewed have processes in place for tracking, reviewing and evaluating unsolicited proposals, the report highlights a lack of consistency or standardization of procedures among Army activities. These inconsistencies may be the results of two major factors:

- A. Absence of Army guidance; and,
- B. Limited funding and reluctance to reprogram funds when technically acceptable unsolicited proposals are received.

II. TERMS OF REFERENCE:

- A. Review current Army processes for tracking, reviewing, evaluating and acting on unsolicited and broad agency announcement proposals.
- B. Develop standard guidance and procedures for evaluating and selecting proposals for award using a broad agency announcement.
- C. Recommend changes, if necessary to the Army system of planning and budgeting for product improvements to include whether and how funds should be reserved for unforeseen opportunities, i.e., unsolicited proposals.

III. STUDY SUPPORT:

Mr. Stephen K. Conver, Assistant Secretary of the Army (Research, Development and Acquisition), will sponsor the study. The Cognizant Deputy will be Mr. George T. Singley III, Deputy Assistant Secretary for Research and Technology. The senior Staff Assistant will be Dr. Charles H. Church. The alternate Staff Assistant will be Dr. Roland Gonano.

IV. SCHEDULE:

The study panel should begin its work immediately. As a first step, the study panel chair should submit a study plan to the sponsor and to the Executive Secretary. An interim report is due in January 1993. A final report is due to the sponsor by February 26, 1993.

V. SPECIAL PROVISIONS:

The study is not expected to enter into any "particular matters" within the meaning of Section 208, Title 18, of the United States Code.

Sincerely,



Stephen K. Conver  
Assistant Secretary of the Army  
(Research, Development and Acquisition)



**APPENDIX B**

**INFORMAL TERMS OF REFERENCE**



DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
WASHINGTON, DC 20310-0103

6/23

Jim -

Let me try to put the attached in very simple terms. We need to have a system in place that recognizes and supports good ideas that come to us in the form of unsolicited proposals. This has not always been the case, I believe, because of the "Not Invented Here" Syndrome + because of problems in funding these ideas.

We need to do better on this and, while this is different from the usual ASB study, I believe you can help.

Thanks,  
Steve

APPENDIX C

LOCATIONS VISITED

## ASB FIELD TRIP 1 - Silicon Valley, CA

### Tandem Computer Meeting

Contact:   o    Nasrin Del Parastaran  
                  Program Manager, Corporate Conference Center  
                  o    Tel: 408-725-6941  
                  Fax: 408-285-5130

Address:   Corporate Conference Center  
              19333 Vallco Parkway  
              Cupertino, California 95014

### Oracle Corporation Meeting

Contact:   o    Mary Ann Zirelli  
                  West Coast Contact  
                  o    Tel: 415-506-5341  
                  Fax: 415-506-7144  
                  o    Tom Marti  
                  o    Tel: 301-907-2374 (Local Contact)  
                  Fax: 301-657-1830

Address:   500 Oracle Parkway  
              Box 659511  
              Redwood Shores, California 94065

### Electric Power Research Institute (EPRI Meeting)

Contact:   o    Dr. Seymour Alpert  
                  Executive Scientist

Contact:   o    Dr. Tom Schneider  
                  Executive Scientist

Contact:   o    Dr. John Maulbetsch  
                  Executive Scientist  
                  o    Tel: 415-855-2000  
                  Fax: 415-855-2954

Address:   3412 Hillview Avenue  
              Palo Alto, California 94304

**ASB FIELD TRIP 1 - Silicon Valley, CA (Cont.)**

**Apple Computer, Inc., Visit**

Contact:   o    Dr. David Nagel  
                  Vice President  
                  Advance Technical Group

              o    Ms. Gwen Gazaway  
                  Special Assistant to Vice President

              o    Tel: 408-974-9863  
                  Fax: 408-974-5334

Address:    Infinite Loop 1, Mail Stop 301-4N  
              Cupertino, California 95014  
(scheduled but conflict prohibited visit)

**Hoover Institution Meeting**

Contact:   o    Dr. John Raisian  
                  Director, The Hoover Institution

              o    Tel: 415-723-1198  
                  Fax: 415-725-8990

Address:    Hoover Memorial Building, Room 218  
              Stanford University  
              Stanford, California 94305

**Spectra Diode Laboratories Meeting**

Contact:   o    Dr. Don Scifres  
                  President

              o    Tel: 408-943-9411  
                  Fax: 408-943-1430

Address:    80 Rose Orchard Way  
              San Jose, California 95134

**Systems Control Tech, Inc., Meeting**

Contact:   o    General John W. Pauly (USAF, Ret)  
                  Chief Executive Officer and Chairman  
                  of the Board

              o    Tel: 415-494-2233  
                  Fax: 415-496-6595

Address:    2300 Geng Road  
              Palo Alto, California 94303

**ASB FIELD TRIP 1 - Silicon Valley, CA (Cont.)**

**Raychem Corporation Meeting**

Contact:    o    Dr. Joseph Wirth  
                  Senior Vice President & Chief Technical Officer  
                  o    Tel: 415-361-3365  
                      Fax: 415-361-3569  
Address:    300 Constitution Drive  
                  Mail Stop 122/8508, Menlo Park, California 94025

**ASB FIELD TRIP 2 - Boston, MA**

**Loral Infrared and Imaging Systems Meeting**

Contact:   o   Mr. Kay Turner  
                          Vice President Marketing  
                  o   Tel: 617-863-4577  
                          Fax: 617-863-3334  
Address:   2 Forbes Road  
                  Lexington, MA 02173

**Textron Defense Systems Meeting**

Contact:   o   Mr. Ed Josephson  
                          Vice President Communications and Planning  
                  o   Tel: 508-657-3129  
                          Fax: 508-657-6644  
Address:   201 Lowell Street  
                  Wilmington, MA 01887

**MA-COM Inc., Corporate R&D Meeting**

Contact:   o   Dr. Frank Brand  
                          Former Chief Technical Officer  
                  o   Mr. Pierre Martin  
                          Director of Government R&D Programs  
                  o   Tel: 617-272-3000, EXT 1134 (Mr. Martin)  
                          Fax: 617-221-3115  
Address:   52 South Avenue  
                  Burlington, MA 01803

**Natick Labs Meeting**

Contact:   o   Dr. Mathew Herz  
                          Associate Director for Technology  
                  o   Mr. Dennis Gordon  
                          Director of Advance Systems Directorate  
                  o   Tel: 508-651-4243 (Dr. Herz)  
                          Tel: 508-651-4793 (Dr. Gordon)  
                          Fax: 508-651-4343  
Address:   US Army Natick RD&E  
                  ATTN: SARNC-TT or SATNC-A  
                  Natick, MA 01760

**GTE Corp. Meeting**

Contact:   o   Mr. Stan Berry  
                          Vice President, Acquisitions  
                  o   Tel: 617-455-2727  
                          Fax: 617-455-3784  
Address:   197 First Avenue, Building 23  
                  Needham Heights, MA 02194

**ASB FIELD TRIP 2 - Boston, MA (Cont.)**

**Lockheed Sanders, Inc. Meeting**

Contact:    o    Mr. Joseph Giacomponello  
                  o    Vice President and General Manager  
                  o    Tel: 603-885-2150  
                          Fax: 603-885-9109

Address:    65 Spitbrook Road  
                  Nashua, NH 03061



**ASB FIELD TRIP 3 - Newark, NJ**

**Electronic and Power Source Directorate, ARL Meeting**

Contact:   o    Dr. Clarence Thorton  
              o    Ms. Mary Hayes  
              o    Tel:  908-544-4808  
                      Fax:  908-544-4306  
  
Address:    AJ Meyer Center, 4th Floor  
              Fort Monmouth, NJ  
              (Corner of Rt 2A and 128 of Inner Beltway)

**Communications & Electronics Command Meeting**

Contact:   o    Mr. Alex Mondrick  
              o    Tel   908-544-2690  
                      Fax:  908-544-2607  
  
Address:    A.J. Meyer Center  
              Fort Monmouth, NJ

**Bell Laboratories Meeting**

Contact:   o    Denny Lynes  
              o    Bill Anthony  
              o    Tel:  908-582-5066  
                      Fax:  908-582-7454  
  
Address:    600 Mountain Avenue  
              Room 6A414  
              Murray Hill, NJ

APPENDIX D

GLOSSARY

## GLOSSARY

ACT	Advanced Concepts and Technology
AMC	Army Materiel Command
ARL	Army Research Laboratory
ARPA	Advanced Research Project Agency
ASA(RDA)	Assistant Secretary of the Army (Research, Development and Acquisition)
BAA	Broad Agency Announcement
CECOM	U.S. Communications and Electronics Command
COE	Chief of Engineers
CPFF	Cost plus fixed fee
CR	Cost reimbursement
CS	Cost sharing
FFP	Firm fixed price
LABCOM	U.S. Army Laboratory Command
R&D	Research and Development
RFP	Request for Proposal
SBIR	Small Business Innovative Research
TOR	Terms of Reference
UPs	Unsolicited Proposals

APPENDIX E

DISTRIBUTION LIST

<u>Addressee</u>	<u>Copies</u>
<b><u>OSD</u></b>	
Secretary of Defense, Pentagon, Washington, DC 20301	1
Under Secretary of Defense for Policy, Pentagon, Washington, DC 20301	1
Under Secretary of Defense, Acquisition, Pentagon, Washington, DC 20301	1
Assistant Secretary of Defense (Atomic Energy), Pentagon, Washington, DC 20301	1
Assistant Secretary of Defense (FM&P), Room 3E764, Pentagon, Washington, DC 20301	1
Deputy Under Secretary of Defense for Research and Engineering (R&AT), Pentagon, Washington, DC 20301	1
Chairman, Defense Science Board, Pentagon, Washington, DC 20301	1
Chairman, Joint Chiefs of Staff, Pentagon, Washington, DC 20301	1
Director, DLA, Pentagon, Washington, DC 22310	1
Director, DNA, 6801 Telegraph Road, Alexandria, VA 22310	1
Defense Technical Information Center, Bldg. 5, Cameron Station, Alexandria, VA 22314	12
Assistant to the Secretary of Defense, OSD, Pentagon, 3D-964, Washington, DC 20301	1
<b><u>NAVY</u></b>	
Secretary of the Navy, Pentagon, Washington, DC 20350	1
Chief of Naval Operations, Pentagon, Washington, DC 20350	1
Commandant, US Marine Corps, HQ USMC, Code CMC, Washington, DC 20380	1
Under Secretary of the Navy, Pentagon, Washington, DC 20350	1
Assistant Secretary of the Navy (RE&S), Pentagon, Washington, DC 20350	1
Director, Test & Evaluation and Technology Requirements, (N091), Pentagon, Washington, DC 20350	1
Deputy Chief of Naval Operations (Manpower, Personnel & Training), Chief of Naval Personnel, (OP-01), Washington, DC 20350	1
Deputy Chief of Naval Operations (Plans, Policy & Operations), (N3/N5, Pentagon, Washington, DC 20350	1
Commanding Officer, Naval Medical Research and Development Command, Naval Medical Command, NCR, Bethesda, MD 20814	1
Naval Research Advisory Committee, 800 N. Quincy St., Arlington, VA 22217-5000	1
<b><u>AIR FORCE</u></b>	
Secretary of the Air Force, Room 4E871, Pentagon, Washington, DC 20330	1
Chief of Staff, Air Force, Pentagon, Washington, DC 20330	1
Assistant Secretary of the Air Force (RD&L), Pentagon, Washington, DC 20330	1
Assistant Secretary of the Air Force (MRAI&E), Pentagon, Washington, DC 20330	1
Deputy Chief of Staff (Acquisition), USAF(AF/AQ), Pentagon, Washington, DC 20330	1
Assistant Chief of Staff, (AF/SA), Room 1E388, USAF, (AF/SA), Pentagon, Washington, DC 20330	1
Air Force Studies and Analyses Agency (AFSAA), 1570 Air Force Pentagon, Washington DC 20330-1570	1
Commander, Air Force Systems Command, Andrews AFB, Washington, DC 20334	1
Air Force Scientific Advisory Board, HQ USAF/SB, 1180 Air Force Pentagon, Washington, DC 20330-1180	1
Chief Scientist of the Air Force, HQ USAF/ST, 1060 AF Pentagon, Washington, DC 20330-5040	1
Air Force Studies Analysis Staff, AFCSA/SAMI, Washington, DC 20330	1
Chief Scientist, ACS Studies and Analyses, USAF/SAN, Pentagon, 1E386, Washington, DC 20330-5420	1

<u>Addressee</u>	<u>Copies</u>
<b><u>ARMY</u></b>	
Secretary of the Army, Pentagon, 3E718, Washington, DC 20310	1
Under Secretary of the Army, Pentagon, 3E732, Washington, DC 20310	1
Administrative Assistant, OSA, Pentagon, 3E733, Washington, DC 20310-0105	1
Assistant Secretary of the Army Civil Works, 108 Army Pentagon, Washington, DC 20310-0108	1
General Counsel, OSA, Pentagon, Washington, DC 20310	1
Assistant Secretary of the Army (RDA), Room 2E672, Pentagon, Washington, DC 20310	1
Assistant Secretary of the Army (I,L&E), Pentagon, Washington, DC 20310	1
Deputy Assistant Secretary (Procurement) SARD-ZP, Pentagon, Washington, DC 20310	1
Military Deputy to the Assistant Secretary of Army (RDA), Pentagon, Washington, DC 20310	1
Deputy Under Secretary of the Army (Operations Research), Pentagon, Washington, DC 20310	1
Director, Plans and Projects, OSA, SAAA-PP, Pentagon, 3E741, Washington, DC 20310	1
Assistant Secretary of the Army (Manpower & Reserve Affairs), 111 Army Pentagon, Washington, DC 20310-0111	1
Chief of Staff of the Army, 200 Army Pentagon, Washington, DC 20310-0200	1
Vice Chief of Staff, Army, Pentagon, Washington, DC 20310	1
Director of the Army Staff, Pentagon, Washington, DC 20310	1
Deputy Chief of Staff for Operations and Plans, (DAMO-FDR), 400 Army Pentagon, Washington, DC 20310-0400	1
Assistant Deputy Chief of Staff of the Army for Operations and Plans, Force Development, 400 Army Pentagon, Washington, DC 20310	1
Deputy Assistant Secretary for Research and Technology, SARD-ZT, Pentagon, Washington, DC 20310-0103	1
Deputy Chief of Staff for Logistics, Army HQDA, Room 3E560, Pentagon, Washington, DC 20310-0500	1
Technical Director, HQ TRADOC, ODCSA, ATAN-ZD Fort Monroe, VA 23651-5143	1
Director, Research Institute, US Army Engineer Topographic Labs, Telegraph and Leaf Road, Bldg. 2592, Fort Belvoir, VA 22060-5546	1
Director for Program Evaluation, SARD-DE, Room 2E673, Pentagon, Washington, DC 20310-0103	1
Director, AMC-Field Assistance in Science & Technology Activity, AMC-FAST, Fort Belvoir, VA 22060-5606	1
Department of the Army Office of the Surgeon General, Skyline 6, 5109 Leesburg Pike, Falls Church, VA 22041-3258	1
Deputy Chief of Staff for Personnel (DA DCSPER), HQDA, DAPE-ZXO, Pentagon, Washington, DC 20310	1
Chief, MANPRINT Policy Office, Research & Studies Division, ODCSPER, Pentagon, Washington, DC 20310	1
Director, Civilian Personnel, ODCSPER, Washington, DC 20310	1
Director, Military Personnel, ODCSPER, Washington, DC 20310	1
Comptroller of the Army, Office of the Secretary of the Army, Pentagon, Room 3E588, Washington, DC 20310-0109	1
Deputy Chief of Staff for Intelligence, Pentagon, Washington, DC 20310	1
Department of the Army, Office of the Surgeon General, Liaison, Pentagon, SARD-TM, Room 3E368, Washington, DC 20310	1
Chief, National Guard Bureau, Pentagon, Washington, DC 20310	1

<u>Addressee</u>	<u>Copies</u>
Chief, Military History, Pulaski Building, 20 Massachusetts Ave, NW, Washington, DC 20314	1
Commander, US Army Medical Research & Development Command, SGRD-PR, Fort Detrick, MD 21702-5012	1
Director, US Army TEXCOM Experimentation Center, Fort Ord, CA 93941	1
Director, US Army Space Program Office, DAMO-FDX, 2810 Old Lee Highway, Suite 300, Fairfax, VA 22031-4304	1
Chief of Public Affairs, OSA, Pentagon, 2E636, Washington, DC 20310	1
Chief of Legislation Liaison, OSA, 1600 Army Pentagon, Washington, DC 20310-1600	1
Technical Advisor, US Army, TRADOC, Fort Monroe, VA 23651	1
Commander, US Army Medical Research and Development Command, SGRD-PLR, Fort Detrick, MD 21701	1
Commander, US Army Materiel Command, AMCDCG-T, 5001 Eisenhower Avenue, Alexandria, VA 22333	10
Commander, US Army TRADOC, ATCG-S, (Dr. Berenson), Fort Monroe, VA 23651	5
Deputy Commander, US Army, TRADOC, Fort Leavenworth, KS 66027	5
Office Deputy Chief of Staff for Combat Development, US Army, TRADOC, ATCD-EP, Fort Monroe, VA 23651	1
Deputy Commander, US Army Forces Command, Fort McPherson, GA 30330	2
Director of Force Management, FCJ3-FM, HQ FORSCOM, Fort McPherson, GA 30330	1
Commander, US Army Communications Command, Fort Huachuca, AZ 85613	1
Science Advisor to the Commander, HQ USA FORSCOM, FCSJ-SA (Dr. Suider) Bldg., 200, Fort McPherson, GA 6000	1
Commander, US Army Laboratory Command, AMSLC-CT (Corporate Technology), 2800 Powdermill Road, Adelphi, MD 20783-1145	1
Commander, US Army Tank Automotive Command, AMSTA-CG, Warren, MI 48397-5000	1
Technical Director, US Army Operational Test and Evaluation Command, 4501 Ford Ave., Alexandria, VA 22302-1458	1
Director, US Army Concepts Analysis Agency, 8120 Woodmont Avenue, Bethesda, MD 20814	1
Commander, US Army Nuclear and Chemical Agency, Washington, DC 20310	1
Commander, US Army Foreign Science and Technology Center, 220 7th Street, NE, Charlottesville, VA 22901	1
Commander, US Army Missile and Space Intelligence Center, AIAMS-ZC, Redstone Arsenal, AL 35898-5000	1
Commander, US Army Combined Arms Support Command (CASCOM), Fort Lee, VA 23801-6000	1
Commandant, US Army Logistics Management Center, AMXMC-LS, Fort Lee, VA 23801	1
Director, US Army Research Institute for Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600	5
Director, US Army Research Office, PO Box 12211, Research Triangle Park, NC 27709-2211	1
Program Director, Military Issues and Studies, Center for Social Research and Policy Analysis, P.O. Box 12194, 3040 Cornwallis Road, Research Triangle Park, NC 27709-2194	1
Director, US Army Research Laboratory, ATTN: AMSRL-HR, Aberdeen Proving Ground, MD 21005-5425	3
Director, US Army Materiel Systems Analysis Agency, ATTN: AMXSY-D, Aberdeen Proving Ground, MD 21010-5071	2

<u>Addressee</u>	<u>Copies</u>
Director, (Dr. G. A. Neece), Research & Technology Integration, Army Research Office, PO Box 12211, Research Triangle Park, NC 27709-2211	3
Commander, US Army Info Systems Command, ASCG, Fort Huachuca, AZ 85613-5000	1
Chief, National Science Center for Communications and Electronics, ATZH-STF, Fort Gordon, GA 30905-5689	1
Commandant, US Army War College, Carlisle Barracks, PA 17013	3
Commandant, US Army Command and General Staff College, Fort Leavenworth, KS 66027	3
Commandant, US Army Field Artillery Center and Fort Sill, Fort Sill, OK 73503	1
Commandant, US Army Chemical School, Fort McClellan, AL 36205	10
Commander, US Army Chemical Research, Development and Engineering Center, Aberdeen Proving Ground, MD 21010	1
Commander, Natick, Research and Development Center, STRNC-2, Natick, MA 01760	1
Commander, Combined Arms Center, Fort Leavenworth, KS 66027	5
Commander, Academy of Health Sciences, HSA-CDS, Fort Sam Houston, TX 78234	1
Commander, Eighth US Army, APO San Francisco 96301	5
Commander-in-Chief, US Army Europe & Seventh Army, APO New York 09403	5
Commander-in-Chief, US Army Southern Command, Quarry Heights, Panama, APO Miami 34003	5
Commander, USARJ/IX Corps, AJSA, APO San Francisco 96343	5
Commander, US Army Aviation Systems Command, 4300 Goodfellow Blvd, St. Louis, MO 63120-1798	1
Commander, US Army Security Assistance Command, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001	1
HQDA, DAMO-ZD, Pentagon, 3A538, Washington, DC 20310-0410	1
Commander, US Army T&E Command, Aberdeen Proving Ground, MD 21005-5055	1
Technical Director, US Army Test & Evaluation Command, Aberdeen Proving Ground, MD 21005-5055	1
US Army Communications-Electronics Command, Director RDT&E Center, AMSEL-RD, Fort Monmouth, NJ 07703-5000	1
US Army Communications-Electronics Command, Director RDT&E Center, AMSEL-RD-D, Fort Monmouth, NJ 07703-5201	1
HQ AMC, Physical Science Administrator, AMCAQ-A-ES, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001	1
USASSDC, CSSD-OP, CSSD-DP, PO Box 15280, Arlington, VA 22215-0180	2
Commander, US Army Operational T&E Agency, Park Center IV, 4501 Ford Avenue, Alexandria, VA 22302-1458	1
Commander, Department of the Army, US Army Armament Research, Development & Engineering Center, Picatinny Arsenal, NJ 07806-5000	1
Commander, US Army Depot Systems Command, Chambersburg, PA 17201	1
Commander, West Com, APSA (Science Advisor), Fort Shafter, HI 96858	1
Science Advisor to the CDR, HQ USFK/EUSA-SJS, CS-SO, APO San Francisco 96301	1
Director, R&D Office, CERDZ-A, Office Chief of Engineers, 20 Massachusetts Avenue, NW Washington, DC 20314	1



Addressee	Copies
<b><u>OTHER</u></b>	
Director, CIA, Washington, DC 20505	1
Executive Director, Board on Science & Technology (BAST), 2101 Constitution Avenue, HA292B, Washington, DC 20418	1
Chairman, Defense Science Board, Pentagon, 3D865, Washington, DC 20301	1