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AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

PROJECT PAPER
PAKISTAN - MALARIA CONTROL II
391-0472

APRIL 1982

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UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON D C 20523

PROJECT AUTHORIZATION

PAKISTAN

Malaria Control II
Project No. 391-0472

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Malaria Control II Project for the Islamic Republic of Pakistan (the Cooperating Country) involving planned obligations of not to exceed U.S. dollars Forty-One Million (U.S. $41,000,000) and Twenty-One Million United States-owned Pakistani Rupees (Rs 21,000,000) in grant funds over a five (5) year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the Project.

2. The project is designed to assist the Cooperating Country to contain or reduce the incidence of malaria by expanding the capacity and increasing the capability of the federal provincial and municipal health services to control malaria. It has four components under which assistance such as the following will be included: (a) Program Management: technical assistance to strengthen program management, evaluation, epidemiology, surveillance, urban malaria control, and the safe handling of insecticides; (b) Training: technical assistance to strengthen the capability of the National Malaria Training Center (NMTC) to meet the training and research needs of the Malaria Control Program; support for a new facility for the Center; and, fellowships and in-service training programs for malaria and general health services personnel in specific aspects of malaria control; (c) Basic and Operational Research: technical assistance, supplies and equipment, and budget support to conduct a variety of field studies; and, (d) Commodity Support: insecticides, urban malaria control vehicles, ultra-low volume spraying machines, and other necessary commodities.

3. Except as A.I.D. may otherwise agree in writing, the Project Agreement(s) which may be negotiated and executed by the officer(s) to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority shall be subject to the following essential terms, covenants, and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin of Goods and Service

Goods and services financed by A.I.D. shall have their source and origin in the Cooperating Country or in the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States and the Cooperating Country.

b. Conditions Precedent to Purchase of a Facility for NMTC

Prior to the disbursement of funds under this project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made for the purchase of a building for the NMTC, the Cooperating Country shall, through its Directorate of Malaria Control (DOMC), provide evidence, in form and substance satisfactory to A.I.D., that:

i. six new positions have been approved by the Cooperating Country for the NMTC and that the NMTC is actively recruiting one senior scientific officer, one senior malaria superintendent to supervise field research, one senior entomologist, two technical assistants for the entomologist, and one health educator;

ii. the proposed building is adequate for the needs of the NMTC, is in good physical condition, and is reasonably and fairly priced; and

iii. the Cooperating Country has agreed to cover all operating and maintenance costs for the new building.

c. Conditions Precedent to Renovation of the Building Purchased for the NMTC

Prior to the disbursement of funds under this project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made for renovation of the building purchased for the NMTC, the Cooperating Country shall, through its DOMC, provide evidence, in form and substance satisfactory to A.I.D., that adequate designs have been prepared for the renovation of the building and responsible local contractors have been selected to do the renovation work in accordance with A.I.D.'s competitive procurement procedures for host country contracting.

d. Conditions Precedent to Release of Urban Malaria Control Vehicles and Equipment

Prior to the release to each municipal corporation of urban malaria control vehicles and ultra-low volume (ULV) fogging machines procured under this project, the municipal corporation shall provide to the DOMC, with copies to A.I.D. epidemiological evidence, based on passive case detection or entomological data, that malaria is a public health problem in the municipality based on the criterion of an annual parasite incidence (API) of 0.5 or more cases per thousand population.

e. Conditions Precedent to the Procurement of Insecticides in FY 1983 - FY 1986

Prior to the disbursement under this project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made each year for the procurement of insecticides in FY 1983 through FY 1986, the Cooperating Country, acting through the DOMC, shall furnish to A.I.D., in form and substance satisfactory to A.I.D., evidence that insecticides procured for the preceding year's program have been effectively utilized for the program, and, for the succeeding year's program, the amounts, specifications, and scientific basis for calculating the insecticide requirements.

f. Covenants as to Documentation Required from the Cooperating Country

i. The Cooperating Country, through the DOMC, shall prepare, in consultation with A.I.D., by no later than March 1 of each year, and provide copies to A.I.D., an annual plan detailing satisfactory safety measures and procedures to be employed in the application of all insecticides used in the program.

ii. The Cooperating Country, through the DOMC, shall prepare, in consultation with A.I.D., by no later than January 1 of each year, and provide copies to A.I.D., a satisfactory annual program evaluation plan outlining criteria and benchmarks for each program component to be assessed during the annual February/March program review.

iii. The Cooperating Country, through the DOMC shall prepare, and provide copies to A.I.D.: (a) a satisfactory plan of operations (PC-1) for the period 1984 - 1986 by no later than July 1, 1983; (b) satisfactory annual plans of operation each year during the period 1983 - 1987 by no later than April 1 of the preceding year covered by the

plan, which shall include: (1) a description of the responsibilities of all other agencies and institutions involved in malaria control activities, such as Municipal Committees, Cantonment Boards, as well as responsibilities of other government and semi-government agencies; (2) a timetable for project activities; and, (3) an itemization of the program budget including external sources of assistance; and (c) an extended plan of operation for malaria control covering a period of at least three years following the completion of this A.I.D. assistance by no later than July 1, 1987.

h. Covenant as to Participant Training

The Cooperating Country shall make every reasonable effort to require that each participant trained overseas under this project works in malaria control activities in the Cooperating Country for not less than three times the length of time of his or her training program provided, however, that in no event shall the participant be allowed to work for less than one year nor be required to work for more than five years from the date of the participant's return to the Cooperating Country.

i. Covenant as to Safety of Insecticide Handling

The Cooperating Country shall take appropriate safety measures for the use of insecticides financed under this program, including the provision of safety equipment to insecticide handlers, training of handlers and supervisory personnel in the risks associated with the insecticides, and instruction in proper procedures for safe handling. The Cooperating Country shall also maintain rigid control over the quality of insecticides procured for the program to ensure that they meet WHO and A.I.D. technical requirements.

Signature _____
M. Peter McPherson
Administrator

11 MAY 1982
Date

Clearances:		Date	Initial
Robert Halligan,	A/AA/ASIA		4 May 82
John R. Bolton,	AA/PPC		May 7, 1982
Kelly C. Kammerer,	GC		5/6/82

GC/Asia:JSilverstone:hp:4/29/82
Ext 28092

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

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

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: Pakistan

3. PROJECT NUMBER: 391-0472

4. BUREAU/OFFICE: ASIA — 04

5. PROJECT TITLE (maximum 40 characters): Malaria Control II

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 09 DD 30 YY 87

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

A. Initial FY 82 B. Quarter 3 C. Final FY 86

8. COSTS ($000 OR EQUIVALENT $1 = Rs 10.43)

A. FUNDING SOURCE	FIRST FY 82 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	1,500	-	1,500	41,000	-	41,000
(Grant)	(1,500)	(-)	(1,500)	(41,000)	(-)	(41,000)
(Loan)	(-)	(-)	(-)	(-)	(-)	(-)
Other U.S. 1. Mondale Rupees	-	2,013	2,013	-	2,013	2,013
Other U.S. 2.						
Host Country	2,400	7,411	9,811	2,400	37,300	39,700
Other Donor(s)						
TOTALS	3,900	9,424	13,324	43,400	39,313	82,713

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) ESF	510	542	-	-	-	41,000	-	41,000	-
(2)									
(3)									
(4)									
TOTALS				-	-	41,000	-	41,000	-

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

11. SECONDARY PURPOSE CODE

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

A. Code	TNG						
B. Amount	783						

13. PROJECT PURPOSE (maximum 480 characters)

To assist the Government of Pakistan to contain or further reduce the incidence of malaria.

14. SCHEDULED EVALUATIONS

Interim MM 04 YY 83 | MM 04 YY 84 | Final MM 08 YY 87

15. SOURCE/ORIGIN OF GOODS AND SERVICES

[X] 000 [ ] 941 [X] Local [ ] Other (Specify) _____

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

17. APPROVED BY

Signature: Donor M. Lion

Title: Director, USAID/Pakistan

Date Signed: MM 04 DD 02 YY 82

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

MM 04 DD 05 YY 82

AID 1330-4 (8-79)

MALARIA CONTROL II PROJECT

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LIST OF ABBREVIATIONS

ACD	Active Case Detection
APCD	Activated Passive Case Detection
API	Annual Parasite Incidence
BHC	Benzene Hexachloride (Insecticide)
CDC	Communicable Disease Control
DDT	Dichlorodiphenyl Trichloroethane (Insecticide)
DHO	District Health Officer
DOMC	Directorate of Malaria Control
EPA	Environmental Protection Agency
ERT	External Review Team
GOP	Government of Pakistan
GR	Geographical Reconnaissance
MCP	Malaria Control Program
MEP	Malaria Eradication Program
NMTC	National Malaria Training Center
OP	Organophosphorous
PCD	Passive Case Detection
PC-1	A GOP project document similar to A.I.D.'s Project Paper
RMA	Regional Malaria Advisor
SPR	Slide Positivity Rate
ULV	Ultra-Low Volume
UNICEF	United Nations Children's Emergency Fund
WDP	Water Dispersable Powder
WHO	World Health Organization

GLOSSARY OF TERMS

Active Case Detection is a part of surveillance activities in which malaria personnel actively search for malaria cases through the collection of blood slides and epidemiological investigations.

Annual Parasite Incidence is the proportion of cases of malaria detected on an annual basis in relation to the unit of population in which malaria occurs.

BHC is an abbreviation of the common name Benzene Hexachloride, a chlorinated hydrocarbon type of residual insecticide.

Biological Control is a method of controlling mosquitoes using living vertebrate or invertebrate predators, genetic control, or parasites.

DDT is an abbreviation of the common name Dichlorodiphenyl Trichlorethane, a chlorinated hydrocarbon type of residual insecticide.

Endemicity is a term applied to malaria when there is a constant measurable incidence in an area over a succession of years.

Epidemic is a term applied to malaria when the incidence of cases in an area rises rapidly and markedly above its usual level.

Epidemiology in a broad sense is the study of the environmental, personal, and other factors that determine the incidence of disease.

Fenitrothion is an organophosphorous residual insecticide.

Focal Spraying is residual insecticide house spraying around a malaria focus.

Incidence is the number of cases of disease occurring during a given time period in relation to the unit of population in which they occur.

Larvicide is a substance used to kill the aquatic larval stage of the malaria mosquito by ingestion, contact, or respiratory blockage.

Malaria Control is an operation aimed at reducing the prevalence of malaria to a level at which it is no longer a major public health problem.

Malaria Control Program refers to the national malaria control effort of the Government of Pakistan.

Malaria Eradication is the ending of the transmission of malaria and the elimination of the reservoir of infected cases in a time-limited campaign such that when it comes to an end, there is no resumption of transmission.

Malaria Focus is a defined and circumscribed locality situated in a currently or formerly malarious area and containing continuous or intermittent malaria transmission.

Malariogenic Potential is the degree to which an area is conducive to malaria based on cumulative epidemiological data collected from each area regarding the parasite load, vector density, water-logging, climatic conditions, population movement, and other factors.

Malathion is an organophosphorous residual insecticide.

Malaria Parasite is a colloquial term for any of the protozoan organisms causing malaria infections.

Parasite Rate is the percentage of persons showing malaria parasites by blood smear examination.

Passive Case Detection is a part of the surveillance activities in which the public health and medical services other than the regularly constituted malaria service assist surveillance activities by the collection of blood slides from persons requesting treatment.

P. Falciparum Malaria is a severe type of malaria caused by Plasmodium falciparum, a species of malaria parasite.

Presumptive Treatment is initial drug treatment given to an expected malaria case at the time when a blood sample is taken for examination.

Residual Insecticide is an insecticide which when suitably applied on a surface, maintains for a considerable period of time its insecticidal activity by either contact or fumigant action.

Surveillance is that part of a malaria program aimed at the discovery, investigation, and elimination of continuing transmission and the prevention and cure of infections.

Total Spray Coverage is the application of residual insecticide during one spraying cycle to all sprayable surfaces in all sprayable houses within a given operational area.

Ultra Low Volume Spraying is a method of insecticide dispersion by special air or ground equipment using very small amounts of finely dispersed particles of insecticide.

Vector in malaria is any species of mosquito in which the malaria parasite completes its sexual cycle and which is thus able to transmit the disease.

Vector Density is the number of female Anopheline mosquitoes in relation to the number of specified shelters or hosts or to a given time period, specifying the method of collection.

Vector Susceptibility represents the degree to which a species of mosquito develops resistance to the effects of insecticides.

Water Management as it relates to malaria control involves the reduction or elimination of sources of mosquito breeding through filling, draining, digging, changing water levels, flushing, canal trimming, and other engineering methods.

I. SUMMARY AND RECOMMENDATIONS

A. Recommendations

1. Funding

USAID/Pakistan recommends that an ESF grant of $41.0 million and Rs 21 million (or the equivalent of approximately $2.0 million) 1/ in Mondale rupees be authorized for the Malaria Control II Project, which has a Project Assistance Completion Date (PACD) of September 30, 1987.

2. Geographic Code

The project authorization should specify that, except as A.I.D. may otherwise agree in writing:

a. Goods and services financed by A.I.D. under this Project shall have their source and origin in countries included in A.I.D. Geographic Code 000 or Pakistan.

b. Ocean shipping for all commodities financed by A.I.D. under this Project shall be only on flag vessels of the United States or Pakistan.

B. Summary Project Description

This project is designed to assist the Government of Pakistan implement its Malaria Control Program (MCP) under the New Extension Plan (PC-1) of the MCP for the period 1980-1983, and beyond through 1987. The previous A.I.D.-assisted malaria project, which ended in 1980, was successful in achieving an annual parasite incidence (API) of 0.5 cases per thousand or 500 cases per one million population. The Malaria Control II project will build on the achievements of the previous project by assisting the Government of Pakistan to contain or further reduce the incidence of malaria. This will be accomplished by: (1) expanding the capacity and increasing the capability of the federal, provincial, and municipal health services to effectively control malaria; and, (2) assisting the MCP move from a vertically organized program emphasizing total coverage house-spraying and active case detection surveillance methods to an integrated program utilizing a selective mix of vector control measures and a better balance between active and passive case detection and treatment methods. Successful execution will depend on a number of key variables, including vector resistance to the organophosphorous insecticides, epidemiologically accurate direction of spray operations, cooperation and participation of the general public and general health services staff, reduction in the incidence of *P. falciparum* malaria, collaboration of

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1/ At the exchange rate of $1.00 = Rs 10.43 as of January 26, 1982.

municipal authorities, and expanded use of feasible alternative control measures.

The Malaria Control II Project consists of four components, under which assistance will be provided as follows: (1) Program Management: short and long-term technical assistance to strengthen the GOP Malaria Control Program in the areas of program management, epidemiology, evaluation, surveillance, urban malaria control, and the safe handling of insecticides; (2) Training: short-term technical assistance to strengthen the capability of the National Malaria Training Center (NMTC) to meet the research and training needs of the Malaria Control Program; support for the purchase, renovation and equipping of a new facility for the Center; and, short-term fellowships and in-service training programs for malaria and general health services personnel in specific aspects of malaria control; (3) Basic and Operational Research: short-term technical assistance, supplies and equipment, and budget support to conduct a variety of field studies; and, (4) Commodity Support: insecticides, urban malaria control vehicles, ultra-low volume (ULV) spraying machines, and other necessary commodities.

C. Summary Findings

This project is considered socially, financially, and economically sound, and administratively and technically feasible, and is ready for implementation.

D. Project Checklists and Mission Director's Certification

1. This project meets all applicable statutory criteria. Appropriate checklists are included in Annex B.

2. A FAA 611 (e) certification, which certifies that the GOP has the capability to implement and maintain the project, has been signed by the USAID/Pakistan Mission Director and is included in Annex C.

E. APAC Concerns and Design Guidelines

The project concerns and design guidelines which were raised at the APAC review of the PID (see Annex A), and where they are addressed in the Project Paper are as follows:

1. Host country versus direct A.I.D. procurement of insecticides - Section IV.C., Procurement Plan.

2. Relative contribution of project to commodity and program management needs - Section III.C., Project Components and Section V.A., Technical Analysis.

3. Justification of the approach and techniques to be employed for malaria control - Section V.A., Technical Analysis.

4. Adequate training and monitoring of personnel, storage facilities, transport, and program supplies to ensure the safe handling and effective use of insecticides Section V.A., Technical Analysis and Annex M, A Summary of Observations of Insecticide Handling Procedures in Pakistan.

5. Examination of the timeliness and effectiveness of the technical assistance inputs provided by WHO - Section II.D., Other Donor Assistance.

6. Support for operational research - Section III.C.3. Basic and Operational Research and Section V.A., Technical Analysis.

7. Justification for the amount of insecticide to be procured - Section III.C.4., Commodity Support and Section V.A., Technical Analysis.

8. Review and update of the environmental assessment from the previous A.I.D. malaria project - Section V.F., Environmental Analysis, and Annex I, Initial Environmental Examination.

F. Project Issues

There are three issues in this project: (1) will the GOP be able to assume the recurrent costs of maintaining or further reducing the level of malaria to an API of 0.5 cases per thousand population; (2) will the project interfere with attempts to integrate malaria control activities with basic health services; and, (3) what amounts and types of organophosphorous insecticides, such as malathion and fenitrothion, should be used during the life of the project to effectively control malaria in Pakistan. The first and third issues are examined in the Technical Analysis Section of this paper, and the second issue is addressed in the Administrative Analysis Section. Some comments are, however, in order here.

1. Recurrent Cost Implications

The recurrent costs of the Malaria Control Program (MCP) include wages and salaries of malaria control personnel; equipment maintenance and repair; vehicle operation, maintenance, and repair; annual purchases of insecticides, larvicides, and anti-malaria drugs; and expenditures on biological and operational research and biological and chemical control measures. With the exception of the insecticides and some of the equipment including all the vehicles, all the recurrent costs of the program are local costs.

The GOP has shown its commitment to the MCP by allocating an adequate budget for the local costs of the program for the last five years. The federal malaria program represents approximately 12% of the total federal health development budget. In addition, the provinces together contribute the equivalent of about $5.0 million annually. The GOP, however, has experienced increasing difficulty in meeting the foreign exchange costs of the insecticides for the program. The recurrent cost implications of using residual insecticides are enormous, as evidenced by the proportion of the project budget allocated for the procurement of these commodities. However, the recurrent cost implications of not effectively controlling malaria at the achieved level of 500 cases per million population are even more substantial in terms of the likelihood of widespread malaria epidemics, expansion of high malariogenic areas, an upsurge in the virulent form of malaria, P. falciparum, seeding of infection into adjoining countries, and development of chloroquine resistance with a loss in the effectiveness of a relatively inexpensive drug treatment.

Although the A.I.D. project finances research in alternative biological and chemical control methodologies and genetic manipulation of the vector, it is unlikely that any of these methodologies will be sufficiently developed during the life of the project to alter the approach to be used under the project, namely the spraying of residual insecticides. In the long run, development of a malaria vaccine and genetic manipulation hold the most promise but will not be achieved during the life of the A.I.D. project. This project will assist the GOP in moving from a vertically organized program emphasizing total coverage house-spraying and active case detection surveillance methods toward an integrated program utilizing a selective mix of vector control measures and a better balance between active and passive case detection and treatment methods. Progressive reduction of malaria transmission by vector control and radical drug treatment for humans should reduce the geographic area to be actively controlled, thereby reducing the administrative and financial costs of the program.

It is unlikely, therefore, that this project will have a significant impact on reducing the recurrent foreign exchange costs of the malaria control program in Pakistan. There will be a continued need for some time for a sizeable foreign exchange outlay for the program. Hopefully, by the end of the project, the economic and balance of payments situation in Pakistan will have improved as a result of the GOP's efforts and of the entire A.I.D. assistance program and that of other donors, and the GOP will be in a better position to meet the recurrent foreign exchange costs of its malaria control program. In any case, the alternative of not meeting these expenses could result in higher human and financial costs.

2. Integration

Recognizing the potential benefits in terms of cost-effectiveness of integrating malaria control activities into the general provincial health services, the Ministry of Health and Social Welfare has, as one of its major objectives, full functional integration by the end of 1983. The GOP has made considerable progress in achieving administrative integration but not functional integration. The Mission believes that integration is necessary and that the course being taken by the Ministry is appropriate, but the target date is definitely not achievable nor is it desirable. The 1981 evaluation report of the previous A.I.D.-assisted malaria project cautioned against excessively rapid integration because thousands of malaria and general health services workers must be retrained to perform new duties, and the goals and procedures of an integrated system must still be defined. Integration, at least initially, is likely to result in a reduction in the level of malaria control activities. Over the next several years, it is especially critical that control activities not be abated given the vulnerability of the situation in Pakistan to a resurgence of malaria.

This project will hasten progress toward the achievement of the program's goal of ultimate integration by assisting the GOP to train general health workers in malaria control, and by supporting research and providing technical assistance aimed at increased passive case detection by general health workers and improved treatment methods. Several measures of project purpose achievement are specific outputs of the general health system in undertaking malaria control activities. A more realistic target for the program is to achieve complete functional integration in 50 percent of the health facilities in the country by September 30, 1987, the Project Assistance Completion Date (PACD)

3. Choice of Insecticides

Because resistance has developed to DDT, the internationally-recognized insecticide of first choice, Pakistan has had to resort to the use of organophosphorous insecticides to effectively control malaria. Since 1980, both malathion and fenitrothion have been used in varying amounts in different parts of the country. Conclusive scientific evidence based on field trials does not currently exist to determine which or what mix of these insecticides is optimum for controlling malaria. The conventional wisdom that fenitrothion, the more toxic and expensive compound, should be held in reserve for use only in the event that vectors become resistant to malathion needs to be tested. Similarly, the assertion that fenitrothion has a longer residual effect and hence requires only one spraying cycle also needs to be substantiated.

