AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A = Add, C = Change, D = Delete — Amendment Number

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: Worldwide

3. PROJECT NUMBER: 936-5545

4. BUREAU/OFFICE: AID/SCI

5. PROJECT TITLE (maximum 40 characters): Innovative S&T for Development

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 09 DD 30 YY 93

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4)

A. Initial FY 88 B. Quarter 4 C. Final FY 92

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 88 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	(500)	( )	(500)	(10200)	( )	(10200)
(Loan)	( )	( )	( )	( )	( )	( )
Other U.S. 1. "buy-ins"				(3500)		(3500)
Other U.S. 2.						
Host Country						
Other Donor(s)						
TOTALS	500		500	13500		13700

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) SD	750	870		10200				10200	
(2)									
(3)									
(4)									
TOTALS				10200				10200	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 964

11. SECONDARY PURPOSE CODE: 751

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code: RGEN

B. Amount:

13. PROJECT PURPOSE (maximum 480 characters)

To channel and facilitate exchange between A.I.D. and the global scientific community on the general issues of science and technology in development.

14. SCHEDULED EVALUATIONS

Interim MM 05 YY 90 MM YY Final MM 11 YY 92

15. SOURCE/ORIGIN OF GOODS AND SERVICES: ☐ 000 ☐ 941 ☐ Local ☐ Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a ____ page PP Amendment.)

17. APPROVED BY

Signature: Howard A. Inniss, Ma.

Title

Date Signed

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

PROJECT AUTHORIZATION

NAME OF COUNTRY: Worldwide

PROJECT TITLE: Innovative Science and Technology for Development

PROJECT NUMBER: 936-5545

1. Pursuant to Section 106 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the project entitled "Innovative Science and Technology for LDCs" involving centrally funded planned obligations of not to exceed $10,200,0000 over a five year period from the date of authorization, subject to the availability of funds and in accordance with the A.I.D. OYB allotment process, to help finance foreign exchange and local currency costs for the project. An additional $3.5 million may be made available from other Bureaus, or Offices or Missions of A.I.D. to support activities under the project.

2. The project will:

a) provide a channel for the U.S. scientific community for voluntary advice and assistance to the Program in Science and Technology Cooperation, especially for scientific monitoring and substantive evaluation of the research grants individually and collectively;

b) promote communication among the researchers funded by the PSTC program, and between those researchers and the larger scientific community in order to maximize the efficiency of the research and to promote the application of results from PSTC-funded research;

c) provide information on advanced scientific techniques and innovative technology in convenient, readable form to science and technology decision makers in developing countries and donor governments, through the mobilization of volunteer efforts of the (U.S.) science and technology community;

d) provide a channel to facilitate exchange between A.I.D. and the global scientific community on the more general issues of science and technology policy for development.

3. The grants or cooperative agreements which may be negotiated and executed by the office(s) to which such authority is delegated in accordance with A.I.D. regulations and delegations of authority shall be subject to the following terms and conditions together with such other terms and conditions as A.I.D. may deem appropriate.

4. Source and Origin of Commodities, Nationality of Services

a. Commodities financed by A.I.D. under the project shall have their source and origin in the United States or in the cooperating country* except as A.I.D. may otherwise agree in writing. Except for ocean shipping and air services, the suppliers of commodities or services shall have the cooperating country or the United States as their place of nationality, except as A.I.D. may otherwise agree in writing.

b. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States.

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* Each country where research, training, technical, or other assistance takes place under the project shall be deemed to be a cooperating country for the purpose of permitting local cost financing of goods or services for the activity being conducted in such country.

N. C. BRADY

Nyle C. Brady
Senior Assistant Administrator
Bureau for Science & Technology

JUN 4 1988
Date

Clearances:

ST/PO: DSheldon _____ Date 6/2/88
GC/CP, Steve Tisa _____ Date 27 May 88 & 1 Jun 88
AID/SCI, HMinners _____ Date 27 May 88

0792S

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D C 20523

May 31, 1988

ACTION MEMORANDUM FOR THE SENIOR ASSISTANT ADMINISTRATOR, BUREAU FOR SCIENCE AND TECHNOLOGY

Howard A. Minners

FROM: SCI, Dr. Howard A. Minners

SUBJECT: Proposed SCI Project #936-5545, Innovative Science and Technology for Development (ISTD)

Problem: To approve a new $10.2 million, five year project in the Office of the Science Advisor (Project #936-5545, Innovative Science and Technology for Development), and to authorize a new $13.5 million, five year cooperative agreement with the National Academy of Sciences (NAS) which will carry out the new SCI project and receive "buy-ins" from other parts of the Agency for related activities.

Discussion: As you know we have planned for some time to negotiate a new agreement with the NAS this year, but the process was considerably complicated by unexpectedly restrictive wording in the FY 1988 Senate Appropriations Committee report. The National Academy of Sciences submitted their proposal March 9, 1988. It is included as attachment three. An external, ad hoc panel reviewed the proposal and did "not find it the best possible use of A.I.D. and BOSTID talents." The panel, however, was "convinced of the value of the relationship between the Agency for International Development and the Board on Science and Technology for International Development (BOSTID)." It was also "extremely supportive of the efforts to continue BOSTID's unique services to developing country scientists." Their report of April 22, 1988 forms attachment four. In the following pages, we present a revised plan which is directly responsive to the concerns of the panel, which also attempts to incorporate the principal improvements urged by the recent Management Review (Richard Blue), and which we feel implements your intentions for the program.

We propose Project #936-5545, Innovative Science and Technology for Development, as a means to continue the SCI mandate. To this end we propose to fund the National Academy of Sciences for a $10 million, five-year cooperative agreement with A.I.D. In addition, we propose that the project also include authority for $200 thousand for ouside evaluation contracts to provide an independent review of the progress under the cooperative agreement. This would allow for a $100,000 mid term and a $100,000 final evaluation of the interaction of the N.A.S. cooperative agreement and the larger PSTC program. Of course, a specific work plan would be approved prior to any such evaluation contract. Finally, we propose that the cooperative agreement be authorized for $13.5 million to allow for buy-ins by other parts of A.I.D. for additional NAS activities of the type specified below. The

funding for the new cooperative agreement and the existing grant will be monitored to assure that total funding is consistant with Congressional guidance.

The emphasis in the new cooperative agreement will be: (1) Research Program Support, (2) Networking, and (3) Scientific Studies, Studies Distribution and Information Services. The NAS will not conduct regular proposal peer reviews nor directly fund research. Research grants funded under the Program in Science and Technology Cooperation (PSTC) will be made as part of #936-5542, Innovative Scientific Research. The revised proposal has been discussed with the N.A.S. and they are in agreement.

Because of the length and complexity of this document, a table of contents is included for your convenience:

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THE NEW PROJECT #936-5545, INNOVATIVE S&T FOR DEVELOPMENT

I. BACKGROUND:

The Program in Science and Technology Cooperation (PSTC) began in 1981. It is managed by the Office of the Science Advisor (SCI). Its purpose is to carry out a more innovative and collaborative program of science and technology with developing countries than had been institutionalized in A.I.D. prior to 1980.

The PSTC was created in response to a U.S. initiative at the 1979 UN Conference on Science and Technology for Development (UNCSTD). The National Academy of Sciences was a major collaborator with A.I.D. and the Department of State in preparing for UNCSTD and the initiative. As the Congress considered the initiative, the National Academy developed its own specific plan. Since the Academy has no line-item Congressional budget, and a very limited endowment, in order to achieve its purposes of catalyzing more effective application of Science and Technology for International Development, it sought A.I.D. funding.

In 1981 under project #936-5538, Applying Science and Technology to Development (NAS), a PSTC grant was made to the National Academy of Sciences Board on Science and Technology for International Development (BOSTID) which funded the development of six research subprograms, and also developed a series of science policy efforts, including studies produced in the form of monographs. That project and the NAS grant are funded through March 15, 1990, and has resulted in 110 subgrants. The SCI portion of the grant to the NAS is authorized at $36 million, $33.5 million of which has been obligated through FY 1987. In addition, the grant ceiling was raised in 1986 to $40 million to accommodate buy-ins from other A.I.D. Offices and Bureaus.

The proposed relationship with the NAS will complement and strengthen project #936-5542, Innovative Scientific Research which (together with the U.S.-Israel CDR Program) has funded some 400 grants from inception through FY 1988. Project #936-5542 emphasizes investigator-initiated proposals and external scientific peer review. Four criteria are used for the evaluation of projects and project proposals. These are: (1) scientific merit, (2) relevance to development, (3) innovation, and (4) strengthening of innovative research capacity in developing countries.

The current innovative scientific research project is organized in six modules:

1. Biotechnology/Immunology (BIOT/I) in human and/or animal systems, including recombinant microbiology (genetic engineering), monoclonal antibodies, and related immunological techniques for better and more rapid diagnosis, immunotherapy, vaccine development, and related health applications.

2. Plant Biotechnology (BIOT/P), including tissue culture research, protoplast fusion, somaclonal variation, and recombinant microbiology to enhance food crops; also improvement of drought tolerance and enhancement of resistance to disease, insecticides and/or herbicides, e.g., through studies of gene expression, transfer and regulation.

3. Chemistry for World Food Needs (CHEM), particularly biochemical growth regulation in plants and animals, soil chemistry, soil-plant-animal relationships (biochemistry), innovative agricultural and food chemistry, studies of natural pesticides from plants, and the chemistry of integrated aquaculture systems.

4. Biomass Resources and Conversion Technology (BMAS) emphasizing improved, renewable production and innovative, efficient use of woody biomass and tropical grasses (including cane and bamboo) for fuels, fodder, and higher value chemicals; new and simpler methods to identify economically useful biomass products and byproducts.

5. Biological Control (VECT) of (a) human schistosomes and their snail vectors, and of (b) plant crop viruses and their arthropod vectors, emphasizing ecologically acceptable interruption of disease transmission based on microorganism-host-vector relationships, genetics, biochemistry (e.g., juvenile hormones, pheromones), immunology, natural predation, and pathobiology.

6. Diversity of Biological Resources (GEN) emphasizing innovative research on terrestrial and aquatic plant/animal/microbial species of economic promise for development. This includes: new methods for identifying economically useful species and products, restoration and optimization of habitat for species and ecosystem maintenance and productivity, and development of new molecular-genetic methods for the above. Conventional breeding, taxonomic studies and distribution surveys are normally excluded.

Five research areas of the current NAS program will initially be assumed within the foregoing six modules for immediate convenience (Grain Amaranth within GEN, Fast Growing Trees within BMAS, Biological Nitrogen Fixation within CHEM, Mosquito Vector Research within VECT, and Rapid Epidemiological Assessment with BIOT/I). The sixth, Acute Respiratory Infections, may also be grouped with BIOT/I and Rapid Epidemiological Assessment, but in addition it is under external review and also under consideration by A.I.D./S&T/Health for possible transfer. Based on the advice of the scientific panels and ongoing evaluations, these research modules will be modified in the next two years.

The cycle for new research grants will involve one competition per year in which preproposals are screened, full proposals are peer reviewed, and grants are made by A.I.D.. This "obligation cycle" will be managed by SCI, and research grants will be funded entirely from #936-5542, and not from the new project #936-5545. SCI will be responsible for overall management of the portfolio of grants, and for evaluation of the overall program progress and accomplishments.

The NAS staff will be funded from the initiation of the new cooperative agreement through the expiration of the old grant in 1990 by two instruments. The old grant will fund primarily the final expenditures under the existing subgrants, and some related staff costs. Care will be exercised to assure no double costing.

Networking and scientific program support under the new cooperative agreement, will initially be focused on some 110 previously awarded subgrants of the PSTC-BOSTID program (#936-5538), and some 320 grants awarded to date under Innovative Scientific Research (#936-5542), and to a lesser extent to some 110 grants made under the U.S.-Israel Cooperative Development Research Program (#936-5544). Emphasis will initially be on the approximately 250 active grants funded directly or indirectly by SCI.

II. GOALS: To apply advanced scientific techniques and innovative technology to important problems of A.I.D. target countries, and to strengthen the institutional capacity of those A.I.D. target countries to do so themselves.

III. OBJECTIVES: The objectives of the Project are:

1. To provide a channel for the U.S. scientific community for voluntary advice and assistance to the PSTC program, especially for scientific monitoring and substantive evaluation of the research grants individually and collectively;

2. To promote communication among the researchers funded by the PSTC program, and between those researchers and the larger scientific community in order to maximize the efficiency of the research and to promote the application of results from PSTC-funded research;

3. To provide information on advanced scientific techniques and innovative technology in convenient, readable form to science and technology decision makers in developing countries and donor governments, through the mobilization of volunteer efforts of the (U.S.) S&T community;

4. To provide a channel to facilitate exchange between A.I.D. and the global scientific community on the more general issues of science and technology policy for development.

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IV. STATEMENT OF WORK: The cooperative agreement will be funded as part of the SCI PSTC program, and through additional buy-ins from other parts of A.I.D. The NAS will seek to encourage complementary funding from the private sector, and matching in-kind contributions, especially including the donated services of scientists.

The cooperative agreement will fund three interrelated subprograms. They are described below in order of increasing distance from the core research orientation of the PSTC program (it is assumed that the buy-ins will be particularly oriented toward the networking and studies/information subprograms). The details of numbers of activities of the different types specified are tabulated with the budget tables.

A. RESEARCH PROGRAM SUPPORT SUBPROGRAM

This subprogram will provide a vehicle to allow the U.S. scientific community to volunteer services needed to improve the the PSTC research grants programs. Emphasis will be on improving monitoring and evaluation. A.I.D. funding for this subprogram will generally be limited to travel and per diem for the volunteers, honoraria for residencies, and staff resources needed to plan, schedule, arrange for, and utilize these volunteer services effectively.

(1) SCIENTIFIC WORKING GROUPS: will be convened on a regular basis to review aspects of the grants program and provide information and advice to improve that program. Initially there will be one Scientific Working Group meeting per module per year. The rate of meetings will be reviewed and may be changed as the research program is reorganized. Some Scientific Working Group meetings will be explicitly organized to review completed projects based on reports and publications. These Scientific Working Groups will provide evaluations of both individual projects as well as the overall performance of a module or a program. Scientific Working Groups may also be convened to discuss related topics, such as the interrelationship among modules in a research area, or the potential advantages and disadvantages of restructuring/narrowing the research areas.

In the first year, Scientific Working Groups will be appointed ad hoc, according to the needs for program modification and analysis. In future years, as agreed to by BOSTID and A.I.D., the Scientific Working Groups or other groups may evolve a continuing system of review for specific research areas. In general such "standing" Scientific Working Groups will be small, perhaps three to five members, at least one of whom would be a member of BOSTID. Such standing Scientific Working Groups would be augmented for each meeting by additional ad hoc participants according to the specific expertise required.

(2) SITE VISITS: BOSTID-identified scientists will be funded to make site visits to groups of PSTC projects, typically in conjunction with attendance at networking meetings or training workshops. Projects to receive these site visits will be jointly chosen by A.I.D./SCI and BOSTID staff. Frequently, site visits will be scheduled in conjunction with the attendance of U.S. scientists at networking meetings (discussed below). In some cases they will be scheduled at the request of the A.I.D. Project officer for a grant, and will provide specific technical advice on a problem encountered in the research. These site visits will also provide important information for project monitoring and evaluation. Scientists will be expected to provide written trip reports, and to brief the USAID Field Project Officer in country about the projects visited.

(3) RESIDENCIES: BOSTID will also offer residencies to scientists, typically on exchanges, or sabbatical leave or who are willing to accept a half-time appointment for a period of one to two years, who will provide expert services in the support and evaluation of the research areas. Such scientists may be from developing countries, from the U.S. or from other donor agencies. Core funding will support three persons per year of such services. This component of the project is based on the experience of the current program. Several criteria will be used in evaluating such possibilities. Residencies will be encouraged for people with specific expertise, such as bench research experience in the research area (experts in fast moving areas such as biotechnology do not remain at the cutting edge of their field long if they leave the laboratory and accept administrative posts). The degree to which such a residency is likely to encourage a career interest in problems of development will also be used as a selection criteria. Residencies will also be encouraged for developing country research administrators interested in apprenticeships in research mangement, or for officials of other donor agencies to stimulate collaboration among donors.

(4) EQUIPMENT SPECIFICATION SUPPORT: BOSTID will provide assistance to PSTC grantees in the specification and acquisition of U.S. scientific equipment and supplies in an effort patterned after that of their current program. Grantees that request this support will be assisted to open a U.S. dollar bank account for such purchases. BOSTID staff, in conjunction with volunteer scientific advisors, will review the proposals of these developing country scientists requesting such assistance, and recommend specific equipment and sources. Further, they will expedite the communication between scientist and supplier if requested.

(5) OTHER SUPPORT: On occasion, BOSTID may be asked by A.I.D. to assist in providing scientific advice for other aspects of the program. Thus from time to time, when specific expertise needed

to evaluate a proposal submitted to A.I.D./SCI is not available in the Washington, D.C. area, the NAS will assist in locating an appropriate scientist and arranging for his or her travel to the peer review meeting. Similarly, if scientific assistance is needed by a developing country scientist to resubmit a technical proposal, NAS-BOSTID in consultation with A.I.D. will assist in selecting an appropriately qualified volunteer, and arrange the required travel. As appropriate, the NAS will be asked to provide logistic support, as they currently do now, for example, for the peer review panels organized by SCI, or for the independent evaluation team which A.I.D. may appoint.

B. NETWORKING SUBPROGRAM

The networking subprogram will focus on, but not be limited to, encouraging communication among PSTC researchers, between U.S. researchers and PSTC researchers working in the same fields, and between PSTC researchers and the user community, including developing country decision makers and A.I.D. and other donor technical officers. Core funding will be limited to networking meetings, training workshops, research reviews, providing data to S&T information systems, and scientific exchanges.

(1) PSTC RESEARCHER NETWORKING MEETINGS: The NAS will organize three to four meetings per year around a Research Module or area of research in the PSTC grants program. (Four meetings will be planned in cases where a module is better divided into two meetings, as might be the case with vector biology; thus in general, each module will be provided with a meeting erevy two years.) The specific topics will be selected by agreement between BOSTID and A.I.D. These meetings will have several purposes, including:

a. Encouraging communication between PSTC grantees, and other researchers involved in the same research areas. Such communication may be on difficulties encountered in research and how they may be overcome, on findings of the research and their interpretation, on the balance of the research effort and lacunae that should be filled or areas that appear overfunded, or on needs for follow-up of results and the impact of the results.

b. Encouraging dissemination of the research findings, such as encouraging and assisting publication in scientific journals, or providing a vehicle for presentation of results to appropriate donor or host government officials.

c. Providing informal opportunities for evaluation of the program, especially by encouraging local LDC peer review of the research performance.

(2) TRAINING WORKSHOPS: Will be organized on specialized laboratory or field techniques, where NAS and A.I.D. agree that a

group of PSTC and related researchers could benefit immediately from specific training on a new research technique, or where researchers agree that they should develop a common protocol to enhance their separate projects. The host institutions will often be U.S. or LDC institutions involved in such research that volunteer their facilities without cost. These workshops will be patterned after previous PSTC-BOSTID workshops such as those on the application of molecular genetics techniques to agriculture field experiments, diagnosis of viral or bacterial repiratory pathogens, and data management.

(3) SCIENTIFIC OVERVIEW PAPERS: A research Review Paper will be prepared for each research area during the course of this cooperative agreement, providing an overview of the research program and its results. These substantive overview papers will be widely distributed among the researchers themselves, A.I.D. officers, developing country decision makers, and donor agency officials. These papers will also provide materials for briefing of A.I.D. officials and others interested in the development of these research programs.

(4) DEVELOPMENT INFORMATION SYSTEMS: BOSTID will also provide information on the entire PSTC program to the A.I.D. Development Information System, IDRIS, the SPAAR agricultural information system, and other research data bases especially relevant to the objective of the program.

BOSTID has funded a very successful grant to initiate an "Amaranth Newsletter" to encourage communication among researchers interested in this crop. In the current cooperative agreement, BOSTID may bring to A.I.D.'s attention other such opportunities to catalyze the initiation of newsletters. If such proposals are approved by A.I.D., they will be separately funded.

(5) SCIENTIFIC EXCHANGES: Scientific exchanges, involving visits of scientists from one country to the laboratories of colleagues in other countries, will also be encouraged when appropriate. Generally, visits of U.S. scientists to the laboratories of the developing country scientists will be most frequent. The U.S. scientist will be expected to provide advice and assistance to the counterpart. Similarly, on occasion other LDC scientists will be encouraged to have exchange visits with colleagues in the PSTC program. In few cases, typically involving access to advanced instrumentation or techniques, LDC scientists will be invited to work in a U.S. laboratory. The NAS will seek outside funding for a program that would support U.S. post-doctoral or doctoral students to work in the laboratories of PSTC overseas grantees.

C. SCIENTIFIC STUDIES, STUDY DISTRIBUTION AND INFORMATION SERVICES SUBPROGRAM

(1) STUDIES: Studies will be conducted on specific topics agreed

to and approved in advance by A.I.D. and the NAS. The studies will be published in monograph form. Approximately 2,000 copies of each study will be distributed gratis to a key target audience of developing country readers, and up to 5,000 copies will be printed. The studies will be modelled on the successful studies published in previous years of the A.I.D.-NAS relationship. They will deal with selected topics in science policy and technological innovation. Those studies funded by the PSTC budget will focus specifically on innovative research. Core funding will be provided for five studies.

(2) DISTRIBUTION SYSTEM FOR STUDIES: The cooperative agreement will provide core support for the NAS (BOSTID) system for the distribution of their publications. The distribution system is used to disseminate the reports in the BOSTID studies program previously discussed. To date more than 600,000 copies of some 50 reports have been distributed. BOSTID studies are distributed through a network of U.S. and overseas mechanisms (including Westview Press, the National Academy of Sciences Press), and cost recovery by the NAS through sales of books is estimated as sufficient to cover warehouse, handling and postage costs. The system includes computerized mailing lists, and reporting systems.

(3) OTHER INFORMATION ACTIVITIES: Meetings of scientists will be conducted in the United States and in developing countries, at the request of A.I.D. and in the case of overseas meetings at the request of the host country. Such meetings include briefings to developing country and donor agency or government officials on selected issues in science and technology, workshops for discussion between U.S. and host country officials on topics of science and technology policy or management, and similar opportunities to improve communication between the U.S. scientific community and the development community, and panels of scientists to discuss specific topics of interest to A.I.D. and the N.A.S. The U.S. participants in these meetings will be selected by the NAS on the basis of scientific expertise, and will serve without pay.

V. ORGANIZATION, OPERATING PROCEDURES AND BUDGET:

The Board on Science and Technology for International Development will be appointed by the National Research Council to provide oversight over this program (as well as other efforts). BOSTID will be composed of about 15 distinguished scientists, engineers, and social scientists from a variety of institutions and sectors. BOSTID may include members from developing countries. It will meet twice per year. The overall program will be under the supervision of the Director of BOSTID.

The procedures to be followed are based on the recognition of the unique functions of the National Research Council as a Congressionally chartered organization providing disinterested scientific advice to the government (and by extension to the

international development community). The prestige of the NRC is as much responsible for its ability to attract the best scientists, engineers, and health experts to donate their services to the government, as is the unique network of contacts engendered by the history of thousands of scientific panels organized over a period of decades. Moreover, the imprimature of the NRC on its products greatly enhances their value in communicating scientific information and advice. These are all related to the specialized procedures and structures used by the NRC.

In all aspects of this program, the NRC will follow its own procedures in the creation of panels, and in the selection of scientific experts. In the case of efforts involving the evaluation of research projects and programs funded and managed by A.I.D., the separation of authority is especially important in providing checks and balances on program performance. This cooperative agreement provides resources to the NAS in carrying out a program to support the improvement of scientific capacity in the developing world. A.I.D. is involved in helping to set priorities and in the authorization of specific activiites.

Once grants are made an A.I.D. Field Project Officer is assigned for each grant. For grants made in developing countries an A.I.D./W Backstop Officer will also be assigned. SCI will be responsible for the coordination of the support and networking inputs from the NAS with the management responsibilities of these Project Officers and Backstop Officers.

The Research Program Support Subprogram will be based on a yearly updated management plan which specifies the panels to be mounted, the residencies to be funded, and the budget for visits and ad hoc assistance. This plan will be drafted by the NAS after discussion with A.I.D., and finalized in conjunction with the annual obligation of funds to the cooperative agreement. Visits and ad hoc assistance will be worked out in day-to-day coordination between BOSTID and A.I.D. staff, and in the process of obtaining mission travel clearances.

BOSTID staff working on the networking and provision of scientific inputs related to the PSTC program will work closely with A.I.D./SCI staff administering that program. In general, the networking efforts will be done at the initiative of BOSTID, with concurrence of A.I.D. The Research Program Support Program will generally involve requests from A.I.D., in consultation with the NAS.

Networking activities will generally be authorized by letter of agreement signed by the Director of BOSTID, and countersigned by the A.I.D. Project Officer. Meetings, Workshops, and Scientific Overview Papers will each have a letter agreement patterned after those for the studies. The scientific exchanges will be approved in the process of obtaining mission clearance for such travel.

BOSTID, in close consultation with A.I.D./SCI, will select specific activities which A.I.D. must approve. The implementation of these activities will be the responsibility of the NAS.

In the PSTC-funded information subprogram, agreement on specific activities will be by a letter of agreement, signed by the Director of BOSTID and countersigned by the A.I.D. Project Officer. The letters of agreement will document the topic to be studied, the rationale for the study, the process to be followed, the budget, the time schedule, and the responsible official in BOSTID. The BOSTID staff will consult with A.I.D. widely, and in coordination with the A.I.D. project officer will periodically develop and review a list of possible study topics. In view of these A.I.D. priorities, BOSTID will provide the above-mentioned letter of agreement.

SCI-funded activities under this cooperative agreement will not exceed $10 million over a five year period; however, other relevant activities may be funded up to $3.5 million from other A.I.D. projects from other Bureaus or Offices. These "buy-ins" will be specified in amendments to the cooperative agreement, each of which will provide the full description of the activity involved. In general these will be based on a proposal generated by the NAS, and a Project Implementation Order generated by the funding office in A.I.D. and cleared the the A.I.D. Project Officer for this grant.

BOSTID will maintain an independent oversight of this cooperative agreement, including an independent evaluation program. A.I.D. will retain the right to organize and fund a midterm and final evaluation of the cooperative agreement by an outside panel of scientists. $100 thousand is budgetted for an outside evaluation contractor in year three and $100 thousand in year five, in case such evaluation services are required.

Detailed budget estimates are included in attachment two. Attachment 1 estimates the contributions to the program attributable to the N.A.S.

VI. RECOMMENDATIONS:

(1) That you approve the establishment of a $10.2 million, five year project in the Office of the Science Advisor (#936-5545, Innovative S&T for Development), authorize $500,000 for initial funding in FY 1988, and sign the attached PAF:

APPROVED: _____

DISAPPROVED: _____

DATE: JUN 4 1988

(2) That you authorize A.I.D./SCI to initiate FY 88 funding documents to begin negotiations with the National Academy of Sciences for a $13.5 million cooperative agreement to carry out the new project as described above.

APPROVED: _____

DISAPPROVED: _____

DATE: JUN 4 1988

Attachments: 5
1. Annex I, Other Contributions
2. Detailed budget estimates
3. NAS Proposal 88-166
4. SCI Review Panel Memo to Dr. Minners dated 22 April 1988
5. Project Authorization Form

Clearance:

S&T/PO: DSheldon _____ Date 6/2/88

SCI:WOglesby:JADaly:5/31/88:875-4444:0786S

ANNEX I
OTHER CONTRIBUTIONS

The contributions of others to this project were not specifically discussed above. While the NAS has neither substantial endowment nor line item budget, it does attract substantial contributions in the form of donated professional time and services. The NAS in their proposal estimated that there would be up to $1 million in donated professional services. We calculate independently (see attached table) that the in-kind contribution of professional services for the revised program would be approximately $1.4 million. The more conservative estimate is recommended.

In addition to in-kind donations of professional time, the NAS will seek to find matching funds from private donors. Typically facilities for workshops will be donated by the host institutions, and meetings held overseas usually have facilities donated. The NAS has provided limited "program initiation funds" for activities in the BOSTID program in the past, and should do so in this grant. In the studies program, contributions defray the mailing and warehouse costs for the distribution. Moreover, commercial publishers frequently collaborate in the publication (defraying their expenses thruough the U.S. sales of the monographs). We see no way to reliably quantitatively predict such contributions.

The NAS effort is complementary to A.I.D. inputs in the PSTC program. The grantees in the PSTC program contribute substantially in terms of professional staff time and facilities. Thus the outside contributions to the PSTC program as a whole are much larger than those directly attributed to the NAS.

Contributed services

Estimated value f contributed scientific services:

31 panels @ 10 person days per panel	310 person/days
30 site visits @ 30 person days	900 person/days
10 equipment consultations @ 1 person day	10 person days
16 meetings # @ 140 person days	2240 person/days
5 workshops @ 15 person days	75 person days
5 exchanges @ 60 person days	300 person days
5 studies @ 60 person days	300 person days
10 BOSTID meetings @ 30 person days	300 person days
TOTAL	4435 person/days
Value @ $250	$1,109 thousand

7 residencies* @ $40,000	$280 thousand
TOTAL	$1.4 million

the networking meetings are estimated as five day meetings with 28 participants receiving funding and a comperable number not funded. The experience of the current biotechnology meeting suggests that many more participants are likely. We have assumend contributions of professional staff time at 28 persons for five working days.
* note less than half the residencies are identified as involving contributed services, since a foreign national would probably not have salary equal to that paid the resident. Estimates are somewhat higher than half the salary assuming that the university allowing a sabatical will cover employee benefits, which should be counted as contribution to costs.

RESOURCES FOR THE INNOVATIVE SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
SUPPORT PROG						
PANELS	7	6	6	6	6	PER YEAR
SITE VISITS	6	6	6	6	6	PER YEAR
RESIDENCIES	3	3	3	3	3	PER YEAR
EQUIP SPEC	1	1	1	1	1	UNIT/YEAR
OTHER	1	1	1	1	1	UNIT/YEAR
NETWORKING						
MEETINGS	4	3	3	3	3	PER YEAR
WORKSHOPS	1	1	1	1	1	PER YEAR
REVIEWS			2	2	2	PER YEAR
INFO SYS	1	1	1	1	1	UNIT/YEAR
EXCHANGES	2	2	2	2	2	PER YEAR
OTHER	1	1	1	1	1	UNIT/YEAR
INFORMATION						
STUDIES	1	2	1	1		PER YEAR
P DIST SYS	1	1	1	1	1	UNIT/YEAR
OTHER	1	1	1	1	1	UNIT/YEAR
ADMINISTRATION						
BOSTID	2	2	2	2	2	PER YEAR
OTHER	1	1	1	1	1	UNIT/YEAR

	A	B	C	D	E	F	G
217	PSTC FUNDED PERSONNEL FOR ALL COMPONENTS OF PROGRAM						
218		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTALS
219	DIRECTOR	1	1	1	1	1	5
220	PROF ASSOCIATES	3.748	4.165	3.415	3.415	2.665	17.408
221	INFO SYS MGR	1	1	1	1	1	5
222	STAFF ASSOCIATE	5.41	5.50	5.66	5.66	5.16	27.372
223	ADMIN ASST	1	1	1	1	1	5
224	SECRETARY (6)	1	1	1	1	1	5
225	SECRETARY (5)	5.48	5.48	5.81	5.81	5.48	28.068
226	RESIDENTS	3	3	3	3	3	15
227							
228							
229							
230	PSTC FUNDED BUDGET BY LINE ITEM FOR TOTAL PROGRAM						
231		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
232							
233	DIRECTOR	62227	64405	66659	68992	71407	
234	PROF ASSOCIATES	198280	228053	193532	200305	161785	
235	INFO SYS MGR	14774	15291	15826	16380	16953	
236	STAFF ASSOCIATE	170002	178650	190287	196947	185817	
237	ADMIN ASST	25963	26872	27812	28786	29793	
238	SECRETARY (6)	19099	19767	20459	21175	21917	
239	SECRETARY (5)	93963	97198	106657	110390	107766	
240	SUBTOTAL	584308	630237	621232	642975	595438	
241	BENEFITS	128548	138652	136671	141455	130996	.22
242	RESIDENTS	79353	82130	85005	87980	91059	
243	SUBTOTAL	792209	851019	842908	872410	817493	4176039
244	OVERHEAD	574351	616989	611109	632497	592683	.725
245	TRAVEL	295840	259909	265042	274319	279674	1374785
246	OTHER DIRECT	73200	95945	83234	86147	60474	399001
247	SUBTOTAL	1735600	1823861	1802294	1865374	1750325	
248	G&A	197858	207920	205461	212653	199537	.114
249	TOTAL	1933458	2031781	2007755	2078027	1949862	10000883

	I	J	K	L	M	N	O
1	DISTRIBUTION OF PROGRAM COSTS AMONG ELEMENTS						
2	DIR COST	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
3	RES SUP	570519	560517	580135	600440	621455	2933067
4	NETWORK	609891	510664	620936	642669	665163	3049323
5	STUDIES	367119	561165	393267	407032	220382	1948964
6	ADMIN	385929	399436	413416	427886	442862	2069529
7							10000883
8	FINAL						
9	RES SUP	713238	708231	733019	758675	785229	3698392
10	NETWORK	758267	664233	779880	807176	835427	3844983
11	STUDIES	461953	659318	494856	512175	329206	2457508

	A	B	C	D	E	F	G
1	PSTC FUNDED ACTIVITIES IN THE RESEARCH PROGRAM SUPPORT SUBPROGRAM						
2		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
3	SUPPORT PROG						
4	REVIEW PANEL	7	6	6	6	6PER YEAR	
5	SITE VISITS	6	6	6	6	6PER YEAR	
6	RESIDENCIES	3	3	3	3	3PER YEAR	
7	EQUIP SPEC	1	1	1	1	1UNIT/YEAR	
8	OTHER	1	1	1	1	1UNIT/YEAR	
9							
10							
11	RESOURCES PER ACTIVITY FOR THE RESEARCH PROGRAM SUPPORT SUBPROGRAM						
12		PROF	RESIDENT	STAFF	SECRETARY	TRAVEL	DIRECT
13		ASSOC	SCIENTIST	ASSOC	(GS-5)		COST
14		(GS-14)	1/2GS-14	(GS-11)			
15	SALARY LEVEL	52903	26451	31412	17134		
16	REVIEW PANEL	.083		.167	.083	2220	500
17	SITE VISITS					3900	
18	RESIDENCIES		1			6000	
19	EQUIPMENT SPEC			1	1		10000
20	OTHER	.25			.33		
21							
22	PSTC FUNDED PERSONNEL IN THE RESEARCH PROGRAM SUPPORT SUBPROGRAM						
23		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
24	DIRECTOR						
25	PROF ASSOCIATES	.83	.75	.75	.75	.75	
26	INFO SYS MGR						
27	STAFF ASSOCIATE	2.17	2.00	2.00	2.00	2.00	
28	ADMIN ASST						
29	SECRETARY (6)						
30	SECRETARY (5)	1.91	1.83	1.83	1.83	1.83	
31	RESIDENTS	3	3	3	3	3	
32							
33							
34	PSTC LINE ITEM BUDGET FOR RESEARCH PROGRAM SUPPORT SUBPROGRAM						
35		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
36	(INFLATOR)	1	1.035	1.071225	1.108718	1.147523	
37	DIRECTOR						
38	PROF ASSOCIATES	43962	40956	42390	43874	45409	
39	INFO SYS MGR						
40	STAFF ASSOCIATE	68133	65088	67366	69724	72164	
41	ADMIN ASST						
42	SECRETARY (6)						
43	SECRETARY (5)	32743	32417	33552	34726	35942	
44	SUBTOTAL	144838	138461	143308	148323	153515	
45	BENEFITS	31864	30462	31528	32631	33773	.22
46	RESIDENTS	79353	82130	85005	87980	91059	
47	SUBTOTAL	256055	251053	259840	268935	278347	
48	OVERHEAD	185640	182014	188384	194978	201802	.725
49	TRAVEL	56940	56635	58617	60669	62792	
50	OTHER DIRECT	13500	13455	13926	14413	14918	
51	SUBTOTAL	512136	503157	520768	538995	557859	
52	G&A	58383	57360	59368	61445	63596	.114
53	TOTAL	570519	560517	580135	600440	621455	2933067

	A	B	C	D	E	F	G
56	PSTC FUNDED ACTIVITIES IN THE NETWORKING SUBPROGRAM						
57		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
58	NETWORKING						
59	NET MEETINGS	4	3	3	3	3PER YEAR	
60	WORKSHOPS	1	1	1	1	1PER YEAR	
61	RES REVIEWS			2	2	2PER YEAR	
62	INFO SYS	1	1	1	1	1UNIT/YEAR	
63	EXCHANGES	2	2	2	2	2PER YEAR	
64	OTHER	1	1	1	1	1UNIT/YEAR	
65							
66							
67	RESOURCES PER UNIT ACTIVITY FOR THE NETWORKING SUPPROGRAM						
68		PROF	INFO SYS	STAFF	SECRETARY	TRAVEL	DIRECT
69		ASSOC	MANAGER	ASSOC	(GS-5)		COST
70		(GS-14)	(GS-13)	(GS-11)			
71	SALARY LEVEL	52903	44769	31412	17134		
72	NETWORK MEETING	.25		.25	.25	46200	5000
73	WORKSHOP	.083		.083	.083	18000	1700
74	RES REVIEW			.33	.33		5000
75	INFO SYSTEM		.67	.25	.33		10000
76	EXCHANGES					6300	500
77	OTHER	.25			.33		
78							
79	PSTC FUNDED PERSONNEL IN THE NETWORKING SUBPROGRAM						
80		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
81	DIRECTOR						
82	PROF ASSOCIATES	1.33	1.08	1.08	1.08	1.08	
83	INFO SYS MGR	.67	.67	.67	.67	.67	
84	STAFF ASSOCIATE	1.33	1.08	1.74	1.74	1.74	
85	ADMIN ASST						
86	SECRETARY (6)						
87	SECRETARY (5)	1.74	1.49	2.15	2.15	2.15	
88	RESIDENTS						
89							
90							
91	PSTC FUNDED BUDGET BY LINE ITEM FOR NETWORKING SUBPROGRAM						
92		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
93	(INFLATOR)	1	1.035	1.071225	1.108718	1.147523	
94	DIRECTOR						
95	PROF ASSOCIATES	70520	59299	61375	63523	65746	
96	INFO SYS MGR						
97	STAFF ASSOCIATE	41872	35210	58651	60704	62828	
98	ADMIN ASST						
99	SECRETARY (6)						
100	SECRETARY (5)	29865	26476	39517	40900	42332	
101	RESIDENTS						
102	SUBTOTAL	142256	120986	159542	165126	170906	
103	BENEFITS	31296	26617	35099	36328	37599	.22
104	SUBTOTAL	173553	147602	194642	201454	208505	
105	OVERHEAD	125826	107012	141115	146054	151166	.725
106	TRAVEL	215400	175122	181251	187595	194161	
107	OTHER DIRECT	32700	28670	40385	41799	43262	
108	SUBTOTAL	547479	458405	557393	576902	597094	
109	G&A	62413	52258	63543	65767	68069	.114
110	TOTAL	609891	510664	620936	642669	665163	3049323

	A	B	C	D	E	F	G
113	PSTC FUNDED ACTIVITIES IN THE STUDIES/INFORMATION SUBPROGRAM						
114		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
115	INFORMATION						
116	STUDIES	1	2	1	1	PER YEAR	
117	P DIST SYS	1	1	1	1	1UNIT/YEAR	
118	OTHER	1	1	1	1	1UNIT/YEAR	
119							
120	RESOURCES PER UNIT ACTIVITY FOR THE STUDIES/INFORMATION SUPPROGRAM						
121		PROF	INFO SYS	STAFF	SECRETARY	TRAVEL	DIRECT
122		ASSOC	MANAGER	ASSOC	(GS-5)		COST
123		(GS-14)	(GS-13)	(GS-11)			
124	SALARY LEVEL	52903	44769	31412	17134		
125	STUDY	.75		.5	.33	3700	25000
126	P DIST SYS		.33	.75	.67		
127	LDC MEETING	.25		.25	.25	46200	5000
128	US PANEL	.083		.167	.083	2220	500
129	SITE VISIT					3900	
130	OTHER	.5			.33		
131							
132	PSTC FUNDED PERSONNEL IN THE STUDIES INFORMATION SUBPROGRAM						
133		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
134	DIRECTOR						
135	PROF ASSOCIATES	1.25	2	1.25	1.25	.5	
136	INFO SYS MGR	.33	.33	.33	.33	.33	
137	STAFF ASSOCIATE	1.25	1.75	1.25	1.25	.75	
138	ADMIN ASST						
139	SECRETARY (6)						
140	SECRETARY (5)	1.33	1.66	1.33	1.33	1	
141	RESIDENTS						
142							
143							
144	PSTC FUNDED BUDGET BY LINE ITEM FOR STUDIES/INFORMATION SUBPROGRAM						
145		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
146	(INFLATOR)	1.00	1.04	1.07	1.11	1.15	
147	DIRECTOR						
148	PROF ASSOCIATES	66129	109509	70839	73318	30354	
149	INFO SYS MGR	14774	15291	15826	16380	16953	
150	STAFF ASSOCIATE	39265	56895	42062	43534	27034	
151	ADMIN ASST						
152	SECRETARY (6)						
153	SECRETARY (5)	22788	29438	24411	25266	19662	
154	RESIDENTS						
155	SUBTOTAL	142956	211133	153138	158498	94003	
156	BENEFITS	31450	46449	33690	34869	20681	.22
157	SUBTOTAL	174406	257582	186828	193367	114684	
158	OVERHEAD	126444	186747	135450	140191	83146	.725
159	TRAVEL	3700	7659	3964	4102	0	
160	OTHER DIRECT	25000	51750	26781	27718	0	
161	SUBTOTAL	329550	503738	353023	365378	197830	
162	G&A	37569	57426	40245	41653	22553	.114
163	TOTAL	367119	561165	393267	407032	220382	1948964

	A	B	C	D	E	F	G	H	I
166	PSTC FUNDED RESOURCES FOR ADMINISTRATION OF PROGRAM								
167		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5			
168	ADMINISTRATION								
169	BOSTID	2	2	2	2	2PER YEAR			
170	OTHER	1	1	1	1	1UNIT/YEAR			
171									
172									
173	RESOURCES PER UNIT ACTIVITY FOR PROGRAM ADMINISTRATION								
174		DIRECTOR	PROF	STAFF	ADMIN	SECRETARY	SECRETARY	TRAVEL	DIRECT
175		(GS-15)	ASSOC	ASSOC	ASST	(GS-6)	(GS-5)		COST
176			(GS-14)	(GS-11)	(GS-9)				
177	SALARIES	62227	52903	31412	25963	19099	17134		
178	BOSTID MEETING		.167	.33			.25	9900	1000
179	OTHER	1			1	1			
180									
181									
182	PSTC FUNDED PERSONNEL FOR PROGRAM ADMINISTRATION								
183		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5			
184	DIRECTOR	1	1	1	1	1			
185	PROF ASSOCIATES	.334	.334	.334	.334	.334			
186	INFO SYS MGR								
187	STAFF ASSOCIATE	.66	.66	.66	.66	.66			
188	ADMIN ASST	1	1	1	1	1			
189	SECRETARY (6)	1	1	1	1	1			
190	SECRETARY (5)	.5	.5	.5	.5	.5			
191	RESIDENTS								
192									
193									
194	PSTC FUNDED BUDGET BY LINE ITEM FOR PROGRAM ADMINISTRATION								
195		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5			
196	(INFLATOR)	1.00	1.04	1.07	1.11	1.15			
197	DIRECTOR	62227	64405	66659	68992	71407			
198	PROF ASSOCIATES	17670	18288	18928	19591	20276			
199	INFO SYS MGR	0	0	0	0	0			
200	STAFF ASSOCIATE	20732	21458	22209	22986	23790			
201	ADMIN ASST	25963	26872	27812	28786	29793			
202	SECRETARY (6)	19099	19767	20459	21175	21917			
203	SECRETARY (5)	8567	8867	9177	9498	9831			
204	RESIDENTS								
205	SUBTOTAL	154258	159657	165245	171028	177014			
206	BENEFITS	33937	35124	36354	37626	38943	.22		
207	SUBTOTAL	188194	194781	201598	208654	215957			
208	OVERHEAD	136441	141216	146159	151274	156569	.725		
209	TRAVEL	19800	20493	21210	21953	22721			
210	OTHER DIRECT	2000	2070	2142	2217	2295			
211	SUBTOTAL	346435	358560	371110	384099	397542			
212	G&A	39494	40876	42307	43787	45320	.114		
213	TOTAL	385929	399436	413416	427886	442862	2069529		

NON-PSTC ADD-ONS IN THE STUDIES INFORMATION SUBPROGRAM

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
INFORMATION					
STUDIES	1	2	2	2	2PER YEAR
LDC MEETING	2	2	2	2	2PER YEAR
US PANEL	3	3	4	3	4PER YEAR
SITE VISIT	3	4	3	4	3PER YEAR

RESOURCES PER UNIT ACTIVITY FOR THE STUDIES/INFORMATION SUPPROGRAM

	PROF ASSOC (GS-14)	INFO SYS MANAGER (GS-13)	STAFF ASSOC (GS-11)	SECRETARY (GS-5)	TRAVEL	DIRECT COST
SALARY LEVEL	52903	44769	31412	17134		
STUDY	.75		.5	.33	3700	25000
LDC MEETING	.25		.25	.25	46200	5000
US PANEL	.083		.167	.083	2220	500
SITE VISIT					3900	

NON-PSTC FUNDED ADD-ON PERSONNEL IN THE STUDIES SUBPROGRAM

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
DIRECTOR					
PROF ASSOCIATES	1.499	2.249	2.332	2.249	2.332
INFO SYS MGR					
STAFF ASSOCIATE	1.501	2.001	2.168	2.001	2.168
ADMIN ASST					
SECRETARY (6)					
SECRETARY (5)	.83	1.16	1.16	1.16	1.16
RESIDENTS					

NON-PSTC FUNDED BUDGET FOR ADD-ONS BY LINE ITEM FOR STUDIES

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	
(INFLATOR)	1	1.035	1.071225	1.108718	1.147523	
DIRECTOR						
PROF ASSOCIATES	79302	123143	132157	131914	141570	
INFO SYS MGR	0	0	0	0	0	
STAFF ASSOCIATE	47149	65055	72952	69689	78148	
ADMIN ASST						
SECRETARY (6)						
SECRETARY (5)	14221	20571	21291	22036	22808	
RESIDENTS						
SUBTOTAL	140672	208770	226400	223639	242525	
BENEFITS	30948	45929	49808	49201	53355	.22
SUBTOTAL	171620	254699	276208	272840	295880	
OVERHEAD	124425	184657	200250	197809	214513	.725
TRAVEL	114460	126332	128954	135330	138139	
OTHER DIRECT	36500	63653	66416	68186	71146	
SUBTOTAL	447005	629340	671828	674165	719679	
G&A	50959	71745	76588	76855	82043	.114
TOTAL	497963	701085	748416	751020	801722	3500206

BUDGET DETAIL

The budget is based on the assumption of 3.5 percent inflation per year.

SCIENTIFIC ADVISORY GROUP MEETINGS

Professional Associate, 1/12 person year @ $52,903	
Staff Associate, 1/6 person year @ $31,412	
Secretary, 1/12 person year @ $17,134	
Travel: 3 intra US round trip tickets @ $500	1,500
3 persons, 3 days per diem @ $80	720
travel subtotal	2,220
Incidentals	500

This assumes that the majority of the advisory group members will be from the Washington D.C. area, and will not need travel nor per diem for the group meetings.

SITE VISIT TRIP (probably including several projects)

round trip air fare @ 1500	1,500
30 days per diem @ 80	2,400

It is assumed that in many cases the air fare will be shared with a trip to a meeting. Thus this represeant the average additional fare for site visits combined with the average fare for independent site visit travel.

RESIDENCIES

Assumed 1/2 pay of Professional Associate or	$26,451
travel for the resident	$6,000

EQUIPMENT SPECIFICATION STAFF SUPPORT

1 Staff Associate full time @ 31,412

1 Secretary @ $17,134

OTHER RESEARCH PROGRAM SUPPORT STAFF RESOURCES

Professional Associate, .25 person year @ $52,903

Secretary, 1/3 person year @ $17,134

MEETINGS (per meeting cost):

Professional Associate, 1/4 person year @ $52,903		
Staff Associate, 1/4 person year @ $31,412		
Secretary, 1/4 person year @ $17,134		
Travel:	7 round trip tickets ANE/US @ $2000	14,000
	7 round trip tickets LAC/US @ $1000	7,000
	7 round trip tickets AFR/US @ $1500	10,500
	7 intra US round trip tickets @ $500	3,500
	28 persons, 5 days per diem at $80	11,200
	travel subtotal	46,200
Incidentals		5,000

assumes that an equal number of grantees will travel on their own grant funds.

WORKSHOPS

Professional Associate, 1/12 person year @ $52,903		
Staff Associate, 1/12 person year @ $31,412		
Secretary, 1/12 person year @ $17,134		
Travel: 3 round trip tickets ANE/US @ $2000		6,000
3 round trip tickets LAC/US @ $1000		3,000
3 round trip tickets AFR/US @ $1500		4,500
1 intra US round trip tickets @ $500		500
10 persons, 5 days per diem at $80		4,000
	travel subtotal	18,000
Incidentals		1,500

RESEARCH REVIEWS

Resident Fellow (budgetted separately)	
Staff Associate, 1/3 person year @ 31,412	
Secretary, 1/3 person year @ $17,134	
Publication costs, 1000 copies @ $5	$5,000

INFORMATION SERVICES

Information Systems Manager (GS-13), 2/3 person/year @ 44,769

Staff Assistant (GS-11), 1/4 person year @ $31,412

Secretary (GS-5), 1/3 person year @ $17,134

Books, Journals, and Supplies @10,000

SCIENTIFIC EXCHANGES

round trip air fare @ 1500		1,500
60 days per diem @ 80		4,800
	total	6,300
incidental direct expenses		500

OTHER NETWORKING STAFF RESOURCES

Professional Associate, .25 person year @ $52,903

Secretary, 1/3 person year @ $17,134

STUDIES (Resources per study)

Professional Associate (GS-14), 3/4 person year @ 52,903

Staff Associate (GS-11), 1/2 person year @ 31,412

Secretary (GS-5), 1/3 person year @ $17,134

Travel for panel meeting in conjunction with study

5 intra U.S. round trip tickets @ 500	$2,500
5 persons, 3 days each per diem @ 80	1,200

Publication costs, 5000 copies @ $5 25,000

salaries	61094.58
benefits @22%	13440.81
subtotal	74535.39
overhead @72.5%	54038.16
travel&direct	28700.00
subtotal	158273.55
G&A @11.4%	18043.18
total	176316.73

PUBLICATION DISTRIBUTION UNIT

Information Systems Manager (GS-13), 1/3 person/year @ 44,769

Staff Associate (GS-11), 3/4 person year @ $31,412

Secretary (GS-5), 2/3 person year @ $17,134

OTHER STUDIES PROGRAM STAFF RESOURCES

Professional Associate, 1/2 person year @ $52,903

Secretary, 1/3 person year @ $17,134

BOSTID MEETING

Professional Associate, 1/6 person year @ $52,903	
Staff Associate, 1/4 person year @ $31,412	
Secretary, 1/4 person year @ $17,134	
Travel: 15 intra US round trip tickets @ $500	7,500
15 persons, 2 days per diem at $80	2,400
incidentals	1,000

DIRECTION UNIT

Director (GS-15) @ $62,227

Administrative Assistant (GS-9) @ 25,963

Secretary (GS-6) @ $19,099

NATIONAL ACADEMY OF SCIENCES

NATIONAL RESEARCH COUNCIL

Office of International Affairs

Board on Science and Technology
for International Development

Proposal No. 88-166

to the U.S. Agency for International Development
to support
the Partnership for Research in Development

This proposal is submitted by the National Academy of Sciences, which assumes full technical and financial responsibility under its Act of Incorporation for the work to be carried out under any resultant agreement.

Contract Administration:

Gary E. Dwoskin, Director
Office of Contracts and Grants
National Academy of Sciences
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Program Administration:

John Hurley, Director
Board on Science and Technology
for International Development
National Academy of Sciences
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March 1988

THE PARTNERSHIP IN RESEARCH FOR DEVELOPMENT

SUMMARY

The Board on Science and Technology for International Development (BOSTID) of the National Research Council (NRC) proposes a new five-year program to enhance the quality and productivity of a key research effort of the Agency for International Development (AID). The program will create a scientific partnership between the NRC and AID, building on (1) BOSTID's experience in organizing and managing the Program in Applied Science and Technology Development (ASTD), initiated in 1981 with a grant from the Office of the Science Advisor of AID, and (2) the Science Advisor's experience in operating the Program for Scientific and Technical Cooperation (PSTC).

The new program, to be called the Partnership in Research for Development (PRD), will provide high-quality scientific support for the research in developing countries that characterizes the current BOSTID Research Program. It will also continue the modest studies and information services programs developed over the last several years to enhance the research needs and potential in developing countries. The PRD combines the strengths of the BOSTID and PSTC research efforts, enabling BOSTID to support innovative research by a large number of grantees and devote particular attention to the application and dissemination of their research results. The major difference in the new program is that BOSTID

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will no longer make the financial awards; these will be disbursed by the Office of the Science Advisor, AID. Instead of administering grant awards, BOSTID will devote its resources to strengthening the scientific base of the program, from the proposal evaluation stage through the publication of research results.

Within the PRD, BOSTID will work closely with the Office of the Science Advisor. BOSTID will review research opportunities and priorities, provide advice on research directions and grants, extend scientific support to grant recipients, and monitor research and evaluate results. The responsibilities of both organizations will be worked out in detail during the first several months of operation and it is intended that they be complementary, not duplicative.

Specifically, BOSTID will advise AID on particular areas of research to be included in the program, organize the process of recruitment, review, and selection of research proposals, monitor the scientific progress of projects, recommend appropriate dissemination of research results, and strengthen the research capacity of recipient institutions in developing countries through a range of advisory and information services, scientific meetings, and publications. In addition, BOSTID will conduct studies of research priorities and innovative technologies, focusing on the results generated by research grants and on needs and opportunities for new research.

The total amount of the grant proposed by BOSTID is $15 million for five years from August 1, 1988 through July 31, 1993. Of this amount,

$10.5 million is requested from the Office of the Science Advisor of AID. In addition to the $10.5 million requested from the Office of the Science Advisor, BOSTID will seek funds up to $4.5 million to complement the new grant from AID technical offices and missions.

Complementary funding would be used for partial or full support of particular research topics, research grants and scientific support in specific countries, and studies and research dissemination activities. The $4.5 million will provide a preapproved ceiling against which amendments can be made to the grant. (The current grant, supporting the ASTD, DAN-5538-G-SS-1023-00, has been extended through March 15, 1990, and there will be no duplication of costs charged to the two grants.)

BOSTID will also seek to raise additional funding from private foundations, business, and other government agencies. There may also be possibilities of support from NRC funds for special activities. These funds cannot be assumed, however, as they are awarded for specific activities on a competitive basis. Finally, BOSTID will arrange contributions of time valued at up to $1 million from scientific volunteers during the lifetime of the grant.

BOSTID is uniquely qualified for its role in the program described here for two reasons. First, it is based within the National Research Council, which is the operating mechanism for the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. Each year, thousands of scientists and engineers volunteer their time to participate in NRC activities such as studies of critical national issues, peer review panels, and international symposia. The NRC is a prestigious national institution, respected throughout the United States and abroad for its authoritative reports.

Second, BOSTID has an 18-year record of achievement in assisting Third World countries to apply science and technology to development. Program mechanisms have included strengthening local capacities in research and technology application through projects on R&D planning and management in specific developing countries, awarding selective research grants to developing country institutions and providing scientific support to the recipients, and conducting studies on research priorities and new directions. The Research Program, now entering its eighth year, has awarded about 110 grants to researchers in more than 30 countries.

BACKGROUND

BOSTID is the unit of the National Research Council primarily responsible for programs in science and technology with developing countries. Established in 1969, BOSTID seeks ways to apply science and technology to problems of economic and social development through an integrated program of overseas activities, research grants, studies, and information dissemination and other services. BOSTID programs are supported by the Office of the Science Advisor, technical offices of AID, AID missions, other U.S. government agencies, and private foundations. The current annual expenditure for BOSTID is approximately $7.3 million. Over the past seven years, support from the Office of the Science Advisor for BOSTID's Applied Science and Technology Development Program has averaged about $4 million annually.

BOSTID's objectives are to:

- help developing countries strengthen their own capabilities for dealing with important development-related problems and for moving toward greater scientific and technological self-reliance;
- stimulate and support research and technological innovation within developing countries on problems of high priority for development and human welfare;
- provide developing countries with greater access to the scientific and technological knowledge and expertise found in the United States and other countries; and
- provide a focal point within the U.S. scientific and technical community for assistance to developing countries, for encouraging greater cooperation between U.S. scientists and engineers and

their colleagues in the Third World, and for advising U.S. and international development agencies on policy for science and technology.

BOSTID's strength lies in its ability to deal with a wide range of problems, from policy issues such as assessments of national science and technology resources and needs, to country or region-specific issues such as the need for food self-sufficiency in sub-Saharan Africa. BOSTID is able to marshal the resources of the National Research Council quickly to address a short-term problem or to organize an in-depth study or project for a longer-term assessment.

The American scientists and engineers who serve without compensation on BOSTID's advisory committees and review panels are drawn from academic institutions, government agencies, and the private sector. Through 1986 in the ASTD program, BOSTID had mobilized over 11,000 days of voluntary time of U.S. scientists, contributions that, if calculated at AID consulting rates, are worth about $3 million.

BOSTID's activities are collaborative, based on personal contact and understanding between scientists, engineers, and administrators in developing countries and their counterparts in the United States. Scientists in the developing countries participate actively in the design of bilateral programs, such as technical seminars, and in presenting the reports of joint activities to the officials in their countries. Another example is the process of formulating the ASTD program, where BOSTID staff consulted with scientists in many developing countries to ascertain their priorities for research.

The principal elements of the current ASTD program are:

Research

Grants have been made on a competitive basis to institutions in developing countries to stimulate and support high quality research on important topics not currently receiving adequate support. A Committee on Research Grants (CRG), composed of distinguished scientists from the United States and developing countries, selects research areas and approves grants. BOSTID provides advisory and material support to the grantees through frequent visits of staff or consultants to monitor progress and develop communication networks among the grantees working on similar problems. There are six research areas: grain amaranth; biological nitrogen fixation; tropical trees; mosquito vectors; rapid epidemiologic assessment; and acute respiratory infections in children.

Studies

BOSTID studies identify research priorities, suggest innovative applications of technologies, or address policy issues related to strengthening scientific and technological capabilities in developing countries. Published reports of studies are widely disseminated and have often led to productive research and development efforts in the Third World.

Information Services and Dissemination

Through its publication and dissemination program, BOSTID seeks to stimulate further research and development. BOSTID publishes a newsletter that reports not only on BOSTID activities but also on related programs of other development organizations. Through a seminar series and occasional

symposia, BOSTID informs AID and other government agencies of new discoveries or progress in science and technology with potential application to development.

PROGRAM DESCRIPTION: THE PARTNERSHIP IN RESEARCH FOR DEVELOPMENT

Program Philosophy

The PRD is based on an operating philosophy that is important to the whole endeavor. A three-way partnership is involved, including AID, BOSTID, and the scientists performing research at institutions in developing countries. AID is a government institution with responsibility for assisting in the economic and social development of developing countries. In this regard, it has a definitive interest in bringing science and technology to bear on development problems. BOSTID, as part of the national private scientific institution that mobilizes the American scientific community to advise government on science and technology, has long experience in working with developing country scientists, engineers, and planners and in helping strengthen local scientific capabilities. The research grantees in the PRD will have a wide variety of scientific interests and must pursue their work in light of their own institutional and national concerns.

Given the responsibilities and resources of the partners in the program, it will be crucial that each be aware of and complement the objectives, concerns, and roles of the others. Although the research recipients will be pursuing their work independently, they must understand the need to regularly report on the status of their projects and grant funds. BOSTID must be aware of and cooperative with the policies and regulations that underlie the AID program. And AID must be sensitive to the role of the National Research Council, BOSTID and the scientific

community in providing advice and support to the program, and not simply view them as extensions of AID staff.

Experience has shown that a sound partnership of the kind proposed in the PRD can provide a synergistic effect of enhanced value. The opportunity now presents itself for BOSTID, AID, and the American scientific community to work together in new and more productive ways to help developing countries solve important scientific and technical problems related to their quality of life and economic progress, and to strengthen their capabilities to address these problems in the future.

Program Elements

The new program, described in the following sections, has two elements: research support and studies, which build upon the knowledge gained during the past seven years as BOSTID developed its Research Program and conducted associated studies and informational activities, and as AID operated the Program for Scientific and Technical Cooperation. Through this experience, the value of strong scientific support and coordination for research grantees has become apparent and represents an area in which BOSTID and the NRC have outstanding resources and experience. The PRD will extend this support on a selective basis to a wider circle of grantees than was possible previously. Moreover, it has also become clear that as the research work of grantees has matured and begun to produce valuable results, more attention must be paid to their dissemination and application.

The importance to research grant recipients of strong scientific support and coordination can hardly be overemphasized. Scientists in developing countries often work in relative isolation, without a critical

mass of peers, access to current scientific literature or the means to participate in relevant scientific meetings, or a good supporting infrastructure that can provide adequate equipment or the kind of environment necessary for high-quality scientific research. This isolation also means that promising scientists from developing countries are often unrecognized and do not receive the support and reinforcement that would enable them to make valuable contributions to development problems. The scientific support and networking provided by BOSTID in the PRD is specifically aimed at these problems, bringing grant recipients into active scientific networks, giving regular advice and assistance, and encouraging and assisting scientists to publish their results.

BOSTID assistance to researchers begins in the proposal evaluation stage. After the proposal undergoes peer review and evaluation by the appropriate technical panel, BOSTID staff may make a pre-grant visit to the applicant. Experience in the present program has demonstrated that a proposal is an imperfect instrument for judging the capability of a developing country institution, and that the best time to screen out an unpromising proposal or improve a marginal one is before it is funded.

For travel costs of less than one percent of the total value of grants awarded under the BOSTID Research Program, BOSTID staff have made pre-grant visits to assist grantees in modifying their proposals based on the comments of peer reviewers. The visits have also enabled the staff to identify institutions which, despite submitting an adequate proposal, lacked the capacity to carry out the research.

At times the unfortunate reality behind a competent proposal is an unequipped laboratory or an institutional administration unwilling to provide the basic resources and facilities required. Often the intervention of the visiting BOSTID staff member was sufficient to convince the administrators of the need to provide the researcher with these resources. In the large majority of cases, the staff pre-grant visits resulted in revised proposals and improved protocols. The modest expenditure in pre-grant visits more than repaid itself in improved research projects and identification of institutions with severe problems.

Another important means of assisting grantees with their research is the periodic coordination meeting of grantees in a particular field, where grantees report their progress, problems, and results to other grantees and invited experts, and discuss their technical and administrative problems privately with staff and expert advisers. BOSTID grantees believe these meetings are invaluable for breaking their isolation and motivating them to produce good data to report to their fellow grantees. Workshops held in conjunction with the meetings expose them to new techniques to improve their research or to develop common protocols to increase comparability among projects.

Studies and dissemination activities complement research support efforts. Studies examine needs and opportunities in scientific areas related to development, identify gaps in research efforts, suggest specific problems that are susceptible to research efforts, and describe innovative uses of technologies and natural resources. BOSTID studies have led to both research and applications by AID and other organizations

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in such areas as tropical trees, grain amaranth, biotechnology, arid land management, and alternative energy technologies. While the studies component of the PRD will help stimulate research strategies for the program itself, it will also provide material that will be of substantial benefit to other parts of AID and to developing countries. Funds are included for the dissemination of both new and previous studies and a small related information services structure.

The proposal also calls for a modest program development activity to obtain additional resources for the PRD and related activities and for an evaluation of the PRD to be completed during the middle period of the program. Terms of reference for the evaluation will be discussed with project officers in AID.

The following sections describe the various program elements of the proposed Partnership in Research for Development in greater detail.

I. RESEARCH

A. Scope of the Program

Under the PRD, BOSTID will provide advice on research priorities and topics, recommend research grants to be awarded by AID, and give scientific support to research grant recipients. Specifically, BOSTID will:

- advise AID on research areas and topics that merit support through the PRD;
- advise applicants on the preparation of preproposals and proposals;
- solicit proposals from developing country scientists and arrange for their peer review and evaluation by technical panels;
- recommend proposals to AID for funding;
- recommend research collaboration and support agreements to AID for funding;
- assist the AID project officers to monitor the scientific progress of the projects;
- assist in the dissemination of research results; and
- strengthen the research capacity of grantee institutions in developing countries through a range of advisory and information services, specialized seminars, and scientific meetings.

The principal objective of the program is to seek solutions to problems important to many developing countries by fostering high quality research in several broad areas that are relevant to development and merit

further scientific effort. A second important objective is to strengthen the capacity of the participating developing country institutions to select useful and innovative research topics and carry out the research effectively. BOSTID's primary role will be to enhance the quality of PRD research through its proven experience in supporting research activities in developing countries.

Definition of the Priority Research Areas

Identification of the priority research areas and definition of specific research goals for each will be carried out early in the program by technical panels and the BOSTID board itself, which will oversee the program and carry out a mid-program evaluation.

BOSTID and PSTC are both currently supporting research on several specific research topics. Some of these topics are expected to continue and be incorporated into the PRD, some will be continued with modified goals, and some will be phased out with the completion of the present ASTD grant. Those topics included in the PRD will be organized into four research areas, and other promising, related topics may be added to each area. The definition of these areas will be the first task of BOSTID, in collaboration with AID. It will be based on an analysis of the current topics and projects, consultants' reports, and consultations with other experts in the fields, and take into consideration recommendations of recent BOSTID studies and workshops.

Once the four areas have been defined, a technical panel will be established for each. The primary functions of each technical panel will be to define research goals, review and evaluate proposals, and recommend

networking activities and technical assistance for grantees. The BOSTID Research Program has shown that clear and realistic goals for each area help applicants focus their proposals, and provide a criterion for recruitment and selection of grantees and a framework for planning of networking activities. The goals will also serve as a basis for the mid-course evaluation in the PRD.

(BOSTID was able to achieve significant progress toward most of the goals set at the beginning of the ASTD program, such as elucidating the etiology of acute respiratory infections in developing country children, identifying the constraints in introducing grain amaranth to the marketplace in the Third World, and incriminating and determining the vector competence of the world's principal malaria vectors.)

During the first half-year of the PRD, BOSTID and AID staff and consultants will review and summarize the achievements and status of the existing grants and programs and define the new research areas. For each area, a technical panel will be formed and will promptly have a preliminary meeting to review the summaries and conclusions and set priorities and goals for the new areas, and to prepare program announcements for dissemination to prospective grantees. BOSTID will review and revise the goals and program announcement from time to time as necessary. The technical panels, composed of both standing and ad hoc members, will review preproposals and proposals, select those for recommendation to AID for funding, suggest supporting activities to be carried out by BOSTID, and monitor the research, scientific support, and dissemination activities in their respective areas.

As an example, the four proposed research areas might be structured as follows:

Preservation and Use of Biological Resources. The broad purpose of this area might be to identify, recover, and improve plant, animal and microbial species of special value for developing countries, and adapt them for resource conservation or economic uses. Research topics might include diversity of biological resources, plant biotechnology, grain amaranth, tropical trees, and biological nitrogen fixation.

Chemistry for World Food and Energy Needs. Research in this area might aim to develop biochemical technologies for enhancing agricultural production and food and energy use in the Third World and might cover topics such as chemistry for world food needs and some aspects of biomass resources and conversion technology.

Vector Biology and Control. The research in this area could focus on the identification of vulnerable aspects in the biology and ecology of vectors of malaria, schistosomiasis, and other important human and plant viral diseases. Research topics could include biological control and mosquito vector field studies.

Immunology and Epidemiology for Health Protection. The objective might be to develop and apply appropriate biotechnological and epidemiologic techniques to human public health problems, and to determine the etiologic agents of acute lower respiratory infection, which is a leading cause of child mortality in developing countries. Topics might include biotechnology/immunology, acute respiratory infections, and rapid epidemiologic assessment.

In support of the research areas, BOSTID will organize meetings of grantees in related fields, hold workshops on advanced techniques, recruit and send experts to assist researchers where required, advise on procurement and evaluation of reagents, and provide other scientific advice as required and as resources permit. As the research work is undertaken in various grants, BOSTID will assist AID project officers to monitor the progress of the research by analyzing reports from grantees and site visit reports of staff or advisors. BOSTID will advise AID project officers wherever it is felt that remedial action is necessary.

B. Program Mechanisms

1. Research Grants

BOSTID will recommend proposals from developing country institutions to AID for the award of research grants. Grantees will be encouraged to make cooperative arrangements with researchers in the United States; funds for this purpose may be included in the research grants awarded by AID. Most grants will be in the range of $100,000-$175,000 for three to four years. Recipient institutions will be expected to contribute substantially to the research project through provision of available staff time, materials, equipment, and facilities.

2. Research Collaboration and Support Grants

BOSTID will recommend candidates, primarily U.S. institutions, to AID for research collaboration and support grants. Examples of this type of grant are: reference laboratory services (monitoring quality control for certain procedures undertaken by developing country grantees), sample analysis, publication preparation and editing, travel to grantee meetings

and visits to grantee institutions, and germ plasm evaluation and distribution. In some cases, research collaboration and support grants may include costs of research performed in the United States, particularly if researchers from grantee institutions are directly involved.

3. Supporting Activities

To further the goals of the program, BOSTID will carry out a substantial program of networking and supporting activities in each technical area. These activities, which will be organized on a selective basis guided by the advice of technical panels, research collaborators, and other consultants, will assist grantees to maximize the production of useful results. BOSTID will invite grantees and experts and handle necessary meeting arrangements for all supporting activities.

Examples of supporting activities are:

a. Coordination meetings of grantees with mutual interests and complementary projects will be held when considered highly productive by BOSTID and its technical panels. The first of such meetings would be held in the second year of the grant, since much of the effort of the first year will be spent in refining and announcing the research topics, recruiting applications, and selecting grantees. These meetings will be designed to assist those grantees with special problems, encourage collaborative arrangements among grantees, and involve the grantees in the active scientific community. Recipients of research support and collaboration agreements and other advisors may also participate in the meetings. Meetings will usually be held at one of the participating developing country grantee institutions. When appropriate, the program will include workshops on advanced techniques related to the research.

Coordination meetings will normally be organized around research topics in order to maintain reasonable size and scientific focus. It is estimated that up to six such meetings would be held during the second year of the grant, up to seven the third year, and up to eight in the fourth and fifth years. In the fifth year, the meetings would be organized as symposia to enable grantees to present their results.

b. Workshops on specialized laboratory or field techniques will be held where the technical panel feels that grantees could make immediate use of a new technique in their research, or where grantees wish to follow a common protocol to enhance collaborative aspects of their projects. The host institution will often be a U.S. recipient of a research support and collaboration agreement. These will be patterned after examples from the present BOSTID research program, such as a workshop on application of molecular genetics techniques to agricultural field experiments, workshops on viral and bacterial diagnoses of respiratory pathogens, and workshops on data management.

4. Dissemination of Research Results

BOSTID will encourage all grantees to publish articles in refereed journals in the international scientific literature and assist them when appropriate by arranging for U.S. scientists to review and edit manuscripts in English. BOSTID will also collaborate in the dissemination of research results to AID staff in Washington and overseas missions, the research and development community in the United States and abroad, donor agencies, and international technical agencies. BOSTID's newsletter,

BOSTID Developments, will be reorganized to focus greater attention on research results and their dissemination. Review articles on specific research projects will be prepared by staff and consultants, and circulation will include all grantees, panelists, reviewers, and other interested people.

C. Structure

1. The Board on Science and Technology for International Development (BOSTID)

The members of BOSTID will be appointed by the National Research Council to design and approve goals for the research supported through the PRD, and to recommend for consideration by AID study topics to be supported under the PRD. The Board will also monitor and evaluate the scientific progress of the research support activity, as well as the studies, information services, and other activities carried out by BOSTID under the PRD. It will review the recommendations from the technical panels for grant awards, ranking the projects in priority order for AID funding.

BOSTID will be composed of about 15 distinguished scientists, engineers, and social scientists from universities and industry. At least one member of each technical panel will be a Board member. Other panel members may be invited to participate in Board deliberations as appropriate. The Board may include members from developing countries. It will meet twice each year to review the proposal evaluations, recommend study topics, monitor ongoing activities, and supervise other BOSTID projects.

2. Technical Panels

Four technical panels will be formed, one for each of the proposed research areas. Each panel will consist of about eight participants, some of whom will be regular members and others who will participate on an ad hoc basis to permit addition of specialties that may be needed for given meetings. Panels will meet twice a year. At least one member from each panel will serve on BOSTID.

3. Solicitation of Proposals

BOSTID will prepare a packet of materials for prospective grantees. It will include a general description of the PRD, announcements setting forth the goals of the program areas, instructions for preparation of preproposals and proposals, and information on deadlines. These recruitment packets will be distributed selectively using BOSTID's extensive contact file containing nearly 2,000 researchers in developing countries, through AID missions, and other sources of professional contact.

Applicants will be advised to prepare a short preproposal to submit to AID, although in some cases described below a full proposal may be submitted directly. AID will organize a review of the preproposals, advising applicants on the suitability of the research idea before they invest more effort in preparing a lengthy proposal.

Researchers who are experienced in proposal formulation, those seeking renewal of a grant, and those whose earlier proposal had been rejected with advice and encouragment to submit a new proposal may submit full proposals. The deadline for both types of submission will be the same.

Those whose preproposals have passed screening can be informed by telex or courier, since they will already have guidelines for preparation of a full proposal and may be working on it. They will have at least three months after the preproposal deadline to prepare and submit a full proposal, in accord with a preannounced schedule.

a. Preproposals

Grant applicants will send preproposals to AID. Preproposals will be reviewed by AID for technical merit, importance to development, capability of the institution, and relation to the stated goals of the program. All applicants whose preproposals are considered acceptable will be invited to submit a full proposal, and AID may transmit reviewers' comments to the applicants.

b. Proposals

Grant applicants whose preproposals are accepted will be invited to prepare full proposals. Applicants who choose to submit a full proposal rather than a preproposal will submit their proposals at the preproposal deadline. Their proposals will be screened using the same criteria as the preproposals, and those rejected will be informed of the technical review comments.

Each proposal selected for peer review will be assigned to one of the technical panels. Proposals may be reviewed in three ways: (1) by peer reviewers by mail, (2) by peer reviewers who are invited to join the panel as ad hoc members, and (3) by appointed panel members.

Each panel will meet to consider the proposals in its area; AID staff will be welcome to participate as observers. Panels will separate

proposals into two groups: those not recommended for funding and those acceptable for further consideration.

Pre-grant visits are considered by BOSTID the most important instrument for assisting prospective grantees design the most effective protocol and in eliminating those who lack the capability to carry out the research successfully. As funds permit and when deemed desirable for technical reasons, or because the applicant's institution is not well known to BOSTID or AID, BOSTID staff or consultants will make pre-grant visits to the grant applicants recommended as acceptable by the panels. (As NAS will not be making grant awards, pre-grant visits will not include pre-award audit functions, except for review of the proposed research costs.

Representatives of the local AID mission will be encouraged to participate in the visits. The objectives of the visit are: to evaluate the capability of the research team and institution; to negotiate the scientific terms of the grant, as instructed by the technical panel; to identify and help solve particular logistical or technical problems; to inform the grantee of the operation of the program; and to advise on equipment selection and other matters. Agreement on negotiated points will be documented by the applicant in writing for the staff member or consultant, who will prepare a detailed site visit report following the BOSTID format.

All proposals accepted by the panels, accompanied by site visit reports and technical reviews, will be submitted to BOSTID. BOSTID will meet twice a year to review panel recommendations and rank order the proposals, based on criteria about priorities among research areas and topics. BOSTID will forward the recommendations to AID for funding.

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For each proposal presented to BOSTID for evaluation, whether recommended for support or not, BOSTID will submit to AID appropriate documentation to support the recommendation. For each proposal not approved, AID will receive the technical reviews and the recommendation of the technical panel for transmittal to the applicant. For those that are recommended for support, the package will include reviews, panel recommendations, site visit report, if any, and the final priority assignment of BOSTID.

For those proposals recommended for AID funding, BOSTID staff will analyze the estimate of costs and research plan submitted by the grant applicant. The final estimate recommended to AID for each grant may include revised estimates of cost of travel, equipment, and other expenses, and the costs associated with research support activities, such as expert consultants recommended as essential to the research by the technical panel. BOSTID staff will also prepare a document describing the purposes and objectives of the project, which may be useful in preparing AID documentation for project funding.

Proposals to AID for research support and collaboration grants to U.S. institutions may be recommended by BOSTID at the same time with appropriate documentation. In some cases, research support and collaboration agreements may be recommended for funding to AID by BOSTID staff between meetings of the Board.

4. Timetable

There will be two proposal cycles per year, with a schedule announced in advance. For example, preproposals may be received in November and

May; full proposals may be due in February and August; panels would meet in April and October; site visits would take place in May and November; BOSTID would meet to recommend projects to AID in July and January. The actual dates will be worked out in cooperation with AID to assure the quickest possible funding of the grants.

5. Monitoring, Reporting, and Problem Solving

All grantees will be required to report twice a year on their scientific progress to the AID project officer. BOSTID will receive copies of these reports and take them into account in planning technical assistance, networking, and dissemination activities. If remedial action should be taken, especially where the flow of funds is involved, BOSTID will inform the AID project officer.

Project monitoring and reporting will not be effective, of course, without followup action. Consequently, BOSTID staff will devote a portion of their time to problem solving activities, especially those related to scientific matters. These activities will vary greatly, but might range from urging a U.S. scientist to write to the grantee suggesting project modifications to organizing a workshop on a research topic of interest to several grantees.

C. Dissemination of Results and Information Services

One of the most important measures of the quality of scientific research is publication in refereed journals in the international literature. BOSTID will encourage all grantees to publish and will arrange volunteer assistance where appropriate for pre-reviewing and editing manuscripts in English.

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In addition, BOSTID will focus dissemination activities on four principal audiences for the research:

- o developing country scientists and potential users of the results;
- o AID personnel in country missions, regional development offices, and the regional bureaus and their technical offices in Washington;
- o the U.S. research and development community, and their counterparts in other industrial countries; and
- o donor and international technical agencies.

Dissemination activities will include the following:

Research Reviews. For the research community and technical offices of AID and other donors, as results warrant, periodic reviews of research findings and status will be made. They will be prepared as concise (up to 40 pp.) reviews of research in a particular research area or topic, summarizing achievements and indicating particularly interesting findings and important issues or questions raised by the results. They will be prepared by technical panelists, staff, or consultants as appropriate. On average, one will be prepared for each research area during the life of the grant.

AID Review Presentations. To inform AID Mission Directors and other personnel, BOSTID staff or consultants may, upon request and as resources permit, prepare summaries of specified PRD research topics or areas for presentation at AID regional meetings.

Newsletter Research Coverage. The BOSTID Developments newsletter will be restructured to reflect the increased scientific responsibility for a

larger number of grants and the increased flow of results and other information that it is anticipated the PRD will produce. About half the content of the newsletter will be devoted to research matters. The "Research Update" section of the newsletter will include regular features on researchers, grantees, short review articles on research areas or topics, and specific technical findings or results of coordination meetings. These will be prepared by grantees, staff, consultants or panelists as appropriate. Circulation of the newsletter will include all the grantees and the associated community of technical panelists, research collaborators and other interested people.

Databases. BOSTID serves as the regional focal point for participation in the International Development Research Information System (IDRIS). This is a cooperative database that describes research activities located in, or concerned with, developing countries, and funded or coordinated by the participating donor organizations. The IDRIS Technical Committee has received more than 200 records of BOSTID's existing research grants and other activities, as well as records of six other international development research donors. Existing information will be made available to AID and to grantees, and the database will be used to determine whether proposals submitted duplicate research in progress elsewhere.

To the extent possible, given the limited resources available in the PRD, BOSTID's information services staff will handle requests for information from the program participants. Literature searches will be conducted and some service will be provided to grant recipients who need assistance in identifying specialized material.

II. STUDIES, DISSEMINATION OF STUDIES, AND INFORMATION SERVICES

A. Studies

1. Background

Studies on research needs, priorities and innovative applications of knowledge will be an important part of the PRD program. Such studies can help outline key program opportunities and needs for AID and other donor organizations and for BOSTID. Past BOSTID studies and related activities have included assessments of the research needs and the potential of new or emerging technologies to contribute to development, including:

- biotechnology techniques in vaccine production, embryo transplants, and tissue culture;
- microcomputer applications in developing countries;
- marine sciences and fisheries technologies;
- chemistry research and world food problems; and
- renewable energy technologies.

BOSTID employs several mechanisms through which the potential of technical opportunities in areas such as those listed are assessed and presented to the research and development community. These include:

a. Studies of specific technical topics, such as a research agenda for the impact of biodiversity on development and the U.S. capacity to address tropical infections diseases. These studies have been funded through the grant from the Office of the Science Advisor, technical offices of AID or other government agencies, and private foundations.

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b. International activities, involving participation by scientists from developing countries, to survey potential applications of new developments in international science. These activities, such as a conference on using chemistry to help meet world food needs or a series of seminars on the uses of microcomputers for developing countries, have been carried out in cooperation with AID and other organizations, including the International Agricultural Research Centres, the American Chemical Society, the American Association for the Advancement of Science, and United Nations agencies.

c. Studies that identify underutilized genetic resources or technologies of potential economic importance to identify many aspects of tropical forestry, energy technologies, or new crops in which to develop innovative projects. They have also led to important BOSTID research programs in tropical trees, biological nitrogen fixation, and grain amaranth. Reports on these topics and others have been widely distributed to scientists and planners in developing countries and to the international development community, and have led to research and development efforts and operational projects by the World Bank, United Nations agencies, the Peace Corps, and many private and voluntary organizations.

d. Publications summarizing results from BOSTID's research program, which have been distributed to grantees and the wider research and development commmunities. Handbooks and guidelines have been produced for agroforestry research, various biomedical research protocols, and research proposal writing.

e. The BOSTID Developments newsletter provides information about current and proposed BOSTID activities and serves as a means of communicating research results and related activities through regular features and articles solicited from BOSTID Research Program grant recipients, staff, and consultants. It also conveys development-related information from the scientific literature, conferences and other meetings, that are of particular interest to the development community but may not be readily accessible from other sources.

A modest component of the PRD would support the development of study ideas, new studies, and some of the costs of study management and report dissemination. Substantial additional support for carrying out studies will be sought from a combination of private foundation contributions and funds from AID's technical offices for specific projects. The central grant from the Office of the Science Advisor is an important mechanism permitting other parts of the Agency to request, through amendments, studies or other advisory activities related to the objectives of the grant.

2. Selection of Study Topics under the PRD

To undertake a study or related activity, a "Letter of Agreement" would be exchanged between the BOSTID director and the AID project officer. This letter would outline the proposed study topic, detailing its objectives, terms of reference, work plan, and costs. AID would have 60 days to respond to the concept and study plan. This procedure has worked well under the present grant mechanism. It is proposed that three studies be carried out under the PRD.

Future study topics might include the following:

a. Environmental strengths of traditional sustainable agricultural systems (an examination of the scientific basis for the resilience of traditional systems of crop and animal production);

b. Economic benefits of preserving biological diversity (a discussion of the economic implications for developing countries of investments in preserving biological diversity in agricultural and non-agricultural contexts);

c. Commercial prospects for biotechnology in developing countries (an examination of the experience and commercial self-sustaining potential of tissue culture, embryo transplant, disease-free plant propagation, and other genetic manipulation and postharvest techniques);

d. Cereals for the future (a survey to determine the 25-30 species within the grass family that have outstanding promise as food grains);

e. Innovative aspects of materials science (a compendium of current information on applications such as natural fibers and synthetic composites; soil additives and conditioners for retaining moisture; non-destructible irrigation piping; adhesive technologies; low-cost housing, etc.);

f. Water supply for rural and urban areas (a summary of current information on innovative, nonconventional approaches to rural and urban water supply); and

g. Man-made crops (a survey of man-made food crops, selecting some interspecific and intergeneric crosses that could be "engineered" for hybrid vigor, sterility, seedlessness, special tolerances (for example, to cold or disease), gross changes in plant geometry, and other purposes).

B. Dissemination of Studies and Information Services

Broad dissemination of studies and research results will continue to be emphasized in the PRD. Efforts will focus on informing and guiding researchers working on similar development problems and providing information for practical application of the knowledge gained.

There are four elements of BOSTID's dissemination and information services program for which support is requested in the PRD. First is the distribution of BOSTID research and study reports free or at cost to readers in the developing world. The audience for each report is targeted and copies are sent to scientists, administrators, and planners. More than 600,000 copies of about 50 studies, most of which have been funded by AID, have been distributed to date. The annual distribution figure is about 20,000. BOSTID staff also respond to an average of 150 requests per week for the reports and other information.

The second element is the distributor network through which BOSTID reports are made available to readers in the United States and other industrialized countries. This cost recovery system helps defray distribution costs for the free copies, mentioned above. About one-third of BOSTID reports are distributed through the network of 15 book distributors. Other organizations, such as the Peace Corps and CARE, buy the reports in bulk for redistribution to their field offices.

Third is the newsletter, BOSTID Developments, which is distributed without charge to more than 2,000 subscribers worldwide. Published two times a year, the newsletter reports on BOSTID activities and communicates research results through articles solicited from research grantees, consultants, and staff. It also conveys development-related information

from the scientific literature, conferences, and other meetings that are of particular interest to the development community but may not be readily accessible from other sources.

Fourth is the BOSTID library, which includes a small but important collection of about 5,000 development-related books and journals and on-line access to several international databases. In recent years this library has been used increasingly by the staff in responding to requests for information from scientists in developing countries and the development community.

It is intended that the modest sum requested in the PRD for information services and dissemination will be supplemented from other sources, including other government agencies and private foundations. Proposals for other BOSTID programs, such as overseas activities, will include provision for information services in their cost estimates.

Addendum to the proposal to the U.S. Agency for International Development to support the "Partnership in Research for Development"

Comments on and request for modification to the Mandatory Standard Provisions for U.S., Nongovernmental Grantees (OMB Control No. 0412-0510, expiration date 1/31/89)

1. Allowable Costs

It is assumed that OMB Circular A-122 will apply to NAS, a non-profit organization.

2. Accounting, Audit, and Records

It should be noted that NAS operates on a cash basis rather than an accrual basis. The phrase "but shall develop such accrual data for its reports on the basis of an analysis of the documentation on hand" in 2.(a)(1) should be deleted.

3. Refunds

It is assumed that Paragraph (a) regarding the refund of interest does not apply to funds provided under a Federal Reserve Letter of Credit payment scheme.

4. Revision of Grant Budget

In reference to Paragraph (b) (4), and also to Optional Provision No. 12, "Negotiated Indirect Cost Rates," the estimate of costs provided is in fact an estimate by line item. There may be necessary fluctuation among the line items for programmatic reasons, or due to adjustments in indirect cost rates, but actual expenditures will not exceed the total obligated under the grant. NAS' indirect cost rates are fixed each year, with carry forward provisions. They are negotiated each fiscal year with the appropriate federal oversight agency. AID will be advised of the rates set for each fiscal year during which the grant is operational.

Provisions 5 through 8 are new or revised from those included in Grant No. DAN-5538-G-SS-1023-00, and are acceptable to NAS.

Provisions 9 through 12 are substantially the same as provisions in Grant No. DAN-5538-G-SS-1023-00 and are acceptable to NAS.

Comments on and justification for non-inclusion or modification of Optional Standard Provisions for U.S., Nongovernmental Grantees (OMB Approval No. 0412-0510, Expiration Date 1/31/89)

1,2, and 3. Payment method

This grant will meet the conditions for the Letter of Credit Payment method (Optional Provision 1); Provisions 2 and 3 should outlining other payment methods should not be included.

4. Air Travel and Transportation

The following method for notification of international travel is proposed in lieu of paragraph (a) of this Provision.

"The grantee will notify the Project Officer at the earliest possible time prior to any international trip financed by this grant. The grantee will also notify the appropriate USAID and/or Embassy officer at the earliest possible time prior to the visit of any individual who will interact with the Mission or Embassy. The grantee will secure cognizant Mission or Embassy clearance prior to travel to countries where, as advised by the Project Officer, security considerations necessitate such clearances."

The above notification method was approved for and successfully employed under Grant No. DAN-5538-G-SS-1023-00. The Partnership in Research for Development (PRD) will involve more than 500 trips by AID grantees from developing countries, U.S. scientists who are contributing their time to assist grantees, NAS staff, study panelists and other program participants. To avoid delay in completing travel arrangements, particularly for the AID grantees in developing countries who will comprise the majority of the travelers, it is essential to have a notification procedure that works smoothly and quickly, yet respects the concerns of the Missions and Embassies for the security of U.S. citizens and others traveling under grant auspices.

Paragraph (b) should be deleted in its entirety, as was the done in Grant No. DAN-5538-G-SS-1023-00. To reduce travel costs and to make better use of manpower, the grantee frequently schedules travel by staff and volunteer scientific advisors to more than one country per trip, and it would be exceedingly difficult to make such arrangements if portions of such trips had to be arranged from U.S.-owned local currency.

5. Ocean Shipment of Goods

It is not anticipated that goods will be purchased and shipped to cooperating countries under this grant, therefore, this provision should not be included.

6. Procurement of Goods and Services, and,
7. AID Eligibility Rules for Goods and Services.

It is not anticipated that goods and services will be procured under this grant, other than reference materials, packaged computer software, office supplies, and printing of brochures and reports, all of which are customarily arranged through in-house NAS facilities. Thus these optional provisions need not be included.

8. Subagreements

It is not anticipated that subgrants or cooperative agreements will be financed under this grant, thus the provision should not be included.

9. Local Cost Financing with U.S. Dollars

Since research grants will be awarded by AID, not NAS, it is not anticipated that local costs will be authorized under the grant, and this provision should not be included.

10. Patent Rights

Patentable processes or practices will not be financed by the grantee and the provision should not be included.

11. Publications

(a) Acceptable
(b) Acceptable
(c) Under Grant No. DAN-5538-G-SS-1023-00 the grantee has developed a cost recovery system for distribution costs associated with its publication program. It is proposed that under the Partnership in Research for Development, the cost recovery system will continue to operate. In the estimate of costs for the PRD, it has been assumed that funds recovered will defray distribution costs for publications produced by the grantee. Any excess above distribution costs would be used to

reprint out-of-stock publications. It is anticipated that funds generated by cost recovery system will not exceed the cost of publishing and distributing the grantee's publications.

(d) Acceptable

12. Negotiated Indirect Cost Rates - Predetermined

The grantee currently operates with predetermined indirect cost rates and it is assumed that this provision (rather than No. 13) will apply.

13. Negotiated Indirect Cost Rates - Provisional

This provision does not apply.

14. Regulations Governing Employees

It is not anticipated that the grantee will assign employees outside the United States, thus this provision does not apply.

15. Participant Training

(a) No participant training will be conducted under the proposed program, therefore this provision does not apply.

16. Voluntary Population Planning

The Partnership in Research for Development will not involve any aspect of voluntary population planning activities, and this provision should not be included.

17. Protection of the Individual as a Research Subject

Through the PRD, NAS will be providing advice to AID regarding proposals that will be funded by AID in developing countries. As the funding organization, AID is responsible for making sure that the proposed research properly protects the individual as a research subject. Thus this provision does not apply to the grantee (NAS), and should not be included.

18. Care of Laboratory Animals

As noted under item 17, NAS will be advising AID on research proposals to be funded by AID. Thus, the responsibility for ensuring that research involving laboratory animals is conducted in accordance with this provision lies with AID. The provision should not be included.

19. Government Furnished Excess Personal Property

It is not anticipated that any government-furnished excess personal property will be involved in this program, and this provision should be omitted.

20. Title to and Use of Property (Grantee Title),
21. Title to and Use of Property (Grantee Title), and
22. Title to and Care of Property (Cooperating Country Title)

As noted above, it is anticipated that no real property or nonexpendable property will be procured under this grant. Therefore, either none of these provisions, or the one that is customarily used in such circumstances, should be included.

23. Cost Sharing (Matching)

The proposed grant from AID to NAS for the Partnership in Research for Development Program is intended to be "core funding." No cost sharing or matching requirement should be included in the schedule, nor should Optional Provision 23 be included.

24. Use of Pouch Facilities

Acceptable

25. Conversion of United States Dollars to Local Currency

It is assumed that this provision applies primarly to grantee employees on long-term assignment in cooperating countries. It is not practical for grantee employees or others traveling on behalf of the grantee who are in the cooperating country for a short time (usually less than one week) to consult with the Mission Director regarding the conversion of United States dollars to local currency. Under Grant DAN-5538-G-SS-1023-00, the provision regarding conversion of U.S. dollars to local currency was deleted and the grantee submitted an alternate cash management procedure to AID. Similar modification would be appropriate for this grant.

NATIONAL ACADEMY OF SCIENCES

Proposal No.
Partnership in Research for Development
Estimate of Costs
August 1, 1988 - July 31, 1993

Rev. 3/16/88
File: LINES

	RESEARCH SUPPORT					STUDIES							
	Sel/Retw/ SOSTIB	Resilter (50%)	Info Serv (50%)	Prog Eval & Dev (50%)	Adm/Mgt (75%)	Production	Distribution	Resilter (50%)	Info Serv (50%)	Prog Eval & Dev (50%)	Adm/Mgt (25%)	TOTAL	Percent of Total
Salaries & Wages*													
Professional	$1,250,895	$32,883	$17,758	$52,411	$215,475	$194,054	$167,985	$32,883	$17,758	$52,411	$71,825	$2,106,334	20.1%
Secretarial-Clerical	407,348	3,763	53,179	5,085	90,291	22,985	81,357	3,763	53,179	5,085	30,097	836,130	8.0%
Fringe Benefits @ 22% of Salaries & Wages	382,414	8,062	15,606	12,649	67,268	47,749	54,855	8,062	15,606	12,649	22,423	647,343	6.2%
Consultants	303,200	0	0	0	0	18,000	0	0	0	0	0	321,200	3.1%
Overhead @ 72.5% of Salaries & Wages & Fringe Benefits**	1,631,726	32,413	62,744	50,855	270,449	191,971	220,543	32,413	62,744	50,855	90,150	2,696,861	25.7%
Travel Expenses	1,943,050	0	2,500	23,498	0	60,180	2,500	0	2,500	23,498	0	2,057,725	19.6%
Other Direct Costs	477,262	33,651	28,300	11,910	23,974	80,060	22,885	33,651	28,300	11,910	7,992	759,895	7.2%
General & Administrative Costs @ 11.4% of all of above item	738,253	12,628	20,530	17,832	76,090	70,110	62,715	12,628	20,530	17,832	25,363	1,074,510	10.2%
TOTAL	$7,214,148	$123,399	$200,617	$174,238	$743,547	$685,109	$612,840	$123,399	$200,617	$174,238	$247,850	$10,500,000 ***	100.0%
Percent of Total	68.7%	1.2%	1.9%	1.7%	7.1%	6.5%	5.8%	1.2%	1.9%	1.7%	2.4%	100.0%	

NOTE: The NRC annually utilizes the services of over 7,500 volunteer scientists, engineers, and other professionals in its committee system. Largely drawn from universities and industry, the NRC committees represent over $10,000,000 in services provided at no cost to sponsors during the performance of studies. Placing the value of those donated services in the overhead base would result in an effective overhead rate of less than half of the current negotiated rate.

The use of all rates in this proposal has been reviewed and agreed to by OMB for use in Academy proposals to assist sponsors in cost estimating, pending approval of final fixed rates.

*Includes accrual for annual and sick leave, holidays, and other leave such as for jury duty, military service, and special personal leave, currently estimated at 19% of direct salaries and wages.

**Includes a facilities capital cost of money factor of approximately 04.54%.

***It is understood that the grant will provide for advance payments.

Partnership in Research for Development
Estimate of Costs
August 1, 1988 - July 31, 1993

Rev. 3/16/88
File: REPK8

	8/1/88-9/30/88	10/1/88-9/30/89	10/1/89-9/30/90	10/1/90-9/30/91	10/1/91-9/30/92	10/1/92-7/31/93	TOTAL	Percent of Total
RESEARCH SUPPORT								
Selection/Networking/BOSTID	$85,705	$1,366,344	$1,515,579	$1,643,373	$1,484,587	$1,118,560	$7,214,148	68.7%
Dissemination (Newsletter)	0	23,947	28,294	29,381	30,468	11,310	123,399	1.2%
Information Services	4,865	28,564	43,134	45,102	47,071	31,882	200,617	1.9%
Program Evaluation & Development	7,532	35,899	33,343	32,720	33,699	31,045	174,237	1.7%
Admin/Management	9,345	144,297	127,279	161,613	169,635	131,378	743,547	7.1%
Subtotal, Research Support:	$107,447	$1,599,051	$1,747,628	$1,912,189	$1,763,459	$1,324,175	$8,455,948	80.5%
STUDIES								
Studies (3)	20,527	146,363	158,715	163,968	107,038	88,498	685,109	6.5%
Distribution System	3,304	90,775	124,011	131,079	137,547	125,524	612,840	5.8%
Dissemination (Newsletter)	0	23,947	28,294	29,381	30,468	11,310	123,399	1.2%
Information Services	4,865	28,564	43,134	45,102	47,071	31,882	200,617	1.9%
Program Evaluation & Development	7,532	35,899	33,343	32,720	33,699	31,045	174,237	1.7%
Admin/Management	3,115	48,099	42,426	53,871	56,545	43,794	247,850	2.4%
Subtotal, Studies:	$39,343	$373,647	$430,523	$456,121	$412,367	$332,052	$2,044,052	19.5%
TOTALS	$146,789	$1,972,697	$2,178,151	$2,368,310	$2,177,826	$1,656,227	$10,500,000	100.0%

File: NTBASS:elemnt2 4/11/88

PROGRAM ELEMENTS INCLUDED IN PARTNERSHIP IN RESEARCH FOR DEVELOPMENT (PRD)

RESEARCH SUPPORT

Selection of Grantees

Review and refinement of technical areas in which grants will be awarded, initially and throughout the program, by four technical panels. Each technical panel will have regular and ad hoc members, total of eight participants per meeting, two meetings per year.

Recruitment of grantees through correspondence and other appropriate means, using existing contact lists and other sources.

(Preproposals will be received and reviewed by AID/SCI. AID/SCI will inform applicants of reviewers' comments and invite full proposals.)

Two cycles per year of receipt and peer review of full proposals by the technical panels of full proposals. Pre-grant visits as needed to institutions selected by technical panels (10 trips per year budgeted). Final approval and ranking of technical panel recommendations by the Board on Science and Technology for International Development (BOSTID) into a single priority list for funding by AID each fiscal year. (BOSTID will meet twice a year, 21 participants per meeting.) Proposals forwarded to AID for funding will include BOSTID recommendations for the scope of work; the grant budget, including any additional items such as consultant visits recommended by the technical panel or BOSTID; and equipment for each grant. The budget assumes that the evaluation of new proposals will be phased out during the fourth year of operation, and increasing emphasis be placed on end-of-program symposia and dissemination of research results.

Recommend research collaboration and support grants for funding by AID.

Monitoring Grants

Review scientific progress reports submitted by grantees to the AID project officer; advise the AID project officer on any remedial action that should be taken.

Select appropriate expert advisors from U.S. and international scientific community for projects that do not have built-in collaborative relationships. Experts will usually serve on a volunteer basis. Travel expenses for collaboration will usually be included in the grantee's budget.

Attempt insofar as possible to resolve scientific problems the grantee may encounter with direction and conduct of the research. Review scientific progress of each grant with the principal investigator during coordination meetings.

APR 1 1 8

Networking Activities

Arrange approximately 29 coordination meetings, workshops, and symposia (most to be held at the site of a grantee or an institution that offers a special expertise) over the five-year period. Costs of travel for grantees, experts, and staff included in BOSTID budget (approximately 435 trips total).

Dissemination

Emphasis on assistance to grantees to publish their results in refereed international journals. Assistance with identifying appropriate experts willing to pre-review manuscripts on a volunteer basis.

Preparation and distribution of research review papers (one on each technical area) during the grant period. Prepare summaries of PRD research topics for review presentations for AID (as resources permit).

Feature articles on research under the program in BOSTID Developments (about half each issue devoted to research).

Staffing:

Director, BOSTID @ 30%
Associate Director, Research @ 40%
Program Managers, 3 @ 80%, 1 @ 40%
Administrative Officer @ 40%
Administrative Specialist @ 35%
Administrative Secretary @ 100%
Program Assistants, 3 @ 85%
Consultant @ 50% for pre-grant visits, analysis, dissemination
Sabbatical consultant for specialized technical assistance, one half-time person per area, each person will serve one year (total of two FTE person years)
Editorial consultant @ 20%

STUDIES

Production

Production and distribution of three study reports during the five-year period. Each study will include one domestic panel meeting involving 5 U.S. experts and staff and one international meeting involving 5 scientists plus staff. Up to 5,000 copies of each study report will be printed, and up to approximately 2,000 copies of each report will be distributed on a gratis basis to a key target audience and developing country readers (the remainder will be made available through the BOSTID distribution network).

Staffing (for 3 studies)

Director @ 11%
Director, Studies @ 14%
Professional Associate @ 28%
Secretary @ 33%

PUBLICATIONS DISTRIBUTION SYSTEM

Maintenance and expansion of the BOSTID Publications Distribution System, including establishment of suitable distributors in additional countries and mechanisms to recover the cost of the continuing distribution of study reports prepared under previous grants and contracts. This includes maintenance and operation of the BOSTID Integrated Distribution System (BIRDS) which generates mailing information and classifies report requestors by geographical, institutional, and interest categories to provide statistical information about distribution. It is assumed that the costs recovered will be sufficient to pay warehouse, handling, and postage costs for the distribution system, as the budget does not include funds for these expenses.

Staffing:

Information Services Manager @ 33%
Staff Assistant @ 72%
Secretary @ 43%
Secretary @ 24%

NEWSLETTER

Publication of the BOSTID Developments newsletter will continue, with two issues per year (nine issues over the five-year period) to be distributed gratis to approximately 2,000 readers worldwide. About half of the space in each issue will be devoted to research-related topics, and half to studies-related topics and other features.

Staffing:

Director, Studies @ 6%
Information Services Manager @ 25%
Staff Assistant @ 7.5%
Secretary @ 7.5%

INFORMATION SERVICES

Maintenance of BOSTID's development-oriented library for use by staff, developing country scientists, and the development community. Provision of information services needed for research support and studies activities, assistance (as resources permit) to PRD research grantees in conducting literature searches and identifying specialized materials. Budget includes about $29,000 over the five-year period for purchase of reference and specialized library materials, journal subscriptions, and literature searches, plus two trips in connection with continued participation in the IDRIS database. About half the information services functions will be in support of research-related activities and half in support of studies activities.

Staffing:

Information Services Manager @ 15%
Secretary @ 40%
Secretary @ 43%

PROGRAM EVALUATION AND DEVELOPMENT

An evaluation of PRD activities will be conducted at mid-program and evaluation of specific program areas or functions will be done as needed. Approximately 9 domestic and 12 international trips are included for evaluation or program development activities including travel related to efforts to obtain additional resources for PRD and other BOSTID related activities. Half the budget for program evaluation and development will be related to research and half to studies.

Staffing:

Director @ 13%
Professional Associate @ 18%
Secretary @ 6.5%

ADMINISTRATION/MANAGEMENT

Includes program direction and review, financial oversight, staff recruitment and support, and compliance with AID and NRC institutional requirements. This encompasses establishment of project objectives and schedules, monitoring and reviewing staff performance, maintaining liaison with officials of AID and other organizations whose work is related to PRD activities, and responding to requests for program and management information by AID, Congress, or other appropriate bodies. About 75 percent of the administration/management budget is attributable to research support activities and 25 percent to studies activities.

Staffing:

Director @ 22%
Administrative Officer @ 38%
Assistant Director @ 15%
Administrative Specialist @ 36%
Secretary @ 87%

22 April 1988

MEMORANDUM

TO: SCI, Dr. Howard A. Minners

FROM: MEMBERS OF THE SCI REVIEW PANEL:
Dr. Craig Wallace, Chairman (NIH)
Mr. Bernard Chapnick, Rapporteur (AID Consultant)
Dr. Lloyd Frederick (AID)
Dr. Walter Parham (OTA)
Dr. John Robins (AID Consultant)
Dr. Ronald St. John (PAHO)

OTHER MEMBERS CLEARANCE BY PHONE

SUBJECT: Review of NAS/BOSTID Proposal 88-166, "Partnership for Research in Development"

REFERENCE: Review held 13-15 April 1988

I. SUMMARY AND RECOMMENDATIONS

The review panel members a e unanimous in all of the findings and recommendations.

The review panel is convinced of the value of the relationship between the Agency for International Development and the Board on Science and Technology for International Development (BOSTID). We are extremely supportive of the efforts to continue BOSTID's unique services to developing country scientists. The panel is aware of the recent spending limitations which have, in part, caused the premature submission of the proposed grant. The panel has thoroughly reviewed the proposed grant and does not find it the best possible use of AID and BOSTID talents.

The first major evaluation of the Program in Science and Technology Cooperation (PSTC) is currently underway. The first full scale external evaluation of one of the six BOSTID research areas has just been undertaken. The panel strongly believes that full scale technical evaluations of the remaining BOSTID technical areas followed by a cross-cutting overall evaluation of the BOSTID operation and impact are required. Those evaluations, together with the completed PSTC evaluation, form the basis upon which a rationally planned future program can be built.

The panel recognizes that the evaluation process will be time-consuming -- probably a year minimum. We do not see this as a problem, but rather as a necessary and beneficial planning opportunity. Both NAS and AID staff reflect the view that the

proposal is nobody's ideal program, but rather an attempt to deal with the funding limitations imposed by the Congress. To proceed at this time with a hastily conceived five year program is premature, unjustified and counterproductive.

The panel proposes an interim arrangement (and one which should be considered as a long term replacement), which would provide an operational bridge to allow thorough evaluation and rational planning of a sustainable program:

- o AID's current PSTC selection and grant making process would continue and would incorporate pending BOSTID grants and areas of concentration as appropriate.

- o BOSTID would receive the $2 million/year grant level for fiscal years 1988 and 1989. With the removal of the selection process from BOSTID (estimated to cost a half million dollars per year) additional funds for networking and studies will be available.

- o The panel recognizes the major differences in focus as well as process between the BOSTID and PSTC programs. We believe that the major strength of the PSTC program is its unique investigator-initiated research support for LDC scientists. We believe that the major strengths of BOSTID are its networking with U.S. and LDC scientists and its extremely successful studies program. The interim program we propose incorporates these strengths. The present grant proposal greatly limits funding for networking, virtually eliminates studies and abolishes the single most important aspect of the Science Advisor programs -- investigator-initiated research.

Until a thorough evaluation is complete we reject any new long-term AID/BOSTID commitment. We believe the grant proposal from NAS has more weaknesses than strengths. We propose an interim mechanism which is operationally feasible, allows time for the evaluation and reformulation process, and which incorporates the strengths of the PSTC and BOSTID programs.

II. BACKGROUND

During the past eight years, the Office of the Science Advisor (AID/SCI) has pursued two approaches to "assist developing countries to strengthen their own scientific and technological capacity...to undertake the research and experimentation necessary for development."[1/] One approach involves the

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1/ p. 3 - AID/SCI Report: "Development Through Innovative Research, the First Three Years of the AID Program in Science and Technology Cooperation (PSTC)," Washington, D.C. January 1985

concept of funding investigator-originated research proposals in a non-directive way. In other words, within the limits of prespecified broad areas of interest, an investigator in an LDC can develop ideas into proposals for consideration for funding. This approach has been embodied in the PSTC grant program. One of its major strengths is the flexibility to accommodate a broad spectrum of ideas which originate with field-based researchers. A second strength has been its emphasis on investment in "new ideas and innovative approaches"[2/] from national scientists who otherwise probably would not be able to compete for and obtain the necessary funding for their ideas. In addition, it has a strong, commendable peer review process to ensure quality research.

The PSTC program has some weaknesses in the way it is executed. For example, follow-up management of awarded grants is not the responsibility of the granting office (AID/SCI). This responsibility rests with the USAID Missions where the level of interest and enthusiasm for the individual grants may vary substantially. Nevertheless, the general impression of the panel was that the PSTC may well be accomplishing its mission, i.e., long term investment in the development of national research capability. Several evaluations of the PSTC program have been undertaken recently, and final conclusions regarding the effectiveness of the PSTC are pending.

The second approach taken by AID/SCI involves a more direct, "top-down" approach in which an attempt is made to identify specific research issues or questions. Specific proposals to answer them are solicited from LDC researchers. This concept has been implemented through a special grant to the National Academy of Sciences' National Research Council and its Board on Science and Technology for International Development (BOSTID).

This approach also has several strengths as well as weaknesses. One strength is that, within the limits of certain predefined areas, it may be possible to obtain definitive answers to very specific questions. For example, in the area of acute respiratory infections, what are the pathogens involved in country "X?" This question can be answered.

On the other hand, one weakness of this approach, in terms of its ability to strengthen national research capacity in the long run, is that its emphasis on specific questions limits its flexibility. It cannot accommodate unsolicited, innovative proposals which do not "fit" specified questions very well.

The panel noted that the BOSTID program also added a broader scope to international research support that goes beyond pure

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grants management. Through BOSTID's extensive networks of American Scientists and Engineers, it has been able to provide an Information Services and Dissemination program to share technical information and publications with LDC scientists. BOSTID also has a Studies Program to "identify research priorities, suggest innovative applications of technologies, or address policy issues related to strengthening scientific and technological capabilities in developing countries."[3/]

The objectives of the Competitive Grants (PSTC) portion is to develop new and innovative solutions to LDC problems through well-founded relevant research and research capacity building. Proposals for innovative research are considered in five Module areas and three "Pre-modules." Modules (1) Biotechnology/ Immunology, (2) Plant Biotechnology, (3) Chemistry for World Food Needs, (4) Biomass Resources and Conversion, (5) Biological Control, and (6) Diversity of Biological Resources; and pre-modules (1) Engineering, (2) Atmospheric, Marine, and Earth Sciences and (3) Genetic Resource Diversity. The research grants were chosen through an in-house review of preproposals and an external peer review of full proposals. The whole program is administered by a very small scientific staff (4) and low administrative overhead. The research grants, in general, are monitored by a USAID mission officer, in most cases, for LDC-based projects. Technical backstopping of some grants is provided by AID/W technical staff.

The panel believes the PSTC program is a well conceived and innovative approach that is uniquely important in development programs of AID. The RAC review committee commented that, "we believe some good solutions to old problems can be generated by this [investigator-initiated] approach. The openness of this program is a good model worthy of support."

The BOSTID program has two major components: (1) Research Network Grants and (2) Special Studies and Meetings. The Research Network subjects were chosen by a BOSTID Committee on Research Grants (CRG) with AID concurrence. BOSTID staff asked for proposals in the six areas (Grain Amaranth, Biological Nitrogen Fixation, Fast-Growing Trees, Mosquito Vectors, Rapid Epidemiological Assessment, and Acute Respiratory Infection) and worked with selected scientists in LDCs to generate such proposals. The CRG also acted as a peer review panel to select acceptable proposals (mail written reviews by outside scientists were considered). The BOSTID staff administers and monitors the grants.

The special studies and meetings were decided on jointly by BOSTID and AID, ranging from reviews of innovative subjects, such

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as grain amaranth to assessments of policy and research opportunities, such as the workshop on biotechnology. These studies have been widely distributed and many have been acclaimed.

III. THE PROPOSAL

The Partnership for Research in Development must be viewed in light of the concepts and approaches described above and fiscal restraints at the present time. The panel carefully reviewed the technical approaches outlined in the document and reached the following conclusions:

1. Rather than bringing together the strengths of the PSTC and BOSTID programs into a new partnership, the proposal pulls together the weaknesses of each one and develops a one-sided partnership heavily oriented towards the BOSTID approach. Some strengths of the BOSTID program (e.g., the Studies and Information Services/Dissemination Programs) are severely curtailed, and the major emphasis is on one of the program's potential weaknesses, i.e., directed, "top-down" research. The strengths of the PSTC program are ignored. Its peer review process would be sacrificed.

2. In essence, AID/SCI would relinquish a major role in grant selection and review and become simply a source of funds for specific projects "solicited" by BOSTID within the relatively limited areas defined by BOSTID organized technical panels. If AID relinquishes this role, the panel feels that the basic approach which characterizes the PSTC program would be severely compromised. The panel feels that the unrestricted, investigator-originated research approach is critically important for both AID and national research development and that it should not be placed in jeopardy.

3. Given that major evaluations are not yet completed and others have not begun, the panel feels that this proposal is premature. Restructuring the entire SCI-BOSTID relationship prior to the conclusion of critical evaluations would seem unwise and unjustified.

4. The panel believes the proposal is hastily prepared and ill conceived and would destroy an essential approach to the long-term development of national research capability, i.e., the PSTC approach.

Based on these considerations, the panel unanimously recommends that AID reject the proposal and that the entire relationship between SCI and BOSTID be reformulated following the conclusion of all necessary evaluations.

IV. EVALUATIONS

The first review of SCI's Program on Research Grants was by an AID Research Advisory Committee (RAC) panel during December 1984. Not only did they respond individually to 26 questions by SCI regarding the competitive grants program, but they made ten specific recommendations. The panel stated that the PSTC was a "well conceived and innovative approach" although it is too early to judge its success.

"An Interim Evaluation of the BOSTID Research Grants Program" by Robert Burris, Claudia Carr and William Krebs was reported in May 1985 following an extensive year-long, in-depth evaluation including three international site visits. They concluded the BOSTID research grants program was "soundly conceived, well-managed...and that no major shifts in either policy or administration are called for at this time." They felt the program was "likely to make substantial progress toward achieving its principal objectives," but inferred that theirs was an interim evaluation and that it would be premature to judge its success.

A Congressionally-mandated Management Assessment of the Office of the Science Advisor has just been completed. This four-member committee concurred that the SCI objective of supporting innovative research had been achieved and that the overall management of the program "was of high quality but that there was room for improvement in the monitoring of grants...and that better integration of NAS's capabilities with AID's objectives should strengthen the program." The committee, however, was completely divided regarding the objectives of the program and finally stated "the role of AID in the larger world of development-related basic and applied science needs a major examination and a clear statement of overall strategy." It should be emphasized that this assessment was a managerial one and neither intended to be nor was a technical or scientific evaluation.

At this writing a two-month external evaluation of BOSTID's largest research grants program on "Diagnosis and Epidemiology of Acute Respiratory Infection in Children" has been initiated by AID S&T Bureau. This committee, under the chairmanship of Dr. William Jordan, is expected to make its evaluation known May 31, 1988.

As stated above we unanimously and strongly believe that two independent extensive, in-depth and external evaluations of both the BOSTID Research Grants Program and the AID/SCI Competitive Grants Program be undertaken. For the type of assessment that we

believe is now both timely and necessary to evaluate the success of these programs, a year would be a reasonble time frame. Upon completion of these independent evaluations, a blue ribbon committee should be convened to assess the relative merits and success of the respective grant programs in concert with the mission and goals of the Agency. We believe it is only after such a timely and needed assessment of these seven year programs should any major program direction changes be undertaken.

V. THE REVIEW PANEL INTERIM PROPOSAL

As documented elsewhere in the panel's report, we have serious problems with the BOSTID proposal. It seems to us to be a "knee jerk" reaction to the funding limitation for FY 1988. It clearly is not based on the kind of in-depth and comprehensive evaluation that should guide the planning of such a program and as was called for in the AID grant to the NAS.

The panel acknowledges that the BOSTID proposal presents a model that both responds to the Congressional mandate for 1988 (i.e., the $2 million limitation) and provides a mechanism for continued BOSTID/AID relations. We think it does neither very well and in the process, incurs some serious opportunity costs, both short and long term. We would propose what we think is a much preferred model which is fiscally sound and avoids most of those opportunity costs.

The present grant to NAS has a $40 million authorization and is now extended to mid-1990. Total AID/SCI funding through FY 1987 has been $33.5 million. "Other" AID funding has been about $2.5 million, leaving room for an assumed $2.0 million tranche in each of the FY's 1988 and 1989. The BOSTID proposal would program $1.5 million to the existing program and $0.5 million in 1988 and $2.0 million in each of the 1989-1993 fiscal years to the "new" program -- this assuming a continued Congressional limit and an AID available funding of $2.0 million per year. We think neither assumption is very certain.

The BOSTID proposal includes a substantial expenditure (by their estimate, about a half million per year) for "project selection" activities. It also provides substantially less for studies, and somewhat less for networking and information elements than BOSTID staff think optimal. We agree with this view.

The panel proposes the following interim funding arrangement as an alternative to that of BOSTID:

- Allocate $2 million of FY 1988 funds to the existing grant. This would bring the total obligation to approximately $38 million ($35.5 million of AID/SCI and [illegible] 5 million of other AID funds).

- Discontinue all "selection" activities under the grant. This would free up a substantial sum that could be directed to funding of previously approved subgrants and/or to enhance studies, networking and/or information programs.

- Assuming that the $2 million limit continues and that $2 million is available in FY 1989, add that sum to the existing grant. Again, use those funds for program elements other than "selection." We would point out that over the two years, eliminating the "selection" activities would release something like $1 million. It is possible that the $2 million limit might be relaxed in FY 1989 if all the cards are played very well. If the BOSTID proposal is implemented we would suggest that the limitation would be "built in" to future AID budgets.

- Continue the PSTC process of selection and funding of small grants with such funds as are available in 1988 and 1989 while the in-depth evaluation now underway is completed.

- Implement a thorough in-depth technical evaluation of the 5 remaining areas of the BOSTID program.

- When the technical evaluations of the PSTC and BOSTID are complete, design and implement a high-level, comprehensive, over-arching assessment of the two programs which could then guide the development of the next generation of the AID-NAS relationship.

We think the actions proposed would place the AID-NAS relationship on a sound footing for the indefinite future. The funding and programmatic actions would largely solve the short-run problems faced by the NAS and AID.

The time required (up to 2 years, if needed) to complete the necessary evaluations and systematic planning of the next generation would be available. And, our approach would build on the perceived strengths of the two programs, rather than their weaknesses.

While the panel believes that its proposed "interim arrangement" is the best marriage of the strengths of AID and BOSTID, we believe any long-term commitment prior to the complete evaluation is premature.

VI. PANEL OBSERVATIONS

A. AID/NAS Relationship:

AID's link to NAS/BOSTID provides AID with easy access to all segments of the U.S. scientific community. The high esteem

among scientists for the NAS facilitates AID's access to these special resources and to their involvement in addressing science-related problems of developing countries. The continued involvement of additional U.S. scientists in the AID/BOSTID activities expands institutional interests nationwide and assists in bringing to bear the widest array of talent to find solutions to development problems where science plays a role.

AID's investment in fostering new research by developing country scientists can be viewed as "venture capital." The payoff to the developing countries and to the United States for the small investment can be high. Good science is the key. Therefore, participation of NAS/BOSTID in AID's science capacity building efforts in developing countries enhances the likelihood of improved scientific research.

B. Scientist Participation:

PSTC Competitive Grants Program should remain open to all scientists in the United States and developing countries. The requirement that U.S. scientists must work in partnership with an LDC scientist(s) must be continued. For projects initiated by investigators in LDCs, collaboration with U.S. scientists should be encouraged, but not mandatory. Scientists in LDCs should have a choice between direct funding or funding through the collaborating U.S. institution. For projects funded through U.S. institutions, a work agreement, including budget, should be submitted and approved by a technical officer before the grant is finalized. Scientific partnership provides support in research capability to LDC scientists but also provides access to research information to both countries.

C. Networking:

Networking activities have been a weakness in PSTC Competitive Grants Program and a strength in the BOSTID Research program.

The use of BOSTID experience and expertise in research networking could increase the effectiveness of the PSTC Competitive Grants Program. Monitoring of PSTC grants is generally done by USAID or AID/W staff who add this to their regular duties because they are interested in the scientists in the country or the subject matter. Neither time nor resources permit these AID persons to network projects into appropriate groups, as BOSTID staff and NAS scientists could do. Appropriate workshops could be held and regular site visits would provide encouragement of better research and

removal of blockages. Follow-up on interim and terminal reports can benefit the program and provide for dissemination of information. BOSTID staff/scientists could assist in developing partnership work agreements.

Networking activities also provide a mechanism for better use of the research results. Network publications, where appropriate, can stimulate research, make available new information and provide a record of accomplishments for the PSTC program in specific areas.

D. Panel Methodology:

The panel met from April 13 through 15, 1988. Persons with whom discussions were held included: Howard Minners, John Daly and other members of the AID/SCI staff; Victor Rabinowitch, John Hurley, Michael Greene, Noel Vietmeyer, and other members of the NRC/BOSTID staff; and Richard Blue, principal author of the Congressionally-mandated management review of the Science Advisor program.

In addition, the panel reviewed the existing grant, the proposed grant, the management review, and all available evaluative materials on both the PSTC and BOSTID programs. The panel also reviewed the existing and planned studies under the BOSTID program.

Because of the tight scheduling of the panel, all available time was devoted to review and panel discussion. The final compilation of sections of the report was accomplished by the rapporteur in the week of April 18, 1988 and any failures in editorial consistency and flow are fully his responsibility.

VII. PANEL CONCLUSION:

The panel members were unanimous in the findings and recommendations and fully support the course of action proposed in this report.