Under the proposed A.I.D. project, an operational research program will be supported throughout the life of the project. Research will be directed at: comparing the use-effectiveness of malathion versus fenitrothion in field studies; improving epidemiological techniques for case detection; undertaking entomological studies of vector resistance to insecticides; monitoring malaria parasite resistance to drug treatment, especially P. falciparum; and identifying innovative approaches for promoting public cooperation and participation in the malaria control program. Research findings will guide the selection and use of insecticides and other control methodologies during the project.

G. Contributors to the Project Paper

The following individuals contributed to the development of this project:

A.I.D.

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Ministry of Health and Social Welfare

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Directorate of Malaria Control
Ministry of Health and Social Welfare

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II. BACKGROUND

A. USG-GOP Negotiations

1. Assistance Package

The United States and the Government of Pakistan have embarked on a renewed and strengthened effort to increase their economic and development cooperation. This effort was marked by high level U.S.-GOP consultations in 1981 which culminated in the negotiation of a $3.2 billion package of military and economic assistance which the U.S. will seek to provide to Pakistan between FY 1982 and FY 1987.

The economic assistance component was designed not only to maximize its development impact but also to produce as favorable balance of payments effects as possible. The balance of payments objective reflects two critical purposes of the agreed upon economic assistance:

a. to ameliorate the burden created by Pakistan's increased military expenditures; and,

b. to reduce the constraints on development which balance of payments strains generate. In this manner, the economic, development, and security interests of both nations are interrelated and supported.

The U.S. Economic Assistance Negotiating Team, headed by the A.I.D. Administrator, visited Pakistan in August 1981 to discuss the details of the economic portion of the military and economic assistance package with the Government of Pakistan. These negotiations were successfully completed and agreement was reached on the FY 1982 ESF program and on areas of concentration for the FY 1982 through FY 1987 period.

2. Strategy

The assistance package is one of the strategic elements of the renewed and expanded USG-GOP relationship. It is one of the instruments required to achieve the U.S. and GOP's mutual goals with respect to security and economic development. The assistance package is seen as an indispensable contribution to the shaping and implementation of a new U.S.-Pakistan relationship and to the critical role in the region which the U.S. Government seeks to assist Pakistan to play. The military-security-political position of Pakistan, including the burden of a massive refugee influx, accentuates the development problem to which the proposed U.S. economic assistance package responds.

The economic assistance program is designed to help Pakistan, one of the world's largest and poorest nations, fulfill the basic human needs of its people. At the same time, it is designed to address the country's foreign exchange needs through quick disbursing activities while laying the foundations for more rapid economic growth. The program is shaped to assure the widest possible distribution of benefits. The program agreed to by the GOP and U.S. negotiating teams will:

a. reactivate a long-term development assistance relationship, which the U.S. views as important because of Pakistan's size, poverty, strategic location, and other multi-faceted U.S. interests;

b. provide balance of payments support so as to help address short and medium term foreign exchange shortfalls, thereby reducing development constraints and strengthening the economy;

c. address key economic problems, which will help enable Pakistan to achieve self-sustaining growth and manage its debt burden;

d. complement and support IMF and IBRD assisted programs, and improve their overall impact; and,

e. expand resource availability for local cost financing.

Each of the objectives and purposes of the economic package cannot be achieved simultaneously. Nevertheless, it is the express intention of both governments to initiate as many of the proposed activities as possible in FY 1982. In view of the recent status of the bilateral relationship and program, and given the magnitude and urgency of the proposed efforts, a carefully designed strategy and approach are required.

In the first year, FY 1982, the balance of payments objective is given primary emphasis. In later years, as program levels are elevated, the balance of payments focus is retained while the longer-term development strategy is given more attention.

It was in this context that A.I.D. agreed to finance a five-year project to assist the GOP implement its Malaria Control Program. The Malaria Control II Project is consistent with the agreed upon U.S.-GOP strategy in that approximately $1 million of the $1.5 million to be provided in the first year will be for commodities, and from FY 1983 onward, other longer-term development objectives will also be pursued. In addition, the Project will have a Mondale rupee component to expand the resources available to the GOP for local cost financing.

B. Pakistan's Malaria Control Program

1. Historical Perspective

Malaria has been identified as a major disease in Pakistan since ancient times and still persists as a serious public health threat to the country's economic and social well-being. The large size of the country, the variety of geographic and demographic conditions, the large refugee population, and the mobility of the population contribute significantly to the malaria control problem.

In the years following its independence, the Government of Pakistan (GOP) struggled with the disease, mainly in the more populous centers. With the advent of residual insecticides, chiefly DDT, the GOP was able to extend its anti-malaria efforts throughout the country. The well-organized program, with the objective of control in the 1950's and eradication in the 1960's, initially achieved a high level of success. Due to various administrative, operational, and technical problems, however, the Malaria Eradication Program (MEP) met with increasing reverses in the late 1960's. The mid-1970's found malaria occurring at high rates in large areas in which the disease had been formerly controlled. This experience demonstrated the explosive potential of malaria in Pakistan in the absence of a continuous, effective control program. In response to this resurgence of malaria, the GOP undertook an Extended Malaria Program (1975-1980) which was supported by the A.I.D.-assisted Malaria Control Project. This program achieved substantial reductions in the annual parasite incidence rate (API) from 138 cases per 1000 population in 1976 to 0.5 cases per 1000 population in 1980. This success, however, was achieved at a high cost in funds, commodities, manpower, and time.

The influx of Afghan refugees has created a new problem for the Malaria Control Program in Pakistan. In 1981, the Afghan refugee population in Pakistan was estimated to be roughly 2 million, located primarily in 229 camps in the NWFP and 25 camps in Baluchistan. In the camps, malaria is a serious problem, second only to tuberculosis in the opinion of GOP health officials, and could exacerbate the problem in Pakistan if it is not sufficiently controlled. With the assistance of the U.N. High Commission for Refugees, a full range of malaria control activities is being carried out by the Baluchistan and NWFP malaria organizations. Although funds are available and supplementary staff, such as former Afghan malaria control personnel, have been employed, the refugee program represents a significant drain on the Malaria Control

Program's (MCP) resources. Project funds will not be used to support the refugee portion of the MCP directly, but overall gains in program planning and implementation and research resulting from the project will improve malaria control operations in the refugee areas as well.

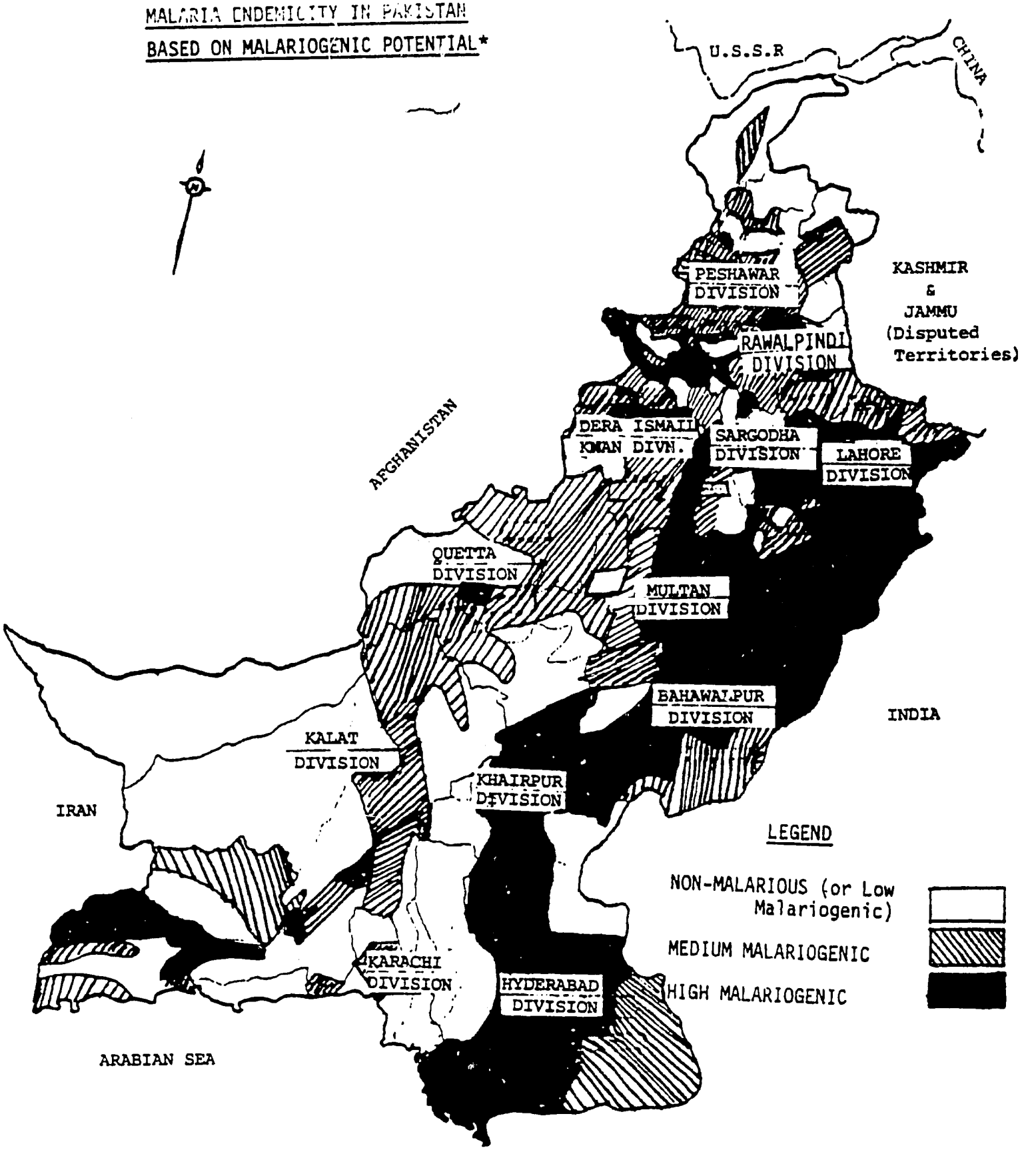
2. Malaria Endemicity

Prior to the organization of a comprehensive national eradication program in 1961, malaria was estimated to infect 7 million people and to cause 100,000 deaths annually. Even this enormous drain on human resources was greatly increased during epidemic years. Early investigations conducted during the 1920's and 1930's had extensively mapped the endemicity of the disease. Areas free of malaria were mainly limited to the northern mountains, deserts, and isolated coastal bands. Tracts of variable or seasonal endemicity were mapped in the urban areas and specific areas in each province. Areas where malaria was deeply entrenched with moderate to high endemicity were widespread, especially in the Indus River Basin. Large portions of these areas were subject to epidemics, often appearing at cyclical intervals of several years. The map on the following page shows malaria endemicity in Pakistan based on malariogenic potential.

The earlier malariometric surveys, made in representative localities, provide a valuable historical record of malaria prevalence in terms of the percentage of malaria infections and enlarged spleens in the examined population. Beginning with the eradication effort in 1961, systematic case detection in operational areas (approximately 80% of Pakistan) was instituted. This unprecedented coverage provided and continues to provide an annual record of malaria incidence in each community, expressed as the annual parasite incidence (API). The national malaria program was dramatically successful through most of the 1960's in keeping down the API. However, the methods employed made little or no impact on the underlying ecological conditions which were favorable to the disease. The areas in large part thus remained receptive to malaria introduction and re-establishment of transmission. Many areas were vulnerable to malaria importation by infected people or by mosquitoes from persistent malaria foci.

The level of maintenance activities in numerous areas freed of malaria was not sufficient to prevent a resurgence, and the disease returned to widespread incidence at high levels of endemicity and epidemicity in both the rural and urban areas. By 1973, large-scale epidemics occurred in many parts of the country. Another massive effort was made by the GOP with the assistance of WHO, the Government

MALARIA ENDEMICITY IN PAKISTAN
BASED ON MALARIOGENIC POTENTIAL*



* Malariogenic Potential is the degree to which an area is conducive to malaria based on cumulative epidemiological data collected from each area regarding the parasite load, vector density, water-logging, climatic conditions, population movement, and other factors.

of Japan, UNICEF, and A.I.D. in the 1975-1980 period to combat this disease. As shown in Table 1, this campaign resulted again in containing malaria at manageable limits, with only approximately 17,700 malaria cases reported in 1980. The program goal of obtaining a case load of 500 cases of malaria per million population was achieved on a national basis during this time period. The GOP recognizes that malaria control is a long-term health activity requiring staff, material, and financial support over many years if the gains made are to be maintained. It is important that past actions which allowed the resurgence of the disease not be repeated.

TABLE 1

SLIDE POSITIVITY RATES (SPR)

PAKISTAN MALARIA CONTROL PROGRAM

Year	No. Slides	No. Positive Slides	SPR(%)[a/]
1973	4,252,184	599,177	14.09
1974	3,094,098	303,936	9.82
1975	3,205,689	238,315	7.43
1976	2,857,854	122,219	4.28
1977	2,667.315	47,571	1.78
1978	2,588,257	16,160	0.62
1979	2,682,351	12,304	0.46
1980	3,006,264	17,707	0.59
1981 [b/]	2,523,426	13,629	0.54

a/ SPR = Number of positive slides divided by total number of slides.

b/ January - September

3. Urban Malaria

Urban malaria problems have assumed increasing importance since the 1960's. At the beginning of the anti-malaria effort, malaria was predominantly associated with rural areas. In the late 1960's, control of malaria in the

larger cities was considered a local responsibility. However, planned anti-larval measures and other anti-malaria activities were not effective because of insufficient funds and trained manpower. The urban centers, particularly Karachi, were unable to prevent the introduction and rising transmission of malaria and became an unexpected major source of infection for the transfer of the disease back into the rural areas. These growing urban problems required the inclusion of the urban areas in the national malaria program, with an intensification of federal and local cooperative approaches to malaria control which emphasized a variety of specialized urban anti-mosquito measures. However, urban malaria control efforts need to be expanded and placed on a more sound scientific basis.

4. Malaria Parasites and Vectors

Malaria infections in Pakistan occur in the three classic forms caused by *Plasmodium vivax*, *P. falciparum*, and *P. malariae*. The first of the plasmodial species is generally predominant, the last being much less common, but all three species may occur anywhere individually or in occasional mixed infections. *P. falciparum* is by far of greatest concern since it has the most severe clinical manifestations and has a greater fatality rate. This species so far has not shown resistance to chloroquine, as is the case in other parts of Asia. Drug resistance is of paramount importance and will require continuous monitoring during the next few years in Pakistan. A continuous effort is being made to contain and reduce *P. falciparum* through research and intensified surveillance and control where this species of malaria is found.

Although there are over 40 species of anopheline mosquitoes recorded in Pakistan, relatively few are malaria vectors. The most important vector species in rural areas, *Anopheles culcifacies*, has shown widespread resistance to DDT and BHC. This species is susceptible to malathion and fenitrothion where these two organophosphate insecticides have been applied in Pakistan as alternatives to DDT and BHC. The common urban malaria vector, *A. stephensi*, has also shown resistance to DDT and BHC. The sensitivity tests conducted so far in both rural and urban areas, using the standard WHO kits, should be regarded as representative but not comprehensive in terms of assessing vector resistance to insecticides.

5. Institutional Setting

Anti-malaria activities are implemented by the provinces, while policy, guidance, and resources support is provided by the Directorate of Malaria Control (DOMC) under the Federal Ministry of Health and Social Welfare.

An organization chart of the DOMC is provided as Annex K. Currently, at the federal and provincial level, there are some 6,500 personnel involved in the malaria program. Staffing is considered generally adequate, although some vacancies at the provincial level exist in some specialties like entomology, and several key technical staff must be added to the DOMC headquarters and its training center in Lahore. Malaria staff have been reduced over the past 5 years as the GOP has turned away from vertical programs to an integrated primary health care approach. Integration of the malaria program into the overall health system, however, has been slow for several reasons. First, the DOMC has been concerned that, as malaria activities are assumed by other health personnel, the time and energy they devote to malaria may decline with a corresponding increase in malaria incidence. Second, malaria workers receive higher salaries than other health workers and their resistance to integration comes from fear of losing pay incentives. Administrative integration of health services and malaria control has occurred in all four provinces, but actual functional integration has been achieved only in the Punjab with mixed results to date.

There are three malaria training and research institutions in Pakistan: the National Malaria Training Center (NMTC) and the Pakistan Medical Research Center (PMRC), both located in Lahore, and the National Institute of Health (NIH) in Islamabad.

The NMTC has operated since the early 1960s and trains both malaria and general health personnel in a variety of malaria control activities such as surveillance, entomology, spray techniques, safe handling of insecticides, and training of clinical laboratory personnel in malaria identification. In addition, the NMTC plans to develop a research unit specifically to address basic and operational research which will be strengthened under the A.I.D. Project. A summary of the training and research activities of the NMTC for the period 1975-1980 is provided as Annex L.

The Pakistan Medical Research Center (PMRC), which is a research station of the University of Maryland, has focused on malaria for some 20 years, conducting field studies in human and vector populations, mosquito genetics, and studies in the basic biology and immunology of plasmodia. The Center has recently begun to study the epidemiologic dynamics of malaria in a suburban field site with a population of 15,000. Entomologic studies include seasonal mapping of breeding sites, night biting rates of mosquitoes on humans and buffaloes, and sub-species identification.

The National Institute of Health (NIH) has a $127,000 project in three communicable disease areas of which about 80 percent is being used to support malaria projects.

6. Program Achievements and Setbacks

The Malaria Eradication Program (MEP) was organized in Pakistan in 1961 in conformance with the internationally accepted principles and guidelines for planning country malaria eradication campaigns. The MEP in Pakistan provided for:

a. The expansion of house-spraying to cover all malarious areas in Pakistan followed by the extension of case detection and treatment (surveillance) within these areas.

b. Reaching every community and household repeatedly with anti-malaria activities. The MEP became by far the largest public health effort in the country in the 1960's.

The MEP divided the malarious areas into operational zones of approximately 1,000,000 population each, constituted within natural and epidemiological boundaries in each province. Each zone was scheduled to progress through the standard four phases of operations in a malaria eradication campaign: preparatory (initial planning, reconnaissance); attack (interruption of malaria transmission by total-coverage house-spraying); consolidation (elimination of the malaria reservoir principally through total-coverage surveillance); and, maintenance (of the achieved malaria eradication through the activities of the permanent provincial health services). The preparatory phase was accelerated by the previous history of malaria investigations and large-scale control operations. By 1966, the MEP advanced entirely into the attack phase and, by 1968, had phased most of its program into consolidation activities. The MEP's surveillance mechanism in 1967, operating on a national scale, detected about 9,500 malaria cases as compared to the estimated 7 million annual cases prior to the MEP. From the early to the late 1960's, malaria mortality had been similarly reduced from an estimated 100,000 deaths per year to nil.

With such unparalleled achievements in malaria reduction and program advances, the Government of Pakistan had reason to feel confident about eradicating malaria as planned in a time-limited campaign. The operational phasing continued to advance additional areas of the country into consolidation and maintenance. However, in 1973 and 1974, some areas began to experience serious malaria outbreaks which could not be eliminated by local remedial measures. Malaria incidence increased year by year, and large areas were reverted to total-coverage spraying. It was necessary to revise the plan of operation and to begin a new major malaria control program with malaria eradication deferred as a long-term objective.

7. Factors in Program Setbacks (1970-1975)

The reasons for the reversals in the malaria eradication effort in Pakistan can be grouped into administrative, operational, and technical factors.

a. Administrative Factors

The major administrative factors involved in the setback have been generally identified as follows:

i. Shortage of manpower: staff turnover, restrictions on recruitment, lack of realistic staffing for surveillance and laboratory services, and insufficient entomological staff;

ii. Inadequate supply of insecticides: non-availability, inadequate funding, increases in costs, delays in procurement and delivery, lack of buffer stock, increases in numbers of houses, and inadequate provision for focal spraying;

iii. Insufficient financial support: gap between technical requirements and financial allocation, wage increases, and delays in procedures for release and use of funds; and,

iv. Unsatisfactory work quality: complacency among malaria workers at all levels, inadequate supervision, and non-involvement and inadequacy of local health services.

b. Operational Factors

The major operational factors were the following:

i. Inadequate transport: old and unserviceable vehicles resulting in limited staff mobility; and,

ii. Problems in public cooperation: locked houses, refusal of spraying on social grounds, belief that malaria had been eradicated, mud-plastering of walls after spraying, nomadic populations, migration of labor force, and outdoor sleeping habits.

c. Technical Factors

The major technical factor involved in the setback was the development of insecticide resistance to DDT and BHC, which affected the major vector species.

C. Lessons Learned

The status of the malaria control program throughout Pakistan has been constantly under detailed study and

evaluation by the federal DOMC, the four provincial health ministries, and independent appraisal teams since the inception of the program. Each year, a team, including a DOMC representative, other GOP ministry personnel, representatives of WHO, A.I.D., and other donor agencies, has conducted an appraisal in the field and at headquarters through observations of actual operations as well as a review of field data. Recommendations have been made on such activities as phasing of operations, improvement of technical and management activities, solution of problems, and research and training. The last such review was held in January 1981. Internal review teams consisting of staff from one province reviewing another province have followed similar formats and have contributed greatly to MCP improvement.

Many significant lessons have been learned from these reviews and evaluations over the last 20 years. Foremost among them are the following:

1. The realization that eradication could not be achieved under existing financial and management constraints;

2. The need for a long-term control program;

3. The need to integrate urban malaria control into the national anti-malaria program as a result of the explosive Karachi epidemic of 1967;

4. The need for graded, selective, and alternative malaria control methodologies in order to conserve insecticides and reduce cost; and,

5. The problems involved with integrating the malaria control program into the general health services system, including retraining of both staffs, administration, supervision, and additional surveillance workload for basic health workers.

The previous Malaria Control Project supported by A.I.D. between 1976-1980 provided a $23.9 million loan primarily for commodities consisting of malathion, BHC, spray equipment, and spare parts. In addition to a USDH malaria advisor on the USAID/Pakistan staff and periodic visits by A.I.D.'s Regional Malaria Advisor, short-term assistance was provided to investigate a malathion intoxication episode and to develop safe handling procedures for malathion. Ninety-six percent of the loan went toward insecticides. Mondale rupees were also provided to cover local costs associated with malaria control operations and malaria research at the Pakistan Medical Research Center (PMRC).

The terminal evaluation of the previous A.I.D. project proposed a number of recommendations, which are provided in Annex O, most of which are already being pursued by the MCP and will receive additional support under this project. The principal conclusions and recommendations of that evaluation are summarized below:

1. Conclusions

a. The DOMC and provincial organizations have achieved considerable progress in reducing malaria incidence over the last five years and in moving from malaria eradication to malaria control and from a vertical program to one which is beginning to be functionally integrated with basic health services.

b. Without appropriate support, the epidemiological situation can rapidly deteriorate with extremely serious consequences.

2. Recommendations

a. That the GOP continue the surveillance and insecticidal spraying activities that have reduced malaria incidence from epidemic to manageable proportions.

b. That the GOP fund the proposed New Extension Plan (PC-1 Form) of the MCP for 1980-1983, the main objectives of which are to maintain or reduce the incidence of malaria and to complete the integration of the MCP with the basic health services.

c. That DDT and BHC not be used for general operational purposes because of the high resistance levels shown by the vector species to these insecticides.

d. That malathion and fenitrothion be applied in two spray cycles in those areas where two peak transmission seasons occur with a 2-4 month interval between peaks.

D. Other Donor Assistance

Other donors who have assisted the Pakistan MCP are the WHO, the Japanese Government, UNICEF, and UNHCR. These donor contributions have been primarily for commodities, training, and technical assistance while the GOP provides all the local cost support required for the program.

1. World Health Organization

WHO has programed $200,000 per year in 1982 and 1983 for malaria from its regular budget. This level of assistance is expected to be maintained over the life of the A.I.D. project. As was the case under the previous

A.I.D.-assisted Malaria Control Project, WHO draws on this budget during the course of the year to provide, on an as needed basis, long-term technical advisors, fellowships, short-term consultants, and support for in-country seminars and workshops. WHO also supplies kits for testing susceptibility of vectors. In addition, a malariologist stationed at the WHO Regional Office in Alexandria, Egypt normally participates in the annual MCP evaluations. WHO departed from its usual pattern of assistance and also provided 200 metric tons of malathion for the 1982 spraying season because of the significant shortfall in foreign exchange available from other donor pledges and the GOP itself to procure insecticides for the program.

The timeliness and effectiveness of WHO technical assistance has been less than optimum. Although a malariologist was provided at the start of the last A.I.D. project, the sanitary engineer arrived more than a year later. WHO also has three local-hire staff working at the provincial level who, although effective at field monitoring, are unable to influence policy or programing decisions. Since 1980, the federal DOMC has had no WHO advisory staff. Recruitment for a full-time malariologist and sanitary engineer or senior sanitarian has been in progress for over 18 months. Recently, a sanitary engineer for urban malaria control was recruited for a six-month assignment. The search for a full-time malariologist continues. WHO is seeking a malariologist-entomologist whose focus will be on disease transmission in contrast to the malariologist-epidemiologist to be provided under the A.I.D. project who will concentrate on program management, epidemiology, training, operational and basic research, and field reporting.

2. United Nations Children's Emergency Fund (UNICEF)

In the past, UNICEF has provided grants for equipment and for emergency supplies of anti-malaria drugs. UNICEF provided $73,000 for drugs in 1980-1981. However, UNICEF does not plan to assist malaria control activities during the life of the A.I.D. project.

3. Government of Japan

The Japanese Government provides block-grants to the GOP. In the 1979-1982 period, approximately $7.7 million was provided for malaria control activities, primarily for insecticides, and some sprayers, vehicles, and other equipment were also made available to the DOMC for provincial distribution. Approximately $2.0 million of this amount was used to purchase 433 metric tons of fenitrothion for the 1982 spraying season. The type and amount of continued support for the MCP from the Government of Japan after 1982 is unknown at this time.

4. United Nations High Commission for Refugees (UNHCR)

The UNHCR has provided funds for malaria control activities in the Afghan refugee camps located in the NWFP and Baluchistan. From July 1, 1981 to December 31, 1981, a total of Rs 5.0 million was provided for surveillance personnel, bicycles, and other supplies. UNHCR's annual plan for 1982 includes about Rs 25.5 million for malaria control.

5. Summary

The proposed A.I.D. project both complements and supplements those malaria activities being financed by other donors. The project will provide inputs which are not being met by the other donors. It does not interfere with nor duplicate other donor efforts, nor does it depend upon the successful implementation of other donor programs. A.I.D. will provide all the external funds required for the GOP's MCP for the next five and one-half years with the exception of the following: (a) a limited amount of technical assistance and fellowships to be provided by WHO; (b) the bulk of the insecticides required for the 1982 spraying season which will be provided by the Government of Japan, WHO, and the GOP itself; and, (c) fuel efficient transport for the rural areas which the GOP will seek from other donors.

E. Relationship to A.I.D. Strategy and Other A.I.D. Projects

The Malaria Control II Project is consistent with A.I.D.'s strategy in Pakistan and will have a significant positive effect on other A.I.D. projects. A.I.D.'s long-term objectives in Pakistan are to increase rural productivity, reduce unemployment and urban-rural income disparities, and improve living standards in rural areas by reducing fertility, increasing agricultural production and income, improving health, and increasing the availability of energy. Over 75 percent of Pakistan's rural and urban areas are at risk of malaria. Epidemiologic investigations have identified moderate to highly endemic malarious areas in the fertile Indus River Basin. Of the ten new project starts and two significant project amendments in FY 1982, five are in agriculture as are two of the four new starts in FY 1983. Agriculture is the single most important sector of Pakistan's economy. About three-quarters of the population is engaged in some type of agricultural pursuit. Success in this sector depends on the use of quality seeds, appropriate use of fertilizers, adequate water, and, most importantly, the existence of a healthy and productive work force. Continued high endemic levels or cyclic epidemics of malaria are counter-productive.

Unfortunately, peaks of malaria transmission occur in Pakistan during the peak planting and harvesting periods. This project will contribute to increased productivity by minimizing one of the major public health constraints to agricultural production and socio-economic development.

The Malaria Control II Project is also closely related to the Primary Health Care Project. This latter project will involve the training of mid-level and community health workers (CHWs) to provide both curative and preventive services down to the village level. The first skills to be mastered by CHWs will deal with diseases of high prevalence and significant morbidity and mortality such as diarrheal diseases and malaria and with practices that will encourage child-spacing. Ultimately, the CHW, through health education, will promote those public health practices that will result in malaria vector source reduction, and render treatment to those with clinical signs of malaria. Thus, malaria control activities will be strengthened and extended as a result of activities planned under the Primary Health Care Project.

While eventually malaria control activities should be integrated with the overall primary health care system, there is a need at this time to continue a vertical program approach to prevent the resurgence of malaria. A.I.D. foresees over the life of the project a carefully and appropriately planned phased integration that, with proper timing, will prevent a resurgence of malaria while continuing to institutionalize malaria surveillance and control as a regular feature of the Primary Health Care Program.

F. Project Rationale

Under the previous A.I.D. Malaria Control Project, the GOP was successful in controlling malaria. Given the nature of the disease, however, with its capacity for resurgence, the ability of vectors to develop resistance, the likelihood of re-infection from neighboring countries and from significant population mobility within the country including the presence of Afghan refugees, control of malaria is a long-term proposition which requires continuous monitoring, surveillance, and, until more efficient and effective methods are identified, spraying with residual insecticides. The tremendous problems and significant costs associated with not effectively controlling malaria alone provide sufficient justification for the project. In addition, this project is important to A.I.D.'s entire development effort in Pakistan since success in all the sectors in which A.I.D. will provide assistance, depends, among other things, on a healthy, productive labor force.

The GOP's commitment to malaria is evidenced by the fact that approximately 12 percent of the federal health development budget is allocated for malaria control activities. The provinces together also contribute the equivalent of approximately $5 million annually out of their own budgets for malaria control activities. Since resistance developed to the insecticide of first choice, DDT, which is manufactured locally, the GOP has been forced to procure more expensive insecticides which are only available outside the country. This imposes an enormous burden on the foreign exchange situation in the country.

The proposed project is designed to reduce the recurrent and foreign exchange costs of the program by supporting: (1) the progressive reduction of malaria transmission by vector control and radical drug treatment for humans, thereby reducing the geographic area that must be actively controlled with insecticides; and, (2) applied research to identify effective and less costly biological and other methods for the control of malaria as alternatives to residual insecticidal spraying. By the end of the project, it is reasonable to expect that the above efforts will somewhat reduce the foreign exchange costs of the program, but they will not totally eliminate the continued need for a sizeable foreign exchange outlay for the program.

This project is entirely consistent with the agreed upon strategy and objectives of the renewed economic assistance program to Pakistan. The balance of payments objective is given primary emphasis in FY 1982, and in later years, the balance of payments focus is retained while longer-term development objectives are given more attention in the project. Hopefully, in five years, the economic and balance of payments situation in Pakistan will improve as a result of the GOP's efforts and of the entire A.I.D. assistance program and that of other donors, and the GOP will be in a better position to meet the recurrent costs of its malaria control program.

III. DETAILED PROJECT DESCRIPTION

A. Project Goal and Purpose

The goal to which this project contributes is to reduce morbidity and mortality from endemic diseases, especially malaria, through the establishment of a responsive, efficient, and effective nationwide health delivery system. The purpose of the project is to assist the Government of Pakistan to contain or further reduce the incidence of malaria. Measures of purpose achievement by the end of the project include the following:

1. An annual parasite incidence at or below 0.5 cases per thousand population or 500 cases per million population in each province including urban areas.

2. *P. falciparum* represents less than 2% of all cases of malaria.

3. The number of blood smear slides collected through passive case detection by general health staff exceeds 25% of the total number of slides collected in the program by all health workers including malaria workers.

4. House spraying coverage does not exceed 25% of all houses in the country and at least 95% of the planned number of houses to be sprayed each season is achieved.

Important assumptions for achieving the project goal and purpose are that the GOP will continue to accord high priority to malaria control activities by providing adequate budgetary support to the program, and that chloroquine resistance and resistance to malathion and other organophosphorous compounds do not develop during the life of the project.

B. Project Outputs/Inputs

1. Outputs

The project purpose will be achieved by: (a) expanding the capacity and increasing the capability of the federal, provincial, and municipal health services to effectively control malaria; and, (b) assisting the MCP move from a vertically organized program emphasizing total coverage house-spraying and active case detection surveillance methods to an integrated program utilizing a selective mix of vector control methods and a better balance between active and passive case detection and

treatment methods. The project is expected to produce the following outputs which together should achieve the project purpose:

a. Annual house-spraying programs are targeted specifically to moderate or highly endemic areas based on refined epidemiological analysis.

b. Senior and mid-level health personnel trained in malaria control undertake surveillance as a regular part of their duties, including taking blood smears, administering appropriate drug treatment, and conducting periodic epidemiological analysis.

c. Criteria for selection of appropriate organophosphorous insecticides (malathion or fenitrothion) exist and are applied in the program.

d. Appropriate and effective biological control methods have been identified from field trials and are implemented.

e. A new facility for the NMTC which is fully equipped and adequately staffed is established.

f. NMTC's research and training programs meet the priority needs of the GOP's Malaria Control Program.

g. Urban malaria control programs are operating at an expanded level and have reliable and accurate epidemiological reporting systems for programing and policy decision-making.

h. Health education activities have expanded and achieved positive results in obtaining social acceptance of house spraying and surveillance activities.

i. An extended plan of operation for malaria control covering a period of at least three years following the completion of the A.I.D. project (September 30, 1987) is prepared and adopted by the GOP.

j. Participation of females, as both recipients and providers of malaria control services, has increased in surveillance activities.

Specific output indicators for the project by year are presented below:

	1983	1984	1985	1986	1987
a. Spray Operations					
Spray operations should cover at least 80% of the planned number of houses to be sprayed each year and should reach 95% by 1987.	80%	83%	85%	90%	95%
b. Surveillance					
i. Passive Case Detection (PCD)					
PCD blood slide collection should reach 25% of the total number of slides collected.	8%	10%	15%	20%	25%
ii. Active Case Detection (ACD)					
(a) ACD blood slide collection should not exceed 10% of the number of cases in the population under protection.	10%	10%	10%	10%	10%
(b) The average time lag from ACD slide collection to treatment of a positive case should be 14 days or less.	28 days	25 days	20 days	18 days	14 days
iii. Laboratory Services					
The error rate in laboratory examination should not exceed 1%.	10%	7%	5%	3%	1%

	1983	1984	1985	1986	1987
c. Transport					
The percentage of the total vehicular fleet (excluding condemned, non-repairable vehicles) which is off-the-road at any point in time should not exceed 10%.	10%	10%	10%	10%	10%
d. Staff vacancies in the total authorized regular budget staff should not exceed 5%.	5%	5%	5%	5%	5%
e. Planning					
i. Annual plan of action prepared.	1	1	1	1	1
ii. Annual plan for insecticide safety outlining training and safety measures to be taken is prepared.	1	1	1	1	1
f. Evaluation					
Annual program-wide evaluation is conducted with GOP/ A.I.D./WHO participation.	1	1	1	1	1

2. Inputs

A.I.D. will provide the following inputs under ıe project:

a. short-term and long-term technical assistance;

b. support for in-service training programs;

c. short-term fellowships outside of Pakistan;

d. local cost financing for operational and ısic research;

e. support for the purchase, renovation, and equipping of a new facility for the National Malaria Training Center; and,

f. commodity support including insecticides, urban malaria control vehicles, ULV machines, teaching equipment and aids, and research equipment and supplies.

C. Project Components

The Malaria Control II Project consists of four components: (1) Program Management; (2) Training; (3) Basic and Operational Research; and (4) Commodity Support.

1. Program Management

In order to effectively control malaria, the GOP Malaria Control Program will require intensive surveillance and possible modifications in program strategy and activities over the life of the project to respond to a changing vector-human-insecticide environment. This project will provide a long-term malariologist-epidemiologist for five years or 60 person-months to assist the Directorate of Malaria Control (DOMC) to carry out a successful maintenance and control program.

Technical assistance will be aimed primarily at epidemiological skill development, particularly at the provincial level, upgrading national and provincial training capabilities, ensuring that proper insecticide protection measures are followed, providing guidance in the conduct of applied field research, and improving the overall management of the program. The resident advisor will also coordinate the visits of the short-term expert consultants programed under this project to assist the DOMC in specific areas. In addition, two short-term consultants will be provided each year for one month each to participate as members of the External Review Team with representatives of the GOP, A.I.D., and WHO to conduct an annual evaluation of the program. During each year of the project, one person-month of assistance will also be provided by an AID/Washington direct-hire malaria specialist who will participate in program evaluations, monitor field operations on a selective basis, and review the GOP's plans of operation.

2. Training

a. In-Service Training

While the GOP MCP has been able to cover the costs of training for federal and provincial malaria personnel, funds are often not available for personnel from Municipal Corporations or other local bodies responsible for urban malaria control programs. This project will therefore support ten four-week in-service training courses, two per year for the life of the project, for up to fifteen urban malaria control personnel in each course. These courses will cover such topics as epidemiological and entomological monitoring and malaria case detection, training of municipal squad leaders in geographical reconnaissance, larviciding, ULV adulticiding, ULV equipment maintenance, and insecticide safety measures.

b. Participant Training

Short-term fellowships for eighteen participants (two in FY 1982 and four per year in FY 1983-FY 1986) will be available under the project for training courses up to four weeks in duration at selected regional training centers such as the Regional Malaria Training Center in Kuala Lumpur or the Caribbean Epidemiology Center (CAREC) in Trinidad in the following areas: (i) management/administration; (ii) epidemiology; (iii) entomology; (iv) health education; and, (v) teaching methodology.

c. National Malaria Training Center (NMTC)

This project will expand the capacity and increase the capability of the NMTC to meet the training and field research needs of the national MCP. The NMTC is now located in a rented building in Lahore with four rooms which are totally inadequate to meet the present and future needs of the MCP. Funds will be provided under the project to purchase, renovate, and equip a new building to house the NMTC. The new facility will be approximately 25,000 square feet and will include four dormitory rooms, office space, laboratories, and classrooms. The GOP will expand the staff of the Center by providing the following six additional teaching and research staff positions and recruiting qualified personnel to fill these positions: (i) one senior scientific officer; (ii) one senior malaria superintendent to supervise field research; (iii) one senior entomologist; (iv) two assistants to the entomologist; and, (v) a health educator. The GOP will be responsible for all operating and maintenance costs of the new facility.

In addition to furniture, teaching equipment, and laboratory equipment and supplies, the project will also provide six person-months of short-term technical assistance to the NMTC in the following areas:

i. curriculum revision and teaching methodology;

ii. analysis of the manpower and training needs of the MCP;

iii. design of the new training facility and development of a list of the training materials and equipment required for the Center; and,

iv. training in epidemiological analysis methodology.

3. Basic and Operational Research

The design and overall coordination of all research conducted under this project will be the responsibility of the DOMC. The NMTC, in collaboration with PMRC specifically on resistance studies, will conduct the operational research studies, while the basic research studies will be undertaken by the Director of Malaria in the Sind.

a. Operational Research

Data currently available on the use and effectiveness of malathion and fenitrothion in Pakistan are not of sufficiently reliable quality to determine which or what mix of insecticides should be used under particular circumstances. This project will therefore support comparative studies of the use-effectiveness of malathion and fenitrothion under field conditions. Additional studies including the following: improved epidemiological techniques for case detection; entomological studies on vector resistance to insecticides and larvicides; monitoring malaria parasite resistance to drug treatment (chloroquine resistance), especially *P. falciparum*; and innovative approaches for obtaining public cooperation in the program. A.I.D. will support these studies by providing seven person-months of technical assistance during the life of the project and funds to cover local costs such as equipment, supplies, and local staff support. This operational research component will not only stimulate the GOP to adopt a more dynamic approach to malaria control based on accurate and up-to-date assessments of the problem, but will also be directed at developing a cadre of technicians who could support the GOP in the adoption of a more responsive, flexible malaria control strategy based on selective spraying.

b. Biological Control Research

Among the proposed alternatives to generalized and repeated use of insecticides and larvicides is control by biological means. Biological control of vector species of malaria has been carried out in Pakistan since the 1930's with larvivorous fish. In most malaria programs throughout the world, biological control of malaria with viruses, nematodes, bacteria, fungi, and protozoa has been considered but not widely used. The Pakistan MCP does not plan to develop these latter biological control methodologies in the 1982-1986 period but will expand the informal 1981 experiments with larvivorous fish conducted by the Sind Provincial Malaria Director.

The MCP has developed a protocol for the assessment of larvivorous fish and plans to institute this protocol during the 1982-1984 period. The DOMC will collaborate with the Fisheries Department on such a study to determine which local fish to use in the proposed village-scale trials. The focus of the proposed research will be to identify the usefulness of several varieties of local fish as predators of mosquito larvae. Some of the fish under consideration are *Ambasis name* (Sisa), *Ambasis ranga* (Shisha), *Aplochellus panchax* (Lal Cheenger), *Colisa lalias* (Chotti Kangi), *Lebistes neticulatus* (Guppy), and *Tilapia mozzambica* (Tilapia) Three of these species will be studied initially. All fish used in the trials will be native species, and no imported fish will be studied. A.I.D. will provide three person-months of technical assistance to assist in the design, implementation, and evaluation of these initial village-scale trials and funds to cover some of the local costs of these studies.

c. Other Research Studies

There are no plans under the MCP to institute studies of the genetic control of mosquito vectors during the project period. However, PMRC, with assistance from the DOMC/MCP, has been undertaking studies in this area with support from A.I.D. in the form of Mondale rupees, and it is expected that these studies will continue during the life of this project.

4. Commodity Support

a. Insecticides

The anti-malaria program in Pakistan, as in many other countries, is totally dependent on residual insecticide house-spraying to interrupt malaria transmission.

In some rural areas in particular, no other suitable mechanism currently exists which can provide comprehensive protective coverage of the population. Widespread vector resistance has developed in Pakistan to DDT and BHC, the internationally recognized insecticides of first and second choice. The use of malathion and/or fenitrothion or other organophosphorous (OP) compounds is therefore indicated in Pakistan.

The amount of malathion and other OP insecticides required is determined by the DOMC/GOP on the basis of an analysis of extensive field data collected by means of geographical reconnaissance of operational areas. This information includes the area of sprayable interior surfaces as well as the number of houses and occupants. Under the selective spraying approach which the MCP follows, only villages with an API of 0.5 or more cases per thousand population are targeted for spraying. Once the villages are identified and the most effective insecticide to be used in each operational spraying area is chosen, the amounts of insecticide required are computed in accordance with standard dosages and the extent of sprayable surfaces.

The DOMC estimates that in any given year, depending on ecological conditions and vector resistance, between 2,500 and 3,000 metric tons of insecticide will be needed for selective spraying of those areas with an API of 0.5 or more cases per thousand population. These estimates are based on the standard dosages used for malathion. For fenitrothion, the amounts required would be less since fenitrothion presumably has a longer residual effect than malathion although this needs to be confirmed in field studies. At the time the GOP was planning its insecticide needs for the 1982 spraying season, only the Japanese had pledged support for the procurement of 433 metric tons of fenitrothion, and WHO had agreed to provide 200 metric tons of malathion. The GOP had planned to come up with the balance of Rs 40 million worth of fenitrothion, which together represented the bare minimum insecticide needs for the program. It was at this time that A.I.D. assistance to Pakistan resumed, and the GOP requested that A.I.D. provide 450 metric tons of malathion to relieve the foreign exchange burden of the program on the GOP's own resources. Because the Mission was confident that there were many areas in Pakistan where malathion is effective and because of the basic balance of payments thrust of the FY 1982 economic assistance program, the Mission agreed to respond favorably to this request.

The GOP has requested A.I.D. to provide all the insecticides required for the MCP for the remainder of the project through FY 1986. As mentioned previously, because of the need for comparative field studies in Pakistan of the use-effectiveness of malathion versus fenitrothion, the possibility of development of vector resistance to one or both of the insecticides during the project, and the high population mobility in some areas, including movements of refugees, calculation of the amounts and types of insecticides required for the life of the project is difficult to undertake with precision at this time. However, for planning purposes, funds have been programed for the procurement of 2,500 metric tons of malathion in FY 1983 and 3,000 metric tons of malathion each year during the period FY 1984 - 1986. On the basis of the operational research component of this project, which will commence as soon as the Project Agreement is signed and continue throughout the life of the project, and annual program reviews, which will be held in February/March of each year, the Mission and GOP will refine their thinking with respect to the type and amounts of insecticide required and the methodology to be employed each year in implementing the GOP's Malaria Control Program over the next five and one-half years.

b. Other Commodities

A.I.D. will provide up to fifty urban malaria control vehicles and fifty ultra-low volume spraying machines for the GOP's urban malaria control program. In urban areas, as contrasted with rural areas, house-spraying is not a feasible and effective approach. Urban populations are reluctant to allow inside spraying and frequently houses are closed during working hours. This necessitates spraying insecticides into the environment via fogging or ultra-low volume (ULV) spraying machines which dispense tiny deposits that adhere to exterior surfaces.

At the present time, about forty municipal areas are conducting urban malaria control programs at different levels of effectiveness. Most do not have an adequate and timely system of epidemiological reporting and surveillance. It is anticipated that during the life of the project, additional municipalities will initiate urban malaria control programs. To encourage the municipalities to expand their operations and base their programing decisions on a sound scientific basis, the GOP and A.I.D. agreed that only those urban areas which provided epidemiological evidence, by passive case detection and/or by entomological data, that malaria was a public health problem in the area (API greater than 0.5 cases

per thousand population) would receive the vehicles and machines. The procurement of these commodities is therefore programed for FY 1984 and FY 1985, by which time the municipalities, with the assistance of the A.I.D.-financed long-term advisor, DOMC staff, and WHO advisors, should be able to meet the conditions precedent for release of the commodities.

IV. IMPLEMENTATION PLAN

A. Implementation Schedule

Project activities are programed to occur over a period of approximately five and one half years from the date of signing the Project Agreement. The Project Assistance Completion Date (PACD) is September 30, 1987. A proposed implementation schedule is presented in Table 2.

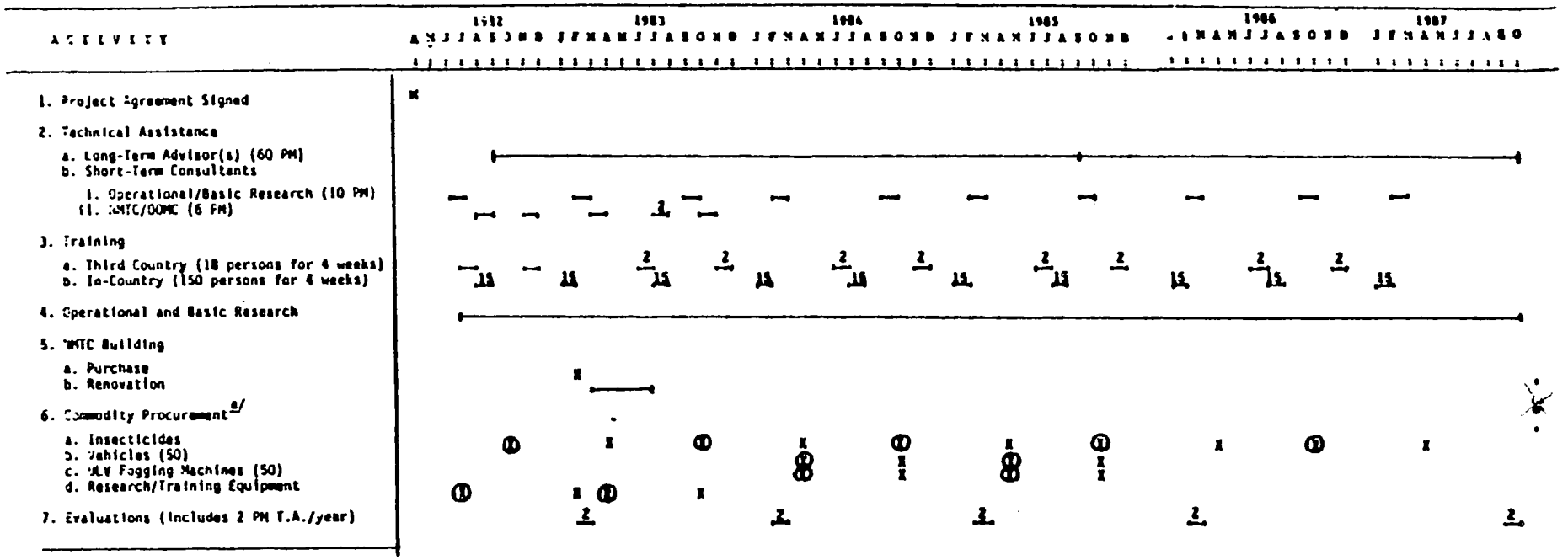
Immediately upon signing the Project Agreement, A.I.D. will procure 450 metric tons of malathion for use in the 1982 spraying season, which begins about July 1, 1982. The GOP/DOMC will submit to A.I.D. by May 31, 1982 a plan detailing the safety measures to be used in the application of the insecticides. The insecticides must arrive at the Karachi port no later than June 1, 1982 to allow sufficient time for off-loading and inland transportation of the insecticides to the provinces.

By October 1, 1982, bids will be solicited for the procurement of the 2,500 metric tons of insecticide required for the 1983 spraying season. A safety plan for insecticide application for the 1983 program will be submitted to A.I.D. by the GOP/DOMC by March 1, 1983. Insecticides should arrive at Karachi by April 1, 1983. This pattern of ordering commodities in October, submitting a safety plan in March, and having the goods arrive in April of the succeeding year will be followed throughout the life of the project for the procurement of insecticides.

Recruitment of the long-term advisor and of the short-term consultant for the operational and basic research component of the project will also begin immediately after signing the Project Agreement. This short-term consultant will be contracted under a PASA for one month beginning about May 1, 1982. The long-term advisor is expected to arrive in-country by September 30, 1982. In addition to the one person-month of technical assistance programed for operational and basic research in May 1982, another nine person-months or a total of ten person-months (two person-months per year) will be provided over the life of the project for this activity as shown in Table 2. Six person-months of technical assistance will be provided to the NMTC in FY 1982 and FY 1983, and an additional two person-months of assistance per year or a total of ten person-months will be programed to cover the two external evaluators who will be participating in the annual program reviews. Visits of 10 to 14 days in duration by an AID/Washington malaria specialist are scheduled for July and November of 1982

TABLE 3

PROPOSED IMPLEMENTATION SCHEDULE



a/ Orders Placed = Ⓘ Orders Received = X

to review program documentation for procurement of insecticides and technical assistance arrangements and to monitor field operations in problem districts in the Punjab. The AID/Washington malaria specialist will also assist the Mission in monitoring the 1982 spray operations. This latter task will be undertaken by the long-term advisor in subsequent years. One to two visits of up to 15 days each per year by an AID/Washington malaria specialist are planned throughout the project.

A building will be purchased and renovated for the NMTC in FY 1983. Training and research equipment for the Center will also be procured early in FY 1983. Other project commodities such as urban malaria control vehicles and ULV fogging machines will be procured in FY 1984 and FY 1985.

Two per year or a total of ten four-week in-service training courses for up to fifteen (15) urban malaria control personnel per course will be held during FY 1982 - FY 1986. In addition, eighteen participants, two in FY 1982 and four per year in FY 1983 - FY 1986, will attend training courses of up to four weeks in duration at selected regional training centers.

A Plan of Operation (PC-1) will be prepared by the DOMC for the 1984-1986 program period and will be approved by the GOP by July 1983. Annual plans of operation will also be prepared by the DOMC during the period 1984 - 1986 and will be approved by the GOP by April of each year for the subsequent GOP operational program year (July 1 - June 30). Annual program reviews will be held in February/March each year beginning in 1983 to evaluate program performance in the preceding year and will involve external evaluators financed under this project and representatives of the GOP, USAID/Pakistan, AID/Washington, and WHO. In 1987, A.I.D. will undertake an in-depth final project evaluation in August.

B. Administrative and Monitoring Arrangements

1. A.I.D. Responsibilities

The USAID/Pakistan Office of Health, Population and Nutrition (HPN) will assume overall responsibility for managing the project. This Office, which is currently staffed with two USDH and two Pakistani professionals, will be expanded by the addition of one USDH and two Pakistani professionals in FY 1982. HPN will work closely with the A.I.D.-financed long-term malariologist who will be located in the offices of the DOMC.

The Mission's Office of Energy and Engineering (E&E) will assist HPN to monitor the purchase and renovation of a building to house the NMTC. E&E will be responsible for approval of the site and the contracts for renovation which the GOP will enter into with local contractors. E&E will also monitor the actual renovation work on behalf of the Mission. As the office responsible for environmental concerns in the Mission, E&E will also assist HPN as needed in ensuring the safe handling of insecticides and in reviewing the GOP's annual plans on this matter each year. The Office of E&E currently consists of one USDH and six Pakistani professionals, four of whom are engineers. The Office of Project Development and Monitoring (PDM), which currently consists of three USDH and three Pakistani professionals, will assist HPN in all contracting and procurement actions under the project. These two offices, E&E and PDM, will also be expanded in FY 1982 by the addition of direct-hire or contract staff.

The Mission will also call upon the services of an AID/Washington malaria specialist to assist in reviewing program documentation, monitoring spraying operations, and participating in program reviews. In addition, the Mission will look to SER/COM, AID/Washington and the Regional Commodity Management Advisor (RCMA) at USAID/Thailand for assistance in the procurement of insecticides and other project commodities. The Regional Contracts Officer (RCO) will also be called upon to provide assistance in contracting the services of the long-term advisor under the project.

These staff resources are considered adequate to handle USAID/Pakistan's administrative and monitoring responsibilities under the project.

2. GOP Responsibilities

T Directorate of Malaria Control (DOMC), which is a division within the federal Ministry of Health and Social Welfare, wi . be the Government of Pakistan implementing agency for all components of this project. The DOMC will be responsible for: (a) furnishing to A.I.D. requests for procurement of commodities and technical assistance; (b) ensuring that counterparts are in place for all the technical assistance provided under the project; (c) ensuring that qualified participants are selected for training under the project; (d) arranging for all in-country training courses planned under the project; (e) ensuring that an adequate building is identified for purchase for the NMTC and that

contracts are executed for the renovation of the building in a timely manner; (f) arranging for and participating in scheduled program evaluations; (g) preparing a PC-1 for the 1984-1986 program, annual plans of operation for this period, and annual safety plans for application of insecticides throughout the life of the A.I.D. project.

The DOMC has requested six additional staff positions for the NMTC and three additional staff positions at its headquarters in Islamabad. With these additional personnel, the budgetary and staffing levels of the DOMC and the provvincial authorities responsible for planning and implementing the national MCP are considered adequate to handle the GOP's administrative and monitoring responsibilities under the project. The specific functions, responsibilities and capabilities of both the federal and provincial authorities involved in the MCP are described in the Administrative Analysis section of this paper.

C. Procurement Plan

1. Technical Assistance

This project will finance a total of 86 person-months of technical assistance consisting of a long-term advisor to the DOMC for five years or 60 person-months and 26 person-months of short-term technical assistance. The short-term technical assistance will be allocated as follows: 10 person-months for operational and basic research; 6 person-months for the NMTC; and 10 person-months of technical assistance for the annual program reviews.

All technical assistance will be contracted by the Mission in accordance with A.I.D. procedures for direct contracting. Since the DOMC has limited staff and limited contracting experience and capability, the Mission has determined that it is in the best interests of the project for A.I.D. to undertake all the contracting for technical assistance. The long-term advisor will be contracted under a PSC, initially for a period of three years. At the end of three years, the advisor may be extended an additional two years or another advisor may be contracted for two years under a PSC. All the short-term technical assistance will be contracted under PSCs or PASAs, the latter with, e.g., the Center for Disease Control or other U.S. government agencies. Funds will also be provided under the project for renovation of the building purchased for the NMTC. The DOMC will contract, in accordance with A.I.D. policies and procedures for host country contracting, with local individuals to renovate this building.

In addition to the project-financed technical assistance, an AID/Washington malaria specialist will provide up to one person-month of assistance per year throughout the life of the project. As mentioned previously, WHO will also be providing a limited amount of technical assistance to the MCP in areas other than research, training, and epidemiology during the life of the A.I.D. project.

2. Commodities

Aside from insecticides which constitute the largest category of commodities to be procured under the project, there are a limited number of other commodities required under the project. These include: urban malaria control vehicles; ULV fogging machines; training and research equipment for the NMTC; and local supplies and equipment for the operational and basic research activities. All commodities procured under this project will have their source and origin in the United States or Pakistan.

To ensure that insecticides are procured in a timely and efficient manner throughout the project, the Mission will handle all insecticide procurement with assistance from SER/COM, AID/Washington, in accordance with A.I.D. policies and procedures for the direct competitive procurement of insecticides for malaria control programs. The Mission will also procure directly the urban malaria control vehicles and ULV fogging machines. Several U.S. manufacturers produce both the fogging machines and vehicles which are designed to carry these machines. The Mission will issue an IFB for the vehicles and machines and select one or more suppliers on the basis of competitive procurement procedures to provide these items as units or separately. The GOP will procure all the local equipment and supplies for the basic and operational research activities and for the NMTC. The Mission will handle all off-shore procurement of the training and other equipment and supplies required for the newly renovated NMTC.

D. Training Plan

1. Participant Training

This project will provide funds for up to eighteen participants (2 in FY 1982 and 4 each in FY 1983 - FY 1986) to attend training courses of up to four weeks in duration at selected regional training centers such as the Regional Malaria Training Center in Kuala Lumpur and the Caribbean Epidemiology Center (CAREC) in Trinidad. The Center in Kuala Lumpur, which recently initiated training for host

country participants, is expected to offer enrollment to participants from other countries in the Asia Region by 1983. If this schedule is delayed, participants will be sent to CAREC. Training will be given in the following areas: (a) management/administration; (b) epidemiology; (c) entomology; (d) health education; and (e) teaching methodology. Participants will be selected from federal, provincial, and municipal organizations involved in the national MCP.

2. In-Service Training

A total of ten four-week in-service training courses or two per year for the five years of the project will be held for up to 15 urban malaria control personnel in each course. The courses will include such topics as entomological monitoring and malaria case detection, training of municipal squad leaders in geographic reconnaissance, larviciding, ULV adulticiding, ULV equipment maintenance, and insecticide safety measures.

3. The National Malaria Training Center (NMTC)

A major objective of this project is to expand the capacity and strengthen the capability of the GOP to meet the manpower and research needs of its MCP. Accordingly, funds will be provided to purchase, renovate, and equip a building to house the NMTC and to provide technical assistance in curriculum design, teaching methodology, and assessment of manpower and training needs. By the end of the project, it is envisioned that the NMTC will be able to meet the majority of the training needs for the MCP to carry on an effective malaria control program. An expanded and adequately staffed NMTC will be in a better position than is the case now to establish cooperative training programs with the College of Community Medicine, which is also located in Lahore, and with other local health institutions of higher learning. Field research and elective training in malaria at the NMTC will be offered to students in these schools who are enrolled in the Diploma in Public Health course, and hopefully MCP personnel will similarly have an opportunity to obtain degree training in public health at these institutions.

E. Evaluation Plan

An annual program evaluation will be carried out in February/March of each year of the A.I.D. project for one month by a joint GOP/A.I.D./WHO team supplemented by two project-financed external consultants. Representatives

of A.I.D. will include an AID/Washington malaria specialist, the A.I.D. project-financed long-term advisor, and one or two members of the Mission's Office of HPN. WHO representatives will include the WHO Regional Malaria Advisor from Egypt in addition to a local WHO representative in Islamabad. The review in 1987 will take the form of an in-depth final project evaluation scheduled to take place in August rather than February/March of that year. In addition to measuring progress achieved against the specific yearly output indicators for the project which were presented in the Outputs Section of the Project Paper, the annual evaluations will assess and provide recommendations on the following aspects of the MCP:

1. Staffing and administrative procedures at the federal, provincial, and municipal levels;

2. Laboratory services, including a review of the number of laboratories established, number of blood films collected and examined, number of qualified microscopists, number of films examined per microscopist, time lag between blood film collection and receipt and examination by the laboratory, and cross-checking operations;

3. Drug distribution centers and fever treatment operations, including a review of the number of blood films collected, fever cases treated, drugs administered, and positive cases given radical presumptive treatment;

4. Condition and maintenance of vehicles, spray equipment, and other program equipment;

5. Surveillance operations by month for active case detection, passive case detection, and epidemiological investigations;

6. Radical treatment of positive cases by month;

7. Utilization of insecticides and anti-malarial drugs, including estimates of annual requirements, beginning stocks, new receipts, actual use, and ending stocks;

8. Spray operations, including percent of coverage and efficiency, entomological studies and results, and resistance problems;

9. Larvicide and other vector source management methods in the urban areas;

10. Training of program personnel, including chief medical officers, district health officers, urban malaria control personnel, and spray personnel;

11. Health education and community participation programs; and,

12. Insecticide handling techniques and safety measures.

The evaluations will be conducted on the basis of field trips, interviews with personnel at the federal, provincial, and municipal levels of the MCP, and review of secondary source information in the form of administrative and technical reports available at the DOMC, provincial and municipal authorities, health facilities, and at WHO and USAID/Pakistan offices in Islamabad.

V. PROJECT ANALYSES

A. Technical Analysis

1. General

The Government of Pakistan is extending and strengthening its anti-malaria campaign under the National Malaria Control Program in the Fifth Five-Year Plan (1978-1983). A number of serious constraints must be overcome in order to attain the MCP objectives of maintaining or further reducing the current low level of malaria incidence.

a. Constraints

i. Resurgence of malaria has been halted and transmission has been contained, but the disease may again flare up as ecological factors are still conducive to the re-establishment of malaria as a major public health problem.

ii. Vulnerability to the introduction and spread of malaria is generally high in the endemic malarious areas.

iii. Urban malarious areas have been assuming more importance as malaria reservoirs and represent an increasingly higher proportion of the total malaria incidence.

iv. Vector resistance to the insecticides DDT and BHC has occurred in most of Pakistan. Tolerance to malathion is appearing in some locations and will require intensive study.

v. Falciparum malaria infections, which have more serious clinical manifestations than other forms of malaria, are being detected in a higher proportion of cases in some districts.

vi. Operational problems of inadequate transport and lack of cooperation by the public vary in importance among the provinces and require detailed study.

vii. Administrative problems include insufficient trained manpower in some skill categories, inadequate financial support for imported commodities, and poor personnel performance.

b. MCP Strengths

i. Achievements in malaria reduction by the MCP remain impressive in spite of recent setbacks in some areas.

ii. Knowledge of malarious areas has been accumulated through many years of investigation and anti-malaria work.

iii. Methods of demonstrated effectiveness can still be applied in most parts of the country.

iv. Experienced staff members are present at all levels of administration and operate as nuclei for further development.

v. Planning to meet training needs is being given major attention, including upgrading of the NMTC in Lahore.

vi. Commitment to reducing spray coverage, based on expanded epidemiologic analysis and alternative interventions has been demonstrated and will be supported by this project.

vii. Research has helped identify areas requiring further investigation and will continue as a high priority of the MCP.

viii. Government commitment to the malaria program exists at high levels, as evidenced by adequate program budgetary support.

ix. WHO, A.I.D. and other donor assistance are available for training, research, evaluation, and commodities.

2. Project Components

a. Extended Plan of Operation

The MCP is currently carrying out a new three-year extended plan of operation covering the period 1980/81-1982/83. This plan is a follow-on to the extended plan of operation (1976-1980) which was assisted by the previous A.I.D. project. The current program is continuing substantially with the basic methods employed during the 1976-1980 period, but new ideas and approaches derived from the previous program are being incorporated into the new program.

The basic attack on the malaria vectors continues with residual insecticidal house-spraying, case detection (surveillance), and the treatment of infections with anti-malaria drugs. Resistance to the organophosphorous insecticides, malathion and fenitrothion, has not yet developed sufficiently to interfere with effective house-spraying. However, attention is being given to systematic entomological analysis of the use of malathion and fenitrothion. The case detection services of active and

than is currently the case in order to conserve insecticides and reduce other operating costs and the danger of causing insecticide resistance of the vectors. More intensive spray coverage will probably be required in certain areas most subject to periodic epidemics such as Lahore, Sialkot, and Sheikhupura districts in the Punjab.

In 1980, actual spray coverage with malathion as a percent of planned target houses was 91 percent in the Punjab, 98 percent in the NWFP, 74 percent in Baluchistan, and 66 percent in the Sind. With the exception of the Sind, this level of coverage is considered adequate to reduce transmission of the disease. The shortfalls were attributed to inadequate supplies of insecticide. This was not a problem in the 1981 spraying season because the GOP received a grant of fenitrothion from the Japanese.

The DOMC estimates that in any given year, depending on ecological conditions and vector resistance, between 2,500 and 3,000 metric tons (MT) of insecticide will be needed for selective spraying of those areas with an API of greater than 0.5 cases per thousand population. These estimates are based on the standard dosages for malathion. For fenitrothion, the amounts required would be less since fenitrothion presumably has a longer residual effect than malathion although this needs to be confirmed in field studies. At the time the GOP was planning its insecticide needs for the 1982 spraying season, only the Japanese had pledged support for the procurement of 433 MT of fenitrothion, and WHO agreed to contribute 200 MT of malathion. The GOP had planned to come up with Rs 40 million worth of foreign exchange to buy the balance of fenitrothion required, which together represented the bare minimum insecticide needs for the program. It was at that time that A.I.D. agreed to provide 450 MT of malathion for the 1982 spray season so that the GOP actually released only Rs 25 million in foreign exchange to purchase insecticides for the 1982 program.

Because the DOMC has never known with certainty what donors may contribute each year, they have requested A.I.D. to be the sole supplier of insecticides required during the life of the A.I.D. project. This assured supply of insecticides will enable the federal DOMC and provincial authorities to plan and implement their programs more efficiently and effectively. The Mission has projected 2,500 MT of malathion in 1983 and 3,000 MT of malathion each year during the period FY 1984-1986. The operations research component of the project and annual program reviews will guide the future choice and amount of insecticides on a more scientific basis, taking into consideration the development of resistance, the residual effect of the two types of organophosphates, benefit-cost ratio, and social factors.

than is currently the case in order to conserve insecticides and reduce other operating costs and the danger of causing insecticide resistance of the vectors. More intensive spray coverage will probably be required in certain areas most subject to periodic epidemics such as Lahore, Sialkot, and Sheikhupura districts in the Punjab.

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c. Surveillance

Malaria incidence surveillance, upon which efficient residual insecticide spraying and drug treatment planning depend, includes active case detection (ACD), passive case detection (PCD), activated passive case detection (APCD), and periodic mass blood surveys. Active case detection (ACD), by which malaria program staff collect blood slides from all persons with recent or current fever in a designated area on a house-to-house basis, will remain the backbone of the system and the principal method for high incidence areas, but several innovative changes are being made in response to specific epidemiologic circumstances. For example, bi-monthly ACD with drug distribution is being used in some Punjab areas of medium malariogenicity where residual spraying is not done. ACD will be replaced in several low malariogenic areas by other surveillance mechanisms such as periodic mass blood surveys. Because the volume of blood slides to be analyzed is likely to exceed the capacity of the few existing provincial laboratories, the MCP is attempting to train more health center and hospital microscopists in how to examine blood slides for malaria. Passive case detection (PCD) by which regular health services staff are expected to take blood smears from all fever cases presented at hospitals and health centers and examine them for malaria infection, will be an increasingly important component of surveillance, especially in urban areas where ACD is not utilized and where positive slides from health facilities constitute the primary basis for selecting urban malaria control methodologies. Although ACD has been the backbone of the MCP surveillance system to date, PCD as a routine function of an integrated health system must be fully developed and relied on over the long-term. The DOMC and provincial malaria planners recognize this and will attempt to strengthen the PCD as well as the ACD system during the project period.

The training, motivation, and supervision required to carry out an effective surveillance and disease control operation are formidable. The ACD system which is considered to be satisfactory will require adequate support of the GOP in the provision of transportation and daily allowances for supervisory personnel. In some regions of the country, new approaches to obtaining slides from females, who rarely appear at health facilities that do not have female health personnel and from whom male surveillance workers may not obtain blood smears, will need to be tested. Nevertheless, most females with fever are said to seek and receive drug treatment even though their blood smears may not be obtained.

Successful PCD requires the cooperation of general health services personnel. Despite ministerial instructions for increased participation of health officers in the malaria program and training courses for medical and public health workers, their participation has been less than satisfactory. In 1978 and 1979, PCD slides constituted only about 7 percent of all slides collected. Thus PCD has not become a reliable epidemiologic tool except in a few areas. Integration of the malaria program into the general health services has not been successful to date as evidenced by the fact that the integration in the Punjab in 1977 has not yet resulted in increased PCD coverage in that province. Steps will be taken under the project by the DOMC to address this problem.

Several measures will be employed to expand and improve the collection of blood smears and analysis of slide positivity rates. Experienced ACD staff will continue to be assigned to health facilities in epidemiologically important areas in order to strengthen the PCD system. Training of health services personnel in PCD surveillance techniques will be increased. The long-term malaria advisor provided by this project, whose speciality will be epidemiology, will devote a major portion of his time to this subject, supported as necessary by short-term consultants. They will help design and carry out operational research projects supported by this project to improve existing surveillance techniques. Periodic mass blood surveys will also continue to be carried out to supplement ACD and PCD when more complete epidemiological data are required.

d. Research

The operational research component of this project will be directed at: improved epidemiological techniques for case detection; entomological studies on vector resistance to insecticides, including comparison of malathion and fenitrothion in the field; monitoring of malaria parasite resistance to drug treatment (chloroquine resistance), especially *P. falciparum*; and, innovative approaches for obtaining public cooperation in the program. Technical assistance and training supported by the project will be devoted to the design, implementation, and evaluation of these specific operational research activities.

Particular importance will be placed on initiating field research projects as early as possible to compare the use-effectiveness of malathion and fenitrothion, with special attention devoted to determining the advisability of using fenitrothion prior to malathion. The conventional wisdom that fenitrothion, the more toxic and expensive compound, should be held in reserve for use only in the

event that vectors become resistant to malathion, will be tested under field conditions at several locations in the country. Research findings will have a direct bearing on insecticide procurement under this project in FY 1984 and beyond.

The project will continue to support, with Mondale rupees, basic malaria research conducted by the Pakistan Medical Research Center, which is an affiliate of the University of Maryland. The DOMC feels that PMRC is making a valuable contribution to understanding the dynamics of the malaria problem in Pakistan. However, they also recognize the importance of establishing a strong applied operational research program as a part of the overall MCP. The DOMC has identified the NMTC as the institution to be charged with this responsibility, and the A.I.D. project will support this objective by increasing the capability and expanding the capacity of NMTC to meet the training and research needs of the program.

e. Urban Malaria Control

Effective control of malaria in the rapidly growing cities and towns poses a special problem for the Program. Urban malaria control efforts are complicated by three important factors:

i. Administration of health services and malaria control activities is the responsibility of each municipality. Therefore, the influence exercised by the DOMC and provincial authorities over municipal malaria control efforts has been limited. The DOMC provides insecticides, larvicides, spray equipment, and vehicles to the municipalities, but the municipalities are responsible for providing manpower, small equipment, some insecticides, and program administration with their own resources.

ii. The explosive growth of urban areas has out-stripped the capabilities of many municipal governments to provide adequate disease control services. Inadequate storm and sewage drainage has multiplied potential vector breeding sites.

iii. The principal malaria control technique developed during the past 20 years in rural areas, i.e., house-spraying with residual insecticides, is not transferable to most urban areas. Therefore, reliance has been placed on source reduction (larviciding) and more recently on fogging with residual insecticides through the use of ULV equipment.

The original MEP in the 1950's and early 1960's did not include urban areas in the eradication plans because urban malaria was not considered to be a serious problem. However, a malaria epidemic in Karachi in 1967 changed that view, and urban areas have been included in the MCP's Extended Plans. Each province has established an urban malaria cell to coordinate the malaria control activities of the municipalities with the MCP. The DOMC has developed a General Plan for Urban Malaria Control which includes 95 municipalities of more than 20,000 population each. As of 1980, forty-two of those municipalities had formally initiated malaria control programs.

Until recently, urban malaria control programs were dominated, and usually overwhelmed, by public demand for general environmental improvement, including mosquito and pest control and water and sewage management. The programs usually had a negligible impact on malaria because the interventions were not well-targeted to the specific malaria vectors. Very little entomological and case detection work has been done in the cities upon which to plan effective malaria control programs as contrasted with general pest control programs.

The DOMC and provincial malaria officials are well aware of this problem and will assist the municipalities during the project period. As long as the towns and cities serve as potential major malaria reservoirs, the rural areas will be subject to continuous reinfection. Emphasis will be placed on developing activated passive case detection systems to pinpoint the foci of transmission within cities. This will include assigning trained malaria workers in urban health system clinics and hospitals to collect and analyze blood slides, and increased motivational and skill training of regular health services personnel in passive case detection methods and epidemiology. Assistance will also be provided to the cities and towns in obtaining entomological data to support selective usage of larvicides and insecticide fogging with ultra-low volume (ULV) machines.

Availability of insufficient manpower to support and carry out effective urban malaria control programs is a serious problem. It is also sometimes difficult for the provincial malaria staff to interact effectively with urban program personnel, especially in large cities such as Karachi, due to overlapping municipal bureaucracies and unclear delineation of responsibilities. Nevertheless, chances of success are enhanced by a growing determination on the part of urban authorities to control malaria and the reinstitution in 1979 of popular elections of town and city officials who recognize the political advantages of environmental improvement measures. With improved epidemiologic intelligence, the urban health officials

should be able to achieve improved malaria control results in the context of expanded environmental improvement programs. Under the A.I.D. program, up to 30 places a year will be reserved for urban malaria control officials to receive training at the NMTC.

f. Health Education

Health education designed to increase the understanding, cooperation, and participation of the people in the program at the community level is as important as the technical operations of vector control, case finding, and treatment. Because it is relatively difficult to achieve results in this area, health education is often neglected in malaria programs around the world, with Pakistan being no exception. The DOMC and provincial malaria officials recognize the importance of health education and are attempting to strengthen that component of the program. As integration of malaria into provincial general health services proceeds, malaria education should become an important element of the overall health education program.

The provinces typically utilize radio, TV, leaflets and posters, newspaper articles, participation in village fairs and exhibitions, and direct contact by malaria field workers to communicate program objectives, procedures, and schedules to the community. The DOMC feels that these efforts have succeeded in creating villager understanding of the program, but have not yet been able to encourage their cooperation, and especially, their participation. An intensive systematic effort will be necessary to change villagers' attitudes and practices.

The MCP has been handicapped by a shortage of trained health educators assigned to the program. Each provincial malaria office now has one educator on the staff. In addition to planning and developing educational activities, this officer is responsible for training provincial malaria staff in information, education and communication (IEC) skills and participates in planning and conducting malaria components of training programs for basic health workers. Neither the DOMC nor the NMTC has ever had a health educator on its staff. However, a position for one educator at the NMTC has been requested in order to strengthen that aspect of the training program.

The MCP has managed to make significant progress in reducing malaria incidence with only marginal health education activiites. Continued progress in reducing malaria further, maintaining low levels, and finally eliminating malaria as a public health problem will require a greater IEC effort than when the disease was more prevalent.

For that reason, this project will provide the services of short-term consultants specializing in health education to support increased IEC training at the NMTC.

g. Training

Specialized pre-service and in-service refresher courses for senior and mid-level provincial and urban health officers (malaria staff and general health staff working on malaria) are provided regularly by the National Malaria Training Center at Lahore, which was established in 1961. The courses offered are designed to meet current MCP requirements. Pre-service courses include 12-14 week senior courses for physicians, malaria superintendents, and entomologists, 10-week courses for junior field supervisors, and 10-12 week courses for microscopists. These courses are described in more detail in Annex L.

New courses initiated during the 1975-1980 period included safe handling of organophosphorous insecticides, and special courses in epidemiology and malaria control for district health officers and CDC inspectors, and in urban malaria control techniques, including a special course in the use and maintenance of ULV fogging machines. The latter courses will be expanded in keeping with the policy to integrate malaria into general provincial health services and the increased emphasis on urban malaria control.

With the addition of six new staff members, the NMTC will have the capacity and capability to meet the training needs of the program. The addition of a health educator will improve the capability of the senior and mid-level staff trained at the NMTC to provide training, in turn, to the operations staff in their districts. Short-term consultants provided under the project will review the curriculum and quality of instruction and recommend changes to make the training more effective. Emphasis will be placed on training in epidemiology and urban malaria control. The project will also provide instructional materials, visual aids, and other training equipment, in addition to funds to purchase and renovate a new building to house the Center.

h. Biological Control

Continued reliance on large-scale use of insecticides poses a number of problems, including vector resistance to the insecticides, general environmental hazards, and high program operating costs, especially given the high cost of insecticides and the drain they represent on scarce foreign exchange. In the long run, Pakistan must develop alternatives to residual insecticide spraying for use as part of its malaria control strategy.

Biological control measures hold some promise as alternative control interventions. The use of larvivorous fish is being investigated and is expected to prove feasible. Eight MCP officials have participated in special training on the subject, and the Sind Province Malaria Director has experimented with Tilapia mozzambica. Further studies will be supported under this project with assistance from the federal and provincial fisheries departments which have expertise in the adaption of indigenous fish for biological use.

The work of the PMRC in mosquito genetics should also prove useful to the malaria control program in the future. PMRC has already provided a useful benchmark by demonstrating that both A. culicifacies "A" and A. culicifacies "B" exist in the Punjab. This will be a significant factor in insecticide resistance studies in the future. If PMRC's work on sterile mosquitoes proves successful, it could represent a major breakthrough for the Program.

i. Insecticide Handling Procedures

The MCP suffered an unfortunate incident in 1976 when five malaria workers died from insecticide poisoning as a result of improper handling of malathion. More strict safety precautions are required for organophosphorous compounds (malathion and fenitrothion) than the less toxic DDT. Workers who are accustomed to handling the less toxic DDT must be specially trained and supervised until the new procedures become routine. Continuous follow-up and supervision of sprayers are critical.

Following the episode in 1976, the MCP greatly increased its training and supervision of improved safety measures in handling and storing organophosphorous (OP) compounds. Protective equipment such as shoes, gloves, head gear and uniforms were provided to all spraymen. The protective drug, atropine, was provided to squad supervisors, and intensive safety training was provided to national, provincial, and district supervisors. Under the previous A.I.D. project (1975-1980), A.I.D. provided malaria advisory personnel to assist in training and field monitoring in those areas where OP insecticides were being applied. Laboratory personnel were trained in the tintometric test for cholinesterase levels in spraymen and squad chiefs. In 1981, the malaria program continued its efforts in proper insecticide management in all the provinces. Emphasis was placed on the procedures used in safely applying malathion and fenitrothion at the village level to ensure that field personnel and villagers were not subjected to any health hazard. As a result of these efforts, there has been no serious intoxication of either spray personnel or villagers reported since 1976.

A.I.D. has determined that the GOP follows proper and safe pesticide management practices from the initial formulation process to its application in villages and will continue to do so during the project period. The conclusion is based on the Mission's experience during the 1976-1981 period, MCP reports, and the findings of the Project Paper design team which are reported in Annex M.

3. Punjab Province Malaria Control Program

The Punjab malaria control program is the largest and most critical of the four province programs because the Punjab has the largest population living in highly endemic areas - 26 million people out of a total provincial population of approximately 38 million. The remainder of the population of the Punjab lives in areas classified as medium endemic (8 million) and low endemic (4 million). Endemicity classification is by sub-sectors and is updated continuously as surveillance data indicates changed status. Control methods used in a particular area depend on the endemic classification of the area. A description of the methodology followed by the province, prepared by the provincial CDC staff, is provided in Annex N. The description is illustrative of how the program is implemented nationwide since the other provinces follow basically the same methodology.

4. Long-Term Sustainability and Impact

If successfully executed, the project will have assisted the MCP to move substantially forward in its transition from a vertically organized program emphasizing total coverage house-spraying and active case detection surveillance methods to an integrated program utilizing a selective mix of vector control measures and a better balance between active and passive case detection and treatment methods. Progressive reduction of malaria transmission by vector control and radical drug treatment for humans will reduce the geographical area to be actively controlled, thereby reducing the administrative and financial costs of the program. Successful execution will depend on a number of key variables, including vector resistance to the OP insecticides, epidemiologically accurate direction of spray operations, cooperation and participation of the general public and general health services staff, reduction in the incidence of *P. falciparum* malaria, collaboration of municipal authorities, and expanded use of feasible alternative control measures.

An important impact from the standpoint of government administration will be significant savings from not having to maintain a large separate malaria organization in each province nor being forced to continue to import

large quantities of expensive insecticides. The long-term impact on social and economic development will be substantial in terms of reduced morbidity (and infant mortality) and increased productivity.

5. Summary

The project is judged to be technically feasible and sound. The project design provides appropriate and sufficient technical assistance and training and includes an operational and basic research component which will enable the GOP to implement innovative and technically sound approaches to malaria control.

B. Administrative Analysis

1. Organization

Program responsibility is shared among the DOMC at the national level, the four provinces, and numerous municipalities. The provinces implement their programs through subordinate units at the district and sub-district levels. The DOMC is responsible for "....technical guidance, coordination between provinces, international agencies and neighboring countries, program evaluation, planning, training and research, and supply of vehicles, insecticides, and spraying equipment to the provinces. The Provincial Malaria Control Programs were made responsible for physical implementation...., administrative as well as operational, evaluation and research."2/ The municipalities have the same responsibilities as the provinces and relate to the DOMC in the same way. This division of responsibility is logical given Pakistan's federal system of government administration, although it can pose difficulties in managing a vertical, problem-specific program.

The DOMC staff in Islamabad is very small considering the magnitude of the program under its direction. It has a limited number of technical staff, which concentrates on planning, coordination, and evaluation, plus a large administrative unit which handles financial, procurement, and reporting matters. The Directorate exerts considerable influence over technical program implementation through its control of allocations to the provinces of insecticides and equipment and its review and approval of their annual plans of operation as well as by means of overseeing the training and research activities of the National Malaria Training Center (NMTC) in Lahore. Despite its relatively

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2/ Annual Report 1980/81, DOMC.

small staff, the Directorate has demonstrated its technical and administrative capability in planning and directing successful provincial efforts to overcome the serious malaria epidemic of the mid-1970's and to reduce malaria incidence to its present low level. However, it will be necessary to increase the technical staff of the NMTC to support the increased training and field research activities contemplated. Six positions have been requested, including an entomologist, scientific officer, health educator, two entomology technicians, and a malaria superintendent to supervise field research. The DOMC has also requested an additional three technial staff positions for its epidemiological section.

The DOMC and NMTC staff will be supplemented by the A.I.D.-financed long-term malariologist-epidemiologist who will concentrate on training and research, and a public health engineer to be provided by WHO to assist with urban malaria control programs. The engineer will also coordinate with other govenrment agencies such as Public Works and Roads to ensure that their design and development work does not create additional malariogenic conditions.

Administrative capabilities vary at the provincial and district level. All provinces need to improve their supply and transport systems. The maintenance of transport is a problem which has increased with the migration of trained mechanics to jobs in the Middle East. Each province has a well-equipped vehicle repair workshop but limited qualified personnel. Regular and frequent supervision of field operations by provincial and district supervisors has been somewhat handicapped by inadequate travel allowances. This latter problem, which affects all government programs, has received considerable attention and should be ameliorated if not resolved in the near future.

Planning capability at the provincial level is considered satisfactory as all provinces have experienced personnel assigned to the program. The majority of the planning documents are well done. The basic problem in planning has been the lack of assured availability of certain commodities, especially insecticides during 1980/81. The Punjab Malaria Director prepared three different work plans for the 1981 operation -- one based on the amount of insecticide required, one based on the amount of insecticide which was allocated by the DOMC, and, finally, one on the basis of a revised distribution allotment which provided 100 additional metric tons of insecticide. It is expected that this project will stabilize the supply of insecticide during 1982 - 1987, thereby permitting more rational planning and effective operations.

Management innovations have been made at all levels resulting in more cost-effective and efficient program operations. The innovations include increased use of bus transport, the use of motorcycles instead of vehicles for supervision, combining two or more officers in one car for field activities, and adapting protective clothing to local conditions.

In summary, the malaria program is subject to many of the same administrative and management constraints facing GOP agencies in general. Over the years, however, the Pakistan malaria program has been able to carry out its functions in a satisfactory manner in spite of many difficulties. It is expected that the DOMC and provincial health authorities will continue to administer the current program in the same manner.

2. Integration of the Malaria Program into the General Health Services

Pakistan is in the process of making malaria control an integral part of the general provincial health services in line with WHO recommendations worldwide. The transition from a self-sufficient vertically organized program to one requiring collaboration of health staff which also has other duties is not easy. Nevertheless, the DOMC recognizes the value of the potential benefits in terms of cost-effectiveness.

Malaria has become a part of the communicable disease control programs (units) in each province, at least administratively. However, functional integration has been achieved only in the Punjab. In that province, 90 district health officers have been trained to manage the malaria control program in their districts. Health center staff are being trained to take blood smears from fever patients and send them to laboratories to be examined for malaria to strengthen the passive case detection system, which could be the greatest contribution of integration.

Realizing that integration would not be a simple matter, the DOMC initiated a pilot project in one district of each province to develop an integration model. The Mission believes that integration is necessary and that the course being taken by the Ministry is appropriate. However, the DOMC's objective of full functional integration by the end of 1983 is probably not achieveable nor is it desirable. The 1981 evaluation report of the previous A.I.D.-assisted malaria project cautioned against excessively rapid integration because thousands of malaria and general health services workers must be retrained to

perform new duties, and the goals and procedures of an integrated system must still be defined. A more realistic target is to achieve complete functional integration in 50 percent of the health facilities in the country by September 30, 1987, the Project Assistance Completion Date (PACD) of this project.

C. Social Soundness Analysis

This analysis will consider two basic factors: (1) the ability of the program to distribute benefits equitably; and,(2) social or cultural constraints to program operations.

The MCP will provide direct and immediate benefits to all inhabitants of malarious sections of the country, which is the majority of the population. Spraying and other vector control measures, case detection, and treatment are designed to reach all affected persons in a given area in order to interrupt malaria transmission. Because spraying and active case detection are conducted on a house-to-house basis, the program reaches a segment of the population frequently missed by many social sector programs - women and small children. These groups, whose limited physical access to health facilities is compounded in Pakistan by cultural factors, will receive preventive and curative malaria services which will reduce morbidity among all age groups and mortality among infants and increase female productivity.

There are two interrelated areas in which the program has failed to deal equitably with women. First, in the conservative regions, especially in the tribal areas, very few blood slides have been obtained from women because male surveillance workers are not permitted to touch them. This detracts seriously from the value of the surveillance data, but even more importantly, it probably means that some women infected with malaria do not receive treatment. The DOMC claims, however, that most females with fever seek treatment for malaria even though their blood has not been tested.

Second, few women have been employed by the MCP. The provinces are trying to remedy this in order to extend surveillance and treatment services to more women in response to the problem noted above. Greatest progress has been made in employing women as microscopists. Recruitment of women as ACD workers, travelling to villages with men, is more difficult and will probably not be very successful in the near term. For that reason, activated PCD will be important since there are more female technicians at health centers and hospitals who can take slides from female fever cases.

Regional and cultural differences do not pose a serious constraint to the MCP because its decentralized administration enables the local program managers to adapt the program components to local conditions. Spray crews, surveillance workers, and supervisors are all recruited from the area in which they work and hence understand the local customs.

The most serious constraint confronting the program is villager reluctance to allow their homes to be sprayed. On the average, 5 percent of the homes scheduled for spraying are not sprayed because either the occupant is not at home or refuses permission to have his house sprayed. Until recently, this has not been sufficient to interfere with attempts to interrupt malaria transmission. However, MCP officials are concerned that this problem could pose a serious threat in the future if the trend in malaria control is reversed.

In the early days of malaria eradication, acceptance of household spraying was high. This was due, at least in part, to the ability of the insecticide to destroy pests, especially bedbugs. The connection between malaria and spraying was frequently not understood by the populace. When insect resistance to DDT and BHC increased and insects remained after spraying, people's acceptance of spraying dropped sharply. Other factors which contribute to resistance to spraying include: the odor of some of the insecticides; the interruption of social and religious events; general nuisance; wall discoloration; the belief that the insecticide is dangerous; and religious objections.

Related to the social acceptance of household spraying is the place malaria holds in the health belief system. If people perceive malaria to be a serious threat, they will be more apt to take steps to work with the MCP. In some areas, malaria is viewed as just such a threat while in others, it is not. Even when malaria is a serious concern of the population, they may not associate malaria with mosquitoes. The health education component of the MCP is intended to promote community understanding, cooperation, and participation. The MCP will place greater emphasis on efforts to inform people about the cause of malaria and how the program's activities will eliminate the disease.

Nevertheless, a continuing review of social acceptance during the implementation of the new project is essential. Along with the annual program evaluations, special studies may be required to examine problems as they arise. Such studies should investigate the reasons for social resistance

and possible courses of remedial action. The MCP has shown a keen awareness of the social requirements of the population in the past and has undertaken considerable educational efforts through the village social and political structure to overcome such problems. These efforts will be continued under the proposed project at the field level as well as in the training courses at the NMTC.

D. Economic Analysis

The benefits of this project to Pakistan are several times its costs. Moreover, because alternative methodologies or technologies of malaria control, some of which (or in combination) could ultimately produce comparable benefits at lower costs, are not yet adequately developed, the project is cost-effective. There are no currently available, proven lower-cost methodologies or technologies.

1. Benefits

The estimates provided below are indicative of orders of magnitude. Precision is not claimed. However, the implicit rate of return and benefit-cost ratio are obviously high. The investment is "worth it."

Table 3 shows that without the proposed malaria program, malaria cases from 1982 to 1986 would exceed 21 million. With the program, roughly the same number would be avoided. The value of benefits from the program, which is shown in Table 4 and is estimated at $280 million, is derived by calculating the value of lost production and the value of avoided treatment costs. This calculation probably understates benefits because value added by workers generally exceeds wage costs. Table 5 compares the costs and benefits of the malaria control program over the next five years.

2. Cost-Effectiveness

Table 6 shows that the per capita cost of malaria prevention during the five-year period is approximately $0.94. The annual per capita cost is about $0.19. Looked at from another perspective, the program, which will total $85.7 million will avoid 20.78 million cases of malaria at a cost of $4.12 per case avoided. In the absence of feasible alternative approaches to malaria control, these outlays are not only modest, but can be considered cost-effective.

3. Sectoral Impact

Although urban malaria will be attacked in this project, the impact of the program will primarily be

TABLE 3

MALARIA CASE PROJECTIONS WITH AND WITHOUT THE PROGRAM

	Without the Program			With the Program		
Year	Population[a/] (mill.)	Malaria Case[b/] Rate Per 10,000	Total Cases (mill.)	Malaria Case[c/] Rate Per 10,000	Total Cases (mill.)	Cases Avoided (mill.)
1982	86.2	65	0.56	15	0.13	0.43
1983	88.8	135	1.20	15	0.13	1.07
1984	91.5	281	2.57	15	0.14	2.43
1985	94.2	583	5.49	15	0.14	5.35
1986	97.1	1200	11.65	15	0.15	11.50
		TOTAL	21.47		0.69	20.78

a/ Based on an annual rate of increase of 3 percent.

b/ Malaria incidence was projected on the basis of the disease trends of the 1973 malaria epidemic in Pakistan. The estimated case rates are considered conservative. The 1986 case rate of 1,200 per 10,000 population without a program is derived from the estimated case rates of the 1973 epidemic. During this epidemic, an estimated 6 million to 10 million cases of malaria occurred in a population of 67 million. A mid-range value of 8 million cases gives a case rate of 1,200 per 10,000 population in 1986.

c/ The malaria case rate with the program was derived by using 15 cases per 10,000 population for the year 1980 and for each subsequent year with a malaria program in place. This fairly conservative rate, which is three times the program goal of maintaining or further reducing the level to five cases per 10,000 population, was chosen on the assumption that the actual number of cases is at least three times the reported number of cases.

TABLE 4

MALARIA CONTROL PROGRAM BENEFITS

(In $ million)

Year	Number of Cases Avoided (million) a/	Value of Lost Production Due to Workdays Lost b/	Value of Lost Production Due to Debilitation c/	Value of Treatment Cost Avoided d/	Total Benefits
1982	0.43	1.48	3.09	1.23	5.80
1983	1.07	3.69	7.69	3.04	14.42
1984	2.43	8.38	17.47	6.93	32.78
1985	5.35	18.43	38.47	15.27	72.17
1986	11.50	39.69	82.67	32.76	155.12
TOTAL	20.78	71.67	149.39	59.23	280.29

a/ The total number of cases avoided was estimated by comparing the projected number of cases with and without a malaria control program. An incidence rate of 15 cases per 10,000 population was taken for the year 1980 and for each subsequent year with a program in place. This rate is three times the program goal of 5 cases per 10,000 population. This rate was chosen on the assumption that the actual number of cases is three times the reported number of cases. (See Table 3.)

b/ Value of lost production due to workdays lost was estimated by assuming that each case of malaria results in six days of lost production time per year for the 30% of the population in the labor force. A daily wage of Rs 20.00 or the equivalent of $1.92 (exchange rate of $1.00 = Rs 10.43) was used.

c/ Value of lost production due to debilitation was estimated by assuming that each case of malaria results in 25 days of 50% reduced effectiveness for the 30% of the population in the labor force being paid a daily wage of $1.92.

d/ The average daily cost for treatment of malaria per patient is estimated to be Rs 2.00 or $0.19. The number of days a patient is ordinarily treated for malaria is 15.

TABLE 5

COMPARISON OF THE COSTS AND BENEFITS OF THE MALARIA CONTROL PROGRAM

(In $ million)

Year	Total Costs a/	Total Benefits b/	Net Benefit
1982	13.72	5.80	-7.92
1983	14.95	14.42	-0.53
1984	17.72	32.78	+15.06
1985	19.56	72.17	+52.61
1986	19.76	155.12	+135.36
TOTAL	85.71	280.29	+ 194.58

a/ Includes the A.I.D. dollar and Mondale rupee contribution, the contribution of the GOP federal and provincial programs, and that of other donors (WHO and the Government of Japan). (See Financial Analysis Section.)

b/ Taken from Table 4.

TABLE 6

PER CAPITA COSTS OF THE MALARIA CONTROL PROGRAM

Year	Population (million)	Total Program Costs ($ million)	Per Capita Program Costs ($)
1982	86.2	13.72	0.16
1983	88.8	14.95	0.17
1984	91.5	17.72	0.19
1985	94.2	19.56	0.21
1986	97.1	19.76	0.21
	TOTAL	85.71	0.94

experienced in the rural or agricultural sector. Thus, the positive economic impact of the Malaria Control Project will be on agricultural production, which is the mainstay of Pakistan's economy.

Malaria is particularly prevalent in irrigated areas. For example, the Mangla and Tarbela Dams in the Indus Basin have contributed to the relatively high malariogenic potential of that area of the country. Malaria is also a seasonal disease, and the height of its prevalence coincides with the time when winter crops are sown and summer crops are harvested. The peak of the malaria season, therefore, occurs when the rural population needs to be most active in productive agricultural operations.

Other analyses could be undertaken to demonstrate, in addition to quality of life results, the direct economic benefits of the project -- e.g., foreign exchange earned, effect on national output and employment -- but the foregoing material is considered adequate to demonstrate the value and cost-effectiveness of the proposed project.

E. Financial Analysis

1. General

This project provides assistance to support the GOP Malaria Control Program. As shown in Table 7, the entire Program over the next five years is estimated to cost $85,713,000. The GOP has budgeted the equivalent of $39,700,000 for the program, consisting of $16,025,000 to support the federal program of the Directorate of Malaria Control (DOMC), Ministry of Health and Social Welfare, and $4,735,000 annually or a total of $23,675,000 over the project period to support all four of the provincial malaria control programs. With the exception of the equivalent of $2,400,000 in foreign exchange which the GOP used to purchase fenitrothion for the 1982 spraying season, all costs to be supported by the GOP are local costs. The pledges of only two other donors are known at this time. The Government of Japan has provided $2,000,000 worth of fenitrothion for the 1982 spraying season, and WHO has budgeted $200,000 annually over the next five years for malaria control activities. The A.I.D. project, which will contribute approximately 50% of the total costs of the entire Program over the next five years, supports GOP efforts which essentially are unsupported by other donors.

Four summary tables are provided on the following pages. Table 7 summarizes project costs by fiscal year and source of funding; Table 8, project costs by expense category and source of funding; Table 9, A.I.D. funding by foreign exchange and local costs; and, Table 10, A.I.D. funding by expense category and fiscal year. Project costs are

Table 7

SUMMARY OF PROJECT COSTS[a/] BY FISCAL YEAR AND SOURCE OF FUNDING

(in $ 000)

Source of Funding	Fiscal Year					
	1982	1983	1984	1985	1986	Total
A.I.D. Dollar Grant	1,500	6,400	9,800	11,500	11,800	41,000
Mondale Rupees[b/]	186	886	253	395	293	2,013
GOP[b/]	9,860	7,460	7,460	7,460	7,460	39,700
Other Donors	2,200	200	200	200	200	3,000
TOTAL	13,746	14,946	17,713	19,555	19,753	85,713

a/ A.I.D. dollar grant project costs are defined as anticipated sub-obligations or commitments of funding through, e.g., PIOs, contracts, or purchase orders.

b/ Expressed as dollar equivalents at exchange rate of U.S. $ 1.00 = Rs 10.43 as of January 26, 1982.

TABLE 8

SUMMARY OF PROJECT COSTS a/ BY EXPENSE CATEGORY AND SOURCE OF FUNDING

(In $ 000)

Expense Category b/	Life of Project Funding		
	A.I.D. Dollar Grant	Mondale c/ Rupees	GOP c/
1. Technical Assistance			
a. Short-Term	176	120	-
b. Long-Term	610	590	-
SUB-TOTAL	786	710	-
2. Training			
a. Third Country Short-Term	22	35	-
b. In-Country	-	151	-
SUB-TOTAL	22	186	-
3. Commodities			
a. Vehicles	1,126	96	-
b. Fogging Machines (Sprayers)	953	-	-
c. Insecticides	37,643	-	2,400
d. Training/Research Equipment	50	48	-
SUB-TOTAL	39,772	144	2,400
4. Other Costs			
a. Building Purchase/ Renovation	-	575	-
b. Evaluation	115	83	-
c. Salaries, Rent, Operating Costs	-	-	37,300
d. Research	-	132	-
SUB-TOTAL	115	790	37,300
TOTAL	40,695	1,830	39,700
Contingency d/	305	183	-
GRAND TOTAL	41,000	2,013	39,700

a/ A.I.D. dollar grant project costs are defined as anticipated sub-obligations or commitments of funding through, e.g., PIOs, contracts or purchase orders.

b/ Inflation: 10% FX salaries, 15% all other FX including insecticides, 20% LC, compounded annually. The cost of insecticides was based on the 1982 price of malathion at $2.20 per kg. to which an inflation factor of 15% was added and compounded annually for succeeding years.

c/ Expressed as dollar equivalents at the exchange rate of U.S. $1.00 = Rs 10.43 as of January 26, 1982.

d/ Not applied to insecticides: otherwise 10% for A.I.D. dollar grant and Mondale rupee costs.

TABLE 9

SUMMARY OF A.I.D. FUNDING

BY FOREIGN EXCHANGE (FX) AND LOCAL COSTS (LC)

(in $ 000)

Expense Category a/	Life of Project Funding			
	A.I.D. Grant		Mondale b/ Rupees (LC)	TOTAL
	FX	LC		
1. Technical Assistance				
a. Short-Term	176	-	120	296
b. Long-Term	610	-	590	1,200
SUB-TOTAL	786	-	710	1,496
2. Training				
a. Third Country Short-Term	22	-	35	57
b. In-Country	-	-	151	151
SUB-TOTAL	22	-	186	208
3. Commodities				
a. Vehicles	1,126	-	96	1,222
b. Fogging Machines (Sprayers)	953	-	-	953
c. Insecticides	37,643	-	-	37,643
d. Training/Research Equipment	50	-	48	98
SUB-TOTAL	39,772	-	144	39,916
4. Other Costs				
a. Building Purchase/ Renovation	-	-	575	575
b. Evaluation	115	-	83	198
c. Research	-	-	132	132
SUB-TOTAL	115	-	790	905
TOTAL	40,695	-	1,830	42,525
Contingency c/	305	-	183	488
GRAND TOTAL	41,000	-	2,013	43,013

a/ Inflation: 10% FX salaries, 15% other FX including insecticides 20% LC, compounded annually.

b/ Expressed as dollar equivalents at exchange rate of U.S. $1.00 = Rs 10.43 as of January 26, 1982.

c/ Not applied to insecticides; otherwise 10% for A.I.D. dollar grant and Mondale rupee costs.

TABLE 10

SUMMARY OF A.I.D. FUNDING BY EXPENSE CATEGORY AND FISCAL YEAR

(In $ 000 and Rs 000)

EXPENSE CATEGORY	FISCAL YEAR 1982		1983		1984		1985		1986		TOTAL	
	Dollar Grant	Mondale Rupees	Dollar Grant	Mondale Rupees	Dollar Grant	Mondale Rupees	Dollar Grant	Mondale Rupees	Dollar Grant	Mondale Rupees	Dollar Grant	Mondale Rupees
1. Technical Assistance												
a. Short-Term	100	232	-	415	23	167	25	199	28	239	176	1,252
b. Long-Term	322	1,170	-	766	-	920	157	1,973	131	1,325	610	6,154
Sub-Total	422	1,402	-	1,181	23	1,087	182	2,172	159	1,564	786	7,406
2. Training												
a. Third Country	6	26	-	63	5	76	5	91	6	109	22	365
b. In-Country	-	114	-	272	-	327	-	392	-	469	-	1,574
Sub-Total	6	140	-	335	5	403	5	483	6	578	22	1,939
3. Commodities												
a. Vehicles	-	-	-	-	524	456	602	546	-	-	1,126	1,002
b. Fogging Machines (Sprayers)	-	-	-	-	443	-	510	-	-	-	953	-
c. Insecticides	1,000	-	6,325	-	8,730	-	10,041	-	11,547	-	37,643	-
d. Trg/Res. Equipment	-	-	50	500	-	-	-	-	-	-	50	500
Sub-Total	1,000	-	6,375	500	9,697	456	11,153	546	11,547	-	39,772	1,502
4. Other Costs												
a. Building Purchase/ Renovation	-	-	-	6,000	-	-	-	-	-	-	-	6,000
b. Evaluation	19	116	20	140	23	168	25	201	28	241	115	86[illegible]
c. Research	-	104	-	240	-	288	-	345	-	396	-	1,373
Sub-Total	19	220	20	6,380	23	456	25	546	28	637	115	8,239
TOTAL	1,447	1,762	6,395	8,396	9,748	2,402	11,365	3,747	11,740	2,779	40,695	19,086
Contingency	53	177	5	841	52	241	135	375	60	280	305	1,914
GRAND TOTAL	1,500	1,939	6,400	9,237	9,800	2,643	11,500	4,122	11,800	3,059	41,000	21,000

defined as anticipated sub-obligations or commitments of funding through, e.g., PIOs, contracts, or purchase orders. Inflation was calculated on the basis of ten percent for U.S. salaries, fifteen percent for all other foreign exchange costs including insecticides, and twenty percent for all local costs, all compounded annually. An inflation factor of 15% was applied to the price of malathion to provide flexibility in the event that research findings indicate that some or all of the insecticides procured in the outer years should be fenitrothion which is more expensive than malathion. Even though fenitrothion is more potent than malathion and less appears to be required for spraying, price trends of this compound cannot be determined with precision at this time. A contingency factor of 10% was applied to all costs, excluding insecticides. Rupees, where shown, are expressed as dollar equivalents at the exchange rate of U.S. $1.00 = Rs 10.43 as of January 26, 1982.

2. Summary Cost Estimate and Financial Plan

a. A.I.D. Contribution

The total cost of the A.I.D. project is $[illegible], which includes $[illegible] in A.I.D. [illegible] grant funds, [illegible] million Mondale rupees ($[illegible] equivalent) and the equivalent of $[illegible] provided by the [illegible]. The A.I.D. [illegible] grant and Mondale rupee component constitutes fifty-two percent of the project and the [illegible] contribution forty-eight percent, excluding the contributions of other donors.

The A.I.D. dollar grant will finance all and only the foreign exchange costs of the project, with the exception of $[illegible] provided by the [illegible] for insecticides. The A.I.D. dollar grant will cover long and short-term technical assistance, short-term [illegible] and in-service training, commodities including vehicles, [illegible] fogging machines, insecticides, and training research equipment, and consultants for the annual program evaluations. Of these, the largest budget item is insecticides, $[illegible], which accounts for eighty-eight percent of the total A.I.D. contribution. The availability of insecticides is essential for Pakistan to effectively control malaria over the next five years.

The Mondale rupee component of the project will finance the local costs associated with the long and short-term technical assistance, all in-country training, the international travel costs for participant training, locally available spare parts for vehicles, locally [illegible] training and research equipment, local costs associated with operational and basic research and the

scheduled annual program evaluations and studies, and the costs of purchasing and renovating a building for the National Malaria Training Center (NMTC). A.I.D. will finance with Mondale rupees the international travel costs of all participant training up to and including one year. Annex P contains a justification for this signed by the USAID/Pakistan Mission Director which waives the requirement for the host country to cover these costs.

Of those costs financed with Mondale rupees, the largest budget item is for the purchase and renovation of a building for the NMTC, $575,000 (Rs 6,000,000) which accounts for twenty-nine percent of the Mondale rupee component. Cost figures were arrived at by estimating the cost of purchasing a 25,000 square foot building, of which 5,000 square feet will be air-conditioned, on the basis of actual costs of buildings in Lahore in 1982. Renovations were assumed to cost approximately one-third of the purchase price.

The dollar grant portion of the project will be incrementally funded. Dollar grant obligations are scheduled as follows: $1,500,000 in FY 1982; $6,400,000 in FY 1983, $9,800,000 in FY 1984; $11,500,000 in FY 1985; and $11,800,000 in FY 1986. The Mondale rupee component, which constitutes about five percent of the total U.S. contribution to the program, will be obligated in its entirety in FY 1982 to reduce the administrative burden on the Mission of incrementally funding this component.

b. GOP Funds

Funds provided by the GOP cover personnel salaries and allowances, operating costs, building rental costs, and local purchase of anti-malaria drugs and larvicides. Since GOP cost estimates are available for only the first two years (FY 1982 and FY 1983) of the A.I.D. project, the total estimate was arrived at by extrapolation from available budgetary information.

The GOP contribution to the project comes from two sources: the budget of the NMTC and the budgets of the four provincial malaria control programs. The provinces together contribute approximately sixty percent of the total costs borne by the GOP. The federal and provincial budgets for the Malaria Control Program have remained relatively constant over the last three years. In discussions with federal and provincial officials, it appears that continued support at an adequate level will be maintained over the life of the project. The GOP estimates do not include urban malaria control program costs borne by municipal corporations. The adequacy of

funding for urban malaria control activities by the cities and towns varies considerably and represents a potential constraint to program operations in some locations. Careful attention will be paid to this aspect of the program during the project.

F. Environmental Analysis

An Initial Environmental Examination (IEE) is provided as Annex I. The insecticides to be used in the Pakistan Malaria Control Program are those commonly used in other malaria programs around the world. Numerous environmental studies and assessments have already been undertaken for these organophosphorous insecticides, and all have concluded that these compounds have a favorable risk-benefit impact on the environment. In view of these studies and the fact that Pakistan has not experienced any health problems over the last five years in its spray operations due to the safeguards built into the program of protective clothing, frequent testing of cholinesterase levels in personnel, adequate supervision, regular and refresher training, and proper storage and distribution practices, the Mission has concluded that no further environmental analysis is required and recommends a negative determination. If new chemical, biological, or physical malaria control methodologies are introduced into the program after the approval of this project, the environmental impact will be reviewed, and, if necessary, environmental studies or assessments will be carried out.

G. Women in Development

This project has both direct and indirect impact on the status of women. Direct benefits will accrue to female malaria and general health workers, researchers, health educators, and malaria program administrators, who will improve their knowledge and skills as a result of the technical assistance and training to be provided under the project. Indirect benefits resulting from research and evaluation findings will permit all service providers, including female providers, to implement an effective malaria control program. Most importantly, the recipients of services supported by the Malaria Control II Project will include all females in the population who will benefit from reduced incidence of malaria in the population and, in particular, from efforts to develop new approaches to obtaining slides from females who do not appear at health facilities that do not have female personnel and from whom male surveillance workers may not obtain blood smears. The increased participation of females in surveillance activities, as both recipients and providers of malaria control services, is an output of this project.

H. Narcotics Impact Statement

The Malaria Control II Project, being basically humanitarian in nature, does not lend itself to specific actions or policies relative to narcotics suppression. It is one of the projects in the proposed economic assistance program to Pakistan which, because of its basic thrust and mechanism for implementation, cannot be meaningfully connected to the U.S. Government's continued efforts, in conjunction with the GOP, to curtail opium poppy cultivation and the processing of opium into heroin in Pakistan. The very nature of the malaria problem, namely, the fact that infected mosquitoes which survive and multiply with subsequent increased transmission of malaria via a mobile population would spread malaria throughout the country as well as to neighboring countries, if all parts of the country are not sprayed simultaneously during the transmission season, argues against denying spraying and the provision of malaria control services in poppy growing areas. Accordingly, no poppy clause will be included in the Project Agreement.

VI. CONDITIONS, COVENANTS, AND NEGOTIATING STATUS

A. Conditions Precedent to Disbursement

1. First Disbursement

Prior to any disbursement under this Project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, other than for the procurement of insecticides required for the 1982 spraying season, the Grantee shall, except as the parties may otherwise agree in writing, furnish or have furnished to A.I.D., in form and substance satisfactory to A.I.D., within sixty (60) days after the signing of the Project Agreement:

a. An opinion of Counsel acceptable to A.I.D. that the Project Agreement has been duly authorized and/or ratified by, and executed on behalf of, the Grantee and it constitutes a valid and legally binding obligation of the Grantee in accordance with all of its terms.

b. A statement setting forth the names and titles of persons holding or acting in the Office of the Grantee and representating that the named person or persons have the authority to act as the representative or representatives of the Grantee, together with a specimen signature of each person certified as to its authenticity.

2. Conditions Precedent to Purchase of a Facility for the National Malaria Training Center (NMTC)

Prior to the disbursement under this Project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made for the purchase of a building for the NMTC, the Grantee shall, through its Directorate of Malaria Control (DOMC), provide evidence, in form and substance satisfactory to A.I.D., that:

a. six new positions have been approved by the Grantee for the NMTC and that the NMTC is actively recruiting one senior scientific officer, one senior malaria superintendent to supervise field research, one senior entomologist, two technical assistants for the entomologist, and one health educator.

b. the proposed building is adequate for the needs of the NMTC, is in good physical condition, and is reasonably and fairly priced.

c. the Grantee has agreed to cover all operating and maintenance costs for the new building.

3. Conditions Precedent to Renovation of the Building Purchased for the NMTC

Prior to the disbursement under this Project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made for the renovation of the building purchased for the NMTC, the Grantee shall, through its DOMC, provide evidence, in form and substance satisfactory to A.I.D., that adequate designs have been prepared for the renovation of the building and responsible and responsive local contractors have been selected to do the renovation work in accordance with A.I.D. competitive procurement procedures for host country contracting.

4. Conditions Precedent to Release of Urban Malaria Control Vehicles and Equipment

Prior to the release to municipal corporations of urban malaria control vehicles and ultra-low volume (ULV) fogging machines procured under this project, the municipal corporations shall, unless A.I.D. otherwise agrees in writing, provide to the DOMC, with copies to A.I.D., epidemiological evidence based on passive case detection and/or entomological data, that malaria is a public health problem in the municipality based on the criterion of an annual parasite incidence (API) of 0.5 or more cases per thousand population.

5. Conditions Precedent to the Procurement of Insecticides in FY 1983 - FY 1986

Prior to the disbursement under this project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made each year for the procurement of insecticides in FY 1983 through FY 1986, the Grantee, acting through the DOMC, shall furnish to A.I.D., in form and substance satisfactory to A.I.D. except as A.I.D. may otherwise agree in writing, evidence that insecticides procured by A.I.D. for the preceding year's program have been effectively utilized for the program, and, for the succeeding year's program, the amounts, specifications, and scientific basis for calculating the insecticide requirements.

B. Covenants

1. The Grantee, through its DOMC, shall prepare by no later than March 1 of each year, and provide copies to A.I.D., an annual plan detailing safety measures and procedures to be employed in the application of all insecticides used in the program.

2. The Grantee, through its DOMC, shall prepare in consultation with A.I.D. by no later than January 1 of each year, and provide copies to A.I.D., an annual program evaluation plan outlining criteria and benchmarks for each program component to be assessed during the annual February/March program review.

3. The Grantee, through its DOMC, shall prepare in consultation with A.I.D., and provide copies to A.I.D.: (a) a plan of operations (PC-1) for the period 1984 - 1986 by no later than July 1, 1983; (b) annual plans of operation each year during the period 1983 - 1987 by no later than April 1 of the preceding year covered by the plan, which shall include: (i) a description of the responsibilities of all other agencies and institutions involved in malaria control activities such as Municipal Committees, Cantonment Boards, as well as responsibilities of other government and semi-government agencies; (ii) a time-table for project activities; and, (iii) an itemization of the program budget including external sources of assistance; and (c) an extended plan of operation for malaria control covering a period of at least three years following the completion of the A.I.D. project, i.e., September 30, 1987.

4. The Grantee shall make every reasonable effort to require that each participant trained overseas under this Project works in malaria control activities in Pakistan for not less than three times the length of time of his or her training program provided, however, that in no event shall the participant be allowed to work for less than one year nor be required to work for more than five years from the date of the participant's return to Pakistan.

5. The Grantee shall take appropriate safety measures for the use of insecticides financed under this program, including the provision of safety equipment to insecticide handlers, training of handlers and supervisory personnel in the risks associated with the insecticides, and instruction in proper procedures for safe handling. The Grantee shall also maintain rigid control over the quality of insecticides procured for the program to ensure that they meet WHO and A.I.D. technical requirements.

C. Negotiating Status

The above Conditions Precedent and Covenants have been discussed with and agreed to by the Government of Pakistan. During Project Agreement negotiations, USAID/Pakistan will incorporate into the Agreement appropriate language to cover these terms and conditions.

VII. ANNEXES

V7CZCIL0952
PP RUFHIL
DE RUFHC #3889 3081913
ZNR UUUUU ZZH
P 0408142 NOV 81
FM SECSTATE WASHDC
TO AMEMBASSY ISLAMABAD PRIORITY 3664
BT
UNCLAS STATE 293889

~~AIDAC~~

E.O. 12065: N/A
SUBJ: MALARIA CONTROL (391-0472) - APAC REVIEW

THE APAC REVIEWED AND APPROVED THIS PROJECT ON OCTOBER 15, 1981. THE FOLLOWING ITEMS WERE DISCUSSED FOR CONSIDERATION IN PP DESIGN.

1. EXPERIENCE IN ASIA SUGGESTS CHANGES IN MALARIA CONTROL STRATEGY WILL BE REQUIRED TO PREVENT A MAJOR RESURGENCE. CONTROL OPERATIONS WHICH ACHIEVED THE RECENT REDUCTION HAVE NOT BEEN EFFECTIVE IN MAINTAINING SIMILAR GAINS ELSEWHERE. THE MISSION SHOULD DESIGN A PROJECT WHICH USES SELECTIVE SPRAYING A D OTHER COMPREHENSIVE CONTROL METHODOLOGIES TAILORED TO THE CURRENT EPIDEMIOLOGIC PICTURE OF MALARIA.

2. DESIGNING A MALARIA CONTROL PROGRAM TO MEET THESE CRITERIA WILL REQUIRE DEVELOPMENT OF SUPPORTING TECHNICAL RESOURCES. DURING THE PP DESIGN, THE MISSION SHOULD EXPLORE WAYS TO SUPPORT THE PMRC IN LAHORE AS THE INSTITUTION MOST CAPABLE OF DEVELOPING INTO A STRONG TECHNICAL RESOURCE. THE APAC SUGGESTS TA FROM THE UNIVERSITY OF MARYLAND BE CONSIDERED TO ASSIST WITH THIS PORTION OF PROJECT DEVELOPMENT.

3. THE APAC AGREES THAT MALATHION IS THE MOST APPROPRIATE INSECTICIDE TO USE IN THE NEAR FUTURE AND THAT PURCHASE OF APPROPRIATE AMOUNTS OF THIS COMMODITY IS A WISE INVESTMENT. HOWEVER, THE MISSION SHOULD BE AWARE THAT (A) A MODIFIED PROGRAM FEATURING LIMITED SPRAYING AND OTHER TECHNIQUES MAY REQUIRE LESS INSECTICIDE THAN HAS BEEN USED PER YEAR, AND (B) THE SHELF LIFE OF MALATHION IS RELATIVELY BRIEF. THEREFORE, THE MISSION SHOULD BUDGET CAREFULLY FOR MALATHION IN THE FIRST YEAR OF THE PROJECT ANT SHOULD PLACE ANNUAL ORDERS IN SUBSEQUENT YEARS AS APPROPRIATE TO AVOID LOSS OF POTENCY DUE TO PROLONGED AND INADEQUATE STORAGE.

4. TO MORE RAPIDLY DISBURSE FUNDS IN THE FIRST YEAR, THE MISSION SHOULD EXPLORE PURCHASE OF SPRAYING EQUIPMENT AND VEHICLES (TO SUPPORT A MORE MOBILE CONTROL PROGRAM), LARVICIDES ANT OTHER COMMODITIES (APPROPRIATE FOR URBAN CONTROL PROGRAMS) AND DIRECT SUPPORT TO PMRC, INTERNATIONAL TRAINING AND LABORATORY EQUIPMENT.

5. THE WHO HAS BEEN THE CHIEF TECHNICAL ASSISTANCE RESOURCE TO NATIONAL MALARIA CONTROL PROGRAMS FOR SEVERAL YEARS. THE MISSION IS ADVISED TO LOOK CRITICALLY AT THE PERFORMANCE OF THE WHO TECHNICAL ASSISTANCE AND TO EXPLORE APPROPRIATE WAYS TO IMPROVE TA THROUGH THE PROJECT.

6. THE MISSION SHOULD EXPLORE WAYS TO PROCURE MALATHION THROUGH USAID RATHER THAN THROUGH THE GOP. EXPERIENCE HAS SHOWN THAT PREVIOUS DELAYS IN PAKISTAN WERE ENCOUNTERED IN PLACING ORDERS NOT IN SHIPPING. USAID PROCUREMENT IS FELT TO BE MORE EFFICIENT.

7. THE MISSION SHOULD INCORPORATE WAYS TO MAXIMIZE SAFETY FOR MALARIA-SPRAYING PERSONNEL.

8. AN UPDATE OF THE ENVIRONMENTAL IMPACT STATEMENT IS REQUIRED FOR THIS PROJECT. HAIG
RT
#3889

VZCZCIIO528
RR RUEHIL
DE RUMJGM #5651 3000610
ZNR UUUUU ZZH
R 270600Z OCT 81
FM AMEMBASSY COLOMBO
TO RUEHC/SECSTATE WASHDC 2368
RUEHNF/AMEMBASSY NEW DELHI 8832
RUMJHT/AMEMBASSY KATHMANDU 1550
RUMTBK/AMEMBASSY BANGKOK 1945
RUEHIL/AMEMBASSY ISLAMABAD 2085
RUEHJA/AMEMBASSY JAKARTA 774
RUEHML/AMEMBASSY MANILA 1177
RUMJRV/AMEMBASSY RANGOON 358
BT
UNCLAS COLOMBO 5651

ANNEX A.2
Page 1

AIDAC

E.O. 12065: N/A
SUBJ: MALARIA CONTROL PROGRAMS - ASIA GAO REVIEW

"THE FOLLOWING ARE USAID/SL AND RMA PERCEPTIONS."

1. GAO TEAM OF WARD AND YUGE COMPLETED GAO REVIEW OF MALARIA CONTROL ACTIVITIES IN SRI LANKA AND WHO/SEARO AND DEPARTED COLOMBO FOR BANGKOK ON OCTOBER 23 TO FINALIZE REPORT. GAO DEBRIEFING SESSION WAS HELD OCTOBER 23 WITH USAID/SL BRADY, MILLER, ZEGARAC AND COWPER.

2. GENERAL SUMMARY OF CONCLUSIONS AND FURTHER ACTIONS OF GAO TEAM AT THIS POINT ARE AS FOLLOWS:

(A) REGIONAL PATTERN OF MALARIA INCIDENCE OVER PAST TWO DECADES INDICATE NATIONAL AND DONOR COMMUNITY RESPONSE TO PERIODIC EPIDEMIC CONDITIONS ARE INTENSE AND PRODUCTIVE BUT ONCE MALARIA CONTROL ACHIEVED AT A LEVEL WHERE ADVERSE ECONOMIC, SOCIAL AND POLITICAL IMPACTS ARE OVERCOME THIS INTEREST LESSENS. AS A RESULT MAJOR MALARIA OUTBREAKS OCCUR AGAIN WHICH GIVE RISE TO ANOTHER ROUND OF MAJOR INVESTMENTS IN MANPOWER, MONEY AND MATERIALS. GAO TEAM BELIEVES A MALARIA CONTROL STRATEGY SHOULD BE DEVELOPED BY AID THAAT AVOIDS OR AT LEAST MODIFIES THESE PERIODIC EPIDEMIC PERIODS BY PROVIDING ASSISTANCE TO REQUESTING COUNTRIES TO MAINTAIN THE HARD WON GAINS AND TO PROVIDE A LEVEL OF MALARIA CONTROL WHICH WILL PROTECT THE MASSIVE NATIONAL AND DONOR ASSISTANCE INVESTMENT. IT APPEARED TO THE GAO TEAM THAT THE ASIA BUREAU MAY BE DE-EMPHASIZING SUPPORT TO MALARIA CONTROL AND PERPETUATING THE MALARIA PATTERN SEEN IN PREVIOUS YEARS.

3. GAO TEAM WAS IMPRESSED BY GAINS MADE BY SRI LANKA MALARIA PROGRAM AND FOUND NATIONAL CONTROL AND MANAGEMENT ASPECTS FOR COMMODITIES SUPPLIED BY AID TO BE IN ORDER. HOWEVER, THERE WERE CONCERNS ON TRAINING OF MIDDLE MANAGEMENT TO DEVELOP FUTURE LEADER-SHIP AND ON EFFECTIVE FIELD SUPERVISION TO OBTAIN HIGHER TOTAL COVERAGE IN SPRAY OPERATIONS. PRESENT INSECTICIDE COVERAGE IS RUNNING ABOUT 60 PERCENT FOR TOTAL AND 25 PERCENT PARTIAL COVERAGE OF TARGET HOUSES.

4. GAO HELD DISCUSSION IN COLOMBO WITH WHO/WPC NOTANEY; DEPUTY DIRECTOR OF PUBLIC HEALTH, DR. DE SILVA; SUPERINTENDENT/AMC, DR. SUBRAMANIAM; VARIOUS USAID/SL STAFF MEMBERS.

5. GAO TEAM ALSO STRESSED THE NEED FOR CONTINUED INTER-SECTORAL COORDINATION BETWEEN DEVELOPMENT PROJECTS SUCH AS IRRIGATION SCHEMES OUTSIDE THE ACCELERATED MAHAWELI PROGRAM (AMP) AND MALARIA CONTROL. GAO RECOGNIZED THAT THE MALARIA CONTROL PROJECT PAPER AMENDMENT WAS AIMED SPECIFICALL AT PROVIDING SUPPORT FOR NEW SETTLEMENT AND IRRIGATION DEVELOPMENT AREAS UNDER THE AMP AND OTHER IRRIGATION SCHEMES IN SRI LANKA.

6. IT WOULD APPEAR THAT THE TENTATIVE CONCLUSIONS REACHED BY GAO ON THIS REVIEW WOULD WARRENT CAREFUL CONSIDERATION OF ASIA/TR/PPN AND OTHER CONCERNED OFFICES AND MISSIONS BOTH AT THE CHAING MAI CONFERENCE AND WITHIN USAIDS.

7. GAO TEAM'S DRAFT REPORT WILL BE SUBMITTED TO THEIR WASHINGTON OFFICE AFTER A REVIEW OF THE THAILANI MALARIA CONTROL PROGRAM WHERE IT WILL BE COMBINED WITH OTHER REPORTS FROM GAO TEAMS VISITING AREAS OF AFRICA, LATIN AMERICA, GENEVA AND MALARIA RESEARCH PROGRAMS IN THE U.S.
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AIDAC

E.O. 12065: N/A

TAGS:

SUBJECT: ASIA REGIONAL MALARIA TRAINING SECRETARIAT

REFS: (A) ISLAMABAD 16220; (B) STATE 340551;
(C) STATE 343807

1. SUMMARY: FURTHER DISCUSSIONS WITH ST/HFA SUGGEST PRACTICAL OBSERVATIONS MAY BE ADVISABLE TO SUPPLEMENT THEORETICAL CONSIDERATIONS IN CHOSING INSECTICIDE IN THE MALARIA CONTROL PROJECT. OBSERVATIONS COULD COME FROM DIRECT COMPARISON OF MALATHION AND FENITROTHION UNDER FIELD CONDITIONS AS AN OPERATIONS RESEARCH COMPONENT OF THE MOH ROUTINE MALARIA CONTROL ACTIVITIES. END SUMMARY.

2. FURTHER DISCUSSIONS WITH ST/HFA REVEAL A HIGH-LEVEL MEETING WILL BE HELD IN WASHINGTON WEEK OF JANUARY 4 WITH REPRESENTATIVES OF AID, WHO, AND CDC TO CONSIDER REVISION OF AGENCY POLICY ON CHOICE OF INSECTICIDE FOR MALARIA CONTROL. ASIA/TR/HPN CONTINUES TO BELIEVE NO CLEAR-CUT RECOMMENDATION ABOUT WHETHER TO USE MALATHION OR FENITROTHION FIRST BASED ON THEORETICAL CONSIDERATIONS ONLY WILL BE FORTHCOMING SOON.

3. HOWEVER, ONE OF THE OUTCOMES OF THE MEETING IS LIKELY TO BE RECOGNITION OF PRACTICAL ISSUES IN ADDITION TO THE PERSISTENT THEORETICAL CONCERNS. THE MEETING WILL CONSIDER RECOMMENDING DIRECT COMPARISON OF THE USE-EFFECTIVENESS OF MALATHION AND FENITROTHION AS ONE ELEMENT IN THE CHOICE OF AN INSECTICIDE. THERE ARE DOCUMENTED INSTANCES WHERE EITHER HAS BEEN SHOWN TO BE MORE EFFECTIVE THAN THE OTHER UNDER FIELD CONDITIONS WHEN VECTORS ARE SENSITIVE TO BOTH. LOCAL FIELD SITUATIONS ARE IMPORTANT IN MAKING A CHOICE UNDER SUCH CIRCUMSTANCES. PAKISTAN IS REPRESENTATIVE OF THIS SITUATION.

4. AID/W REMINDS MISSION THAT EXISTING DATA COMPARING USE-EFFECTIVENESS OF FENITROTHION AND MALATHION IN PAKISTAN MAY NOT BE OF SUFFICIENTLY RELIABLE QUALITY TO USE IN CHOOSING THE OPTIMAL INSECTICIDE. BEFORE OPTING FOR EITHER IT WOULD BE PRUDENT TO NOTE THE EFFECTIVENESS OF EACH UNDER FIELD CONDITIONS WHERE COMPARABLE DATA CAN BE OBTAINED TO ASSIST THE GOP IN MAKING A CHOICE.

5. A DIRECT COMPARISON COULD BE DONE BY ADDING AN OPERATIONS RESEARCH COMPONENT TO ROUTINE MALARIA CONTROL ACTIVITIES IN SELECTED SITES WHICH WOULD NOT HINDER MALARIA CONTROL ACTIVITIES. ASIA/TR/HPN SUGGESTS THE MISSION CONSIDER THIS APPROACH FOR THE FOLLOWING REASONS:

A. IT WOULD DEMONSTRATE AID COMMITMENT TO A FLEXIBLE APPROACH TO MALARIA CONTROL BASED ON ACCURATE UP-TO-DATE ASSESSMENTS OF THE PROBLEM AND SOUND CHOICES OF ALTERNATIVE INTERVENTIONS. THIS, IN TURN, MAY STIMULATE THE GOP TO ADOPT A MORE DYNAMIC APPROACH TO MALARIA CONTROL BASED ON SURVEILLANCE AND RESPONSE WITH THE INTERVENTION MOST APPROPRIATE FOR THE SITUATION RATHER THAN A RIGID STRATEGY RELYING SOLELY ON ROUTINE RESIDUAL SPRAYING.

B. A COMPARATIVE TRIAL UNDER FIELD CONDITIONS AVOIDS NECESSITY OF MAKING AN IMMEDIATE DECISION TO SELECT EITHER AS THE SOLE AGENT IN THE PROJECT. PROJECT FUNDS FOR FUTURE INSECTICIDE COMMODITIES COULD BE USED FOR EITHER DEPENDING ON OUTCOME OF COMPARISON WHILE RESERVING A ROLE FOR MALATHION FOR THE NEAR FUTURE.

C. THE TA CONSULTANTS AND LOCAL STAFFING OF THE OPERATIONAL RESEARCH COMPONENT WOULD PROVIDE THE OPPORTUNITY TO DEVELOP AT AN ACCELERATED PACE A CADRE OF TECHNICIANS IN THE MOH (OR IN UNIVERSITIES) WHO MIGHT BE CRITICAL IN SUPPORTING THE ADOPTION OF A MORE RESPONSIVE, FLEXIBLE MALARIA CONTROL STRATEGY BASED ON SELECTIVE SPRAYING. HAIG
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UNCLAS STATE 025585

AIDAC

E.O. 12065: N/A

TAGS:

SUBJECT: ASIA REGIONAL MALARIA TRAINING SECRETARIAT

REF: ISLAMABAD 0505

AS PER ITEM 3 OF REFTEL, THE JANUARY 4 MEETING IN WASHINGTON REGARDING AGENCY POLICY ON CHOICE OF INSECTICIDES RECOMMENDED THE FOLLOWING:

1. THE INSECTICIDE OF CHOICE FOR RESIDUAL SPRAYING AGAINST MALARIA MOSQUITOS IS DDT.

2. WHEN AND IF THE VECTOR IS DEMONSTRATED TO BE RESISTANT TO DDT, AN ALTERNATIVE INSECTICIDE MUST BE CHOSEN.

3. AT THE PRESENT TIME AVAILABLE ALTERNATIVE INSECTICIDES INCLUDE: MALATHION, FENITROTHION, PROPOXUR, BENDIOCARB AND ACTELLIC.

4. THE ALTERNATIVE INSECTICIDE SHOULD BE CHOSEN ON THE BASIS OF COMPARATIVE FIELD TESTS IN COUNTRY OF AVAILABLE INSECTICIDES TAKING INTO CONSIDERATION EFFECTIVENESS, SAFETY, RESISTANCE POTENTIAL, ENVIRONMENTAL IMPUT, AND COST/BENEFIT RELATIONSHIPS. THESE TESTS SHOULD BE CONDUCTE

FOLLOWING GUIDELINES OF THE WHO, FOR THE STAGE TESTING OF PESTICIDES UNDER CAREFUL AND CAPABLE MONITORING.

5. IT IS SAFE TO SAY THAT INSECTICIDE RESISTANCE WILL EVENTUALLY DEVELOP IN AROPHELENE VECTORS REGARDLESS OF THE PESTICIDE(S) UTILIZED. IN THE PROJECT DESIGN OF MALARIA PROGRAMS, IT IS IMPORTANT THAT FUNDS BE MADE AVAILABLE FOR THESE COMPARATIVE TESTS OF POTENTIALLY ALTERNATIVE PESTICIDES.

COLLABORATIVE EFFORTS BETWEEN WHO, CDC, AND AID CAN BE MADE AVAILABLE TO PROVIDE TECHNICAL ADVICE FOR THE CONDUCT OF REQUIRED TRIALS.

THE POLICY STATEMENT IS BEING FINALIZED AND WILL BE SENT TO ALL MISSIONS SOONEST. HAIG
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E.O. 12065: N/A

TAGS:

SUBJECT: INITIAL ENVIRONMENTAL EXAMINATION (IEE)

REF: MEMO DAVIS/KARAM

1. ASIA AND ST BUREAUS CONCUR IN ANNEX H: ENVIRONMENTAL ASSESSMENT.

2. RECOMMEND DELETE LAST SENTENCE PAGE 4 QUOTE INFACT, THE.....AND FLEAS. UNQUOTE AS IT HAS NO BEARING ON THE IEE. HAIG
BT
#5625

PROJECT CHECKLIST

CROSS-REFERENCES: IS COUNTRY CHECKLIST UP TO DATE?	Yes
HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS CHECKLIST?	Yes

A. GENERAL CRITERIA FOR PROJECT

1. Continuing Resolution Unnumbered; FAA Secs. 634A; 653(b)

(a) Describe how authorizing and appropriations Committees of Senate and House have been or will be notified concerning the project;	(a) Congressional Notification and Congressional Presentation
(b) Is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that amount)?	(b) Yes, assistance is within the 1982 operational year

2. FAA Sec. 611 (a) (1)

Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to to carry out the assistance and (b) a reasonably firm estimate of the cost to U.S. of the assistance?	Yes

3. FAA Sec. 611 (a) (2)

If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	No further legislative action is required.

4. FAA Sec. 611 (b); Continuing Resolution Sec. 501

If for water or water-related land resource construction, has project met the standards and criteria as set	N.A.

forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973?

5. FAA Sec. 611(e)

If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?

Yes, the Mission Director has signed a FAA 611 (e) certification.

6. FAA Sec. 209

Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.

Other donors, specifically the World Healt Organization and the Government of Japan are financing other components of the GOP Malaria Control Plan as separate projects. Assistance will not encourage regional development programs.

7. FAA Sec. 601 (a)

Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and completion; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

No significant effect in these areas is expected. This is a malaria control project.

8. FAA Sec. 601 (b)

Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

Aside from a limited amount of goods and servic to be procured in Pakistan, all goods and services procured under this project will have their source and origin in the United States and will be procured in accordance with A.I.D. competitive procurement

9. FAA Sec. 612 (b), 636 (h); Continuing Resolution Sec. 508

Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.

The GOP will contribute the equivalent of approximately $39.7 million in local currency during the life of the project which is approximately 48% of the total cost of the project. All of the A.I.D. dollar grant will be used for foreign exchange costs.

10. FAA Sec. 612 (d)

Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

Yes, and Rs 21,000,000 of these U.S.-owned excess rupees will be used to finance all of the local costs under the project.

11. FAA Sec. 601 (e)

Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	Yes

12. Continuing Resolution Sec. 522

If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. procedures of the same, similar or competing commodity?	N.A.

13. FAA Sec. 525

Will the funds for this project be used to lobby for abortion?	No

B. FUNDING CRITERIA FOR PROJECT — This is an ESF project.

1. Development Assistance Project Criteria

a. FAA Sec. 102 (b), 111, 113, 281 (a)

Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical	N.A.

assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage domestic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

b. FAA Sec. 103, 103A, 104, 105 106, 107

Is assistance being made available: (including only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.) — N.A.

(1) (103) for agriculture, rural development or nutrition; if so (a) extent to which activity is specifically designed to increase productivity and income of rural poor; 103A if for agricultural research, full account shall be taken of the needs of small farmers, and extensive use of field testing to adapt basic research to local conditions shall be made; (b) extent to which assistance is used in coordination with programs carried out under Sec. 104 to help improve nutrition of the people of developing countries through encouragement of increased production of crops with greater nutritional value, improvement — N.A.

of planning, research, and education with respect to nutrition, particularly with reference to improvement and expanded use of indigenously produced foodstuffs; and the undertaking of pilot or demonstration of programs explicitly addressing the problem of malnutrition of poor and vulnerable people; and (c) extent to which activity increases national food security by improving food policies and management and by strengthening national food reserves, with particular concern for the needs of the poor, through measures encouraging domestic production, building national food reserves, expanding available storage facilities, reducing post harvest food losses, and improving food distribution.

(2) (104) for population planning under sec. 104 (b) or health under 104 (c); if so, (i) extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

N.A

(4) (105) for education, public administration, or human resources development; if so, extent to which activity strengthens non-formal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development; and (ii) extent to which assistance provides advanced education and training of people in developing countries in such disciplines as are required for planning and implementation of public and private development activities.	N.A
(5) (106; ISDCA of 1980, Sec. 304) for energy, private voluntary organizations, and selected development activities; if so, extent to which activity is: (i) (a) concerned with data collection and analysis, the training of skilled personnel, research on and development of suitable energy sources, and pilot projects to test new methods of energy production; (b) facilitative of geological and geophysical survey work to locate potential oil, natural gas, and coal reserves and to encourage exploration for potential oil, natural gas, and coal reserves; and (c) a cooperative program in energy production and conservation through research and development and use of small scale, decentralized, renewable energy sources for rural areas;	N.A

(ii) technical cooperation and development, especially with U.S. private and voluntary or regional and international development, organizations; (iii) research into, and evaluation of, economic development process and techniques; (iv) reconstruction after natural or manmade disaster; (v) for special development problems, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance; (vi) for programs of urban development, especially small labor intensive enterprises marketing systems, and financial or other institutions to help urban poor participatate in economic and social development. N.A.

c. (107) is appropriate effort placed on use of appropriate technology? (relatively smaller, cost-saving, labor using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor.) N.A.

d. FAA Sec. 110 (a)

Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least developed" country)? N.A.

e. FAA Sec. 110 (b)

Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? — N.A

f. FAA Sec. 281 (b)

Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government. — N.A

g. FAA Sec. 122 (b)

Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth? — N.A

2. Development Assistance Project Criteria (Loans Only) — This is an ESF project.

a. FAA Sec. 122 (b)

Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest. — N.A.

b. FAA Sec. 620 (d)

If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?	N.A.

3. Project Criteria Solely for Economic Support Fund

a. FAA Sec. 531 (a)

Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FAA Section 102?	Yes, the Project will improve the GOP's capability and capacity to control malaria in Pakistan, contribute to the reduction of morbidity and mortality from malaria, increase worker productivity, and thereby facilitate the achievement of the GOP's development goals as they relate to economic stability.

b. FAA Sec. 531 (c)

Will assistance under this chapter be used for military, or paramilitary activities?	No

5C (3) - STANDARD ITEM CHECKLIST

A. Procurement

1. FAA Sec. 602

Are there arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed?	Yes

2. FAA Sec. 604 (a)

Will all procurement be from the U.S. except as otherwise determined by the President or under delegation from him?	Yes

3. FAA Sec. 604 (d)

If the cooperating country discriminates against U.S. marine insurance companies, will commodities be insured in the United States against marine risk with a company or companies authorized to do a marine insurance business in the U.S.?	N.A.

4. FAA Sec. 604 (e); ISDCA of 1980 Sec. 705 (a)

If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? (Exception where commodity financed could not reasonably procured in U.S.).	N.A.

5. FAA Sec. 604 (g)

Is the geographic code for the project 941? If it is, is the construction and/or engineering to be procured from a firm in an advanced developing country?	No, the geographic code for this project is 000 and Pakistan.

6. FAA Sec. 603

Is the shipping excluded from compliance with requirement in section 901 (b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates?	No

7. FAA Sec. 621

If technical assistance is financed, to the fullest extent practicable will such assistance, goods and professional and other services be furnished from private enterprise on a contract basis?	Yes
If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?	N.A.

8. International Air Transport. Fair Competive Practices Act 1974

If air transportation of persons or property is financed on grant basis will provision be made that U.S. carriers will be utilized to the extent such service is available?	Yes

9. Continuing Resolution Sec. 505

If the U.S. Government is a party to a contract for procurement, does the contract contain a provision authorizing termination of such contract for the convenience of the United States?	Yes

B. Construction

1. FAA Sec. 601 (d)

If capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interests?	N.A.

2. FAA Sec. 611 (c)

If contracts for construction are to be financed, will they be left on a competitive basis to maximum extent practicable?	N.A.

3. FAA Sec. 620 (k)

If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed $100 million?	N.A.

C. Other Restrictions

1. FAA Sec. 122 (b)

If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?	N.A. This is a grant.

2. FAA Sec. 301 (d)

If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?	N.A.

3. FAA Sec. 620 (h)

Do arrangements exist to insure that United States foreign aid is not used in a manner which, contrary	Yes

to the best interests of the United States, promotes or assists the foreign aid projects or activities of the Communist-block countries?

4. Will arrangements preclude use of financing:

a. FAA Sec. 104 (f)

To pay for performance of abortions as a method of family planning or to, motivate or coerce persons to practice abortions; to pay for performance of involuntary sterilization as a method of family planning, or to coerce or provide financial incentive to any person to undergo sterilization? — Yes

b. FAA Sec. 620 (g)

To compensate owners for expropriated nationalized property? — Yes

c. FAA Sec. 660

To provide training or advice or provide any financial support for police, prisons, or other law enforcement forces, except for narcotics programs? — Yes

d. FAA Sec. 662

For CIA activities? — Yes

e. FAA Sec. 636 (i)

For purchase, sale, long-term lease, exchange or guaranty of the sale of motor vehicles manufactured outside U.S., unless a waiver is obtained. — Yes

f. Continuing Resolution Sec. 504

To pay pensions, annuities retirement pay, or adjusted service compensation for military personnel? — Yes

g. Continuing Resolution Sec. 506

To pay U.N. assessments, arrearages or dues. — Yes

h. Continuing Resolution Sec. 507

To carry out provisions of FAA section 209 (d) (Transfer of FAA funds to multilaeral organizations for lending.) — Yes

i. Continuing Resolution Sec. 509

To finance the export of nuclear equipment fuel, or technology or to train foreign nationals in nuclear fields? — Yes

j. Continuing Resolution Sec. 510

To aid the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights? — Yes

k. Continuing Resolution Sec. 516

To be used for publicity or propaganda purposes within U.S. not authorized by Congress? — Yes

ANNEX C

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN

Cable : USAIDPAK

HEADQUARTERS OFFICE
ISLAMABAD

THE DIRECTOR

MALARIA CONTROL II PROJECT

FAA SECTION 611 (e) CERTIFICATION

I, Donor M. Lion, the principal officer of the Agency for International Development in the Islamic Republic of Pakistan, having taken into account, among other things, the maintenance and utilization of projects in the Islamic Republic of Pakistan previously financed or assisted by the United States, do hereby certify, pursuant to Section 611 (e) of the Foreign Assistance Act of 1961, as amended, that, in my judgement, the Islamic Republic of Pakistan has both the financial capability and the human resources capability to effectively implement, utilize and maintain the proposed Malaria Control II Project.

This judgement is based upon the project analysis as detailed in the Malaria Control II Project Paper and is subject to the conditions imposed therein.

Donor M. Lion

Donor M. Lion
Director
USAID/Pakistan

April 2, 1982

Date

ANNEX II

No. 1(1)CH-VI/81.
Government of Pakistan
MINISTRY OF FINANCE AND
ECONOMIC AFFAIRS
(ECONOMIC AFFAIRS DIVISION)

Islamabad, 31st March, 1982.

COP LETTER OF REQUEST
FOR DOLLAR AND MONDALE
RUPEE ASSISTANCE

Telegram : ECONOMIC
Telex : ECDIV No : 05-1

SECRETARY.
Tele: 21520

Dear Dr. Lion,

As part of our two Governments' agreement on a six-year $ 1.625 billion economic assistance program, the Government of Pakistan formally requests from USAID/Pakistan forty-one million dollars ($ 41,000,000) in United States assistance and twenty-one million rupees (Rs 21,000,000) in Mondale Rupees to fund a Malaria Control II Project.

2. The Malaria Control II Project is designed to maintain, or reduce further, the level of malaria to an annual parasite incidence of 0.5 cases per thousand population by strengthening the planning, evaluation, research, and training components of the Government of Pakistan's Malaria Control Program and by providing insecticides and other commodities for the program.

3. Subject to the availability of funds, approximately $ 41 million of ESF grant funds and Rs 21 million in Mondale Rupees would be provided over a five-year period. These funds will be used to improve the physical facilities and strengthen the training and research capability of the National Malaria Training Center; assist the Government to implement its urban malaria control program; strengthen the surveillance and epidemiologic reporting system and overall management of the malaria program; and ensure the availability of adequate supplies of insecticides and other equipment and supplies required for the national Malaria Control Program.

4. The Government of Pakistan assures the United States Government of its full cooperation in carrying out the Malaria Control II Project. The manpower, financial, and other inputs required of us will be provided in an expeditious manner.

5. We look forward to a continued, combined effort by both our governments to yield a productive and beneficial program for the people of Pakistan.

Yours sincerely,

(EJAZ AHMAD MALIK)

Dr. Damar M. Lion,
Director,
USAID Mission,
Islamabad.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Malaria Control II (391-0472)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: To reduce morbidity and mortality from endemic diseases, especially malaria, through the establishment of a responsive, efficient, and effective nationwide health system.	Measures of Goal Achievement - Measurable reductions in morbidity and mortality from endemic diseases which are directly attributable to specific health interventions. - Increased utilization of the national health services delivery system by the general public.	- Morbidity and mortality data from the federal and provincial health ministries - Health facility service statistics and treatment records	Assumptions for achieving goal targets: - Continued GOP commitment to the provision of health services to the population as evidenced by adequate budgetary support. - Adequately staffed, equipped, and supplied health facilities which are able to attract clients.
Project Purpose: To contain or further reduce the incidence of malaria.	Conditions that will indicate purpose has been achieved: End of project status. - Annual parasite incidence (API) of 0.5 or less cases per 1000 population on a national basis - Reduction in the incidence of *P. falciparum* to 2% of all the cases of malaria - Number of blood smear slides collected by PCD by general health staff exceeds 25% of all slides collected - House spraying does not exceed 25% (continued on p. 2)	- Annual program evaluations - Federal and provincial malaria control program administrative and technical reports	Assumptions for achieving purpose: - Continued GOP commitment to malaria control as evidenced by adequate budgetary support. - Chloroquine resistance does not develop - Resistance to malathion and other OP compounds does not develop - Increased cooperation and participation of the general public and health services staff in malaria control activities. (continued on p. 2)
Outputs: - Malaria cases avoided - Personnel Trained - Training facility purchased, equipped and adequately staffed - Operationally effective urban malaria control programs - Annual plans of operation and insecticide handling - Annual evaluations - 3-year extended plan of operation beyond 1987 (continued on page 2.)	Magnitude of Outputs: - 2½ million - 668 - 1 - 50 - 5 - 5 - 1	- Annual program evaluations - Federal and provincial malaria control program administrative and technical reports	Assumptions for achieving outputs: - The National Malaria Training Center (NMTC) meets the training and research needs of the program. - GOP approves six new positions for the NMTC and three new positions for the federal program (DOMC). - Qualified participants are selected for training. - Municipal corporations are adequately staffed and have adequate budgetary support for malaria control activities. (continued on p. 2)
Inputs: 1. A.I.D. a. Short and long-term technical assistance b. Support for in-service training programs c. Short-term fellowships outside of Pakistan d. Budget support for operational and basic research e. Purchase and renovation of a new training facility f. Commodities including insecticides, urban malaria control vehicles, ULV (continued on page 2.)	Implementation Target (Type and Quantity) See financial analysis, implementation schedule, and commodity, technical assistance, and training plans in the project paper.	- A.I.D. and GOP project records and financial documents - Annual program evaluations	Assumptions for providing inputs: - A.I.D. and GOP proposed funding levels are approved by their respective governments and disbursements are made on a timely basis. - Appropriate overseas training programs can be identified - A physically adequate and fairly priced building can be located for the NMTC (continued on p. 2)

Page 1

DRAFT PROJECT AUTHORIZATION

Name of Country: Pakistan

Name of Project: Malaria Control II

Number of Project: 391-0472

Number of Grant:

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Malaria Control II Project for the Islamic Republic of Pakistan involving planned obligations of not to exceed U.S. Dollars Forty-One Million (U.S. $41,000,000) and Twenty-One Million United States-owned Pakistani Rupees (Rs 21,000,000) in grant funds over a five (5) year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the Project.

2. This Project is designed to assist the GOP to contain or further reduce the incidence of malaria. The project will achieve this result by expanding the capacity and increasing the capability of the federal, provincial and municipal health services to effectively control malaria. The Malaria Control II Project consists of four components, under which assistance such as the following will be included: (a) Program Management: technical assistance to strengthen the GOP Malaria Control Program in the areas of program management, evaluation, epidemiology, surveillance, urban malaria control, and the safe handling of insecticides; (b) Training: technical assistance to strengthen the capability of the National Malaria Training Center (NMTC) to meet the training and research needs of the Malaria Control Program; support for a new facility for the Center; and, short-term fellowships and in-service training programs for malaria and general health services personnel in specific aspects of malaria control; (c) Basic and Operational Research: technical assistance, supplies and equipment, and budget support to conduct a variety of field studies; and, (d) Commodity Support: insecticides, urban malaria control vehicles, ultra-low volume spraying machines, and other necessary commodities.

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3. Except as A.I.D. may otherwise agree in writing, the Project Agreement(s) which may be negotiated and executed by the officer(s) to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin of Goods and Service

Goods and services financed by A.I.D. under this Project shall have their source and origin in the Cooperating Country or in the United States except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Project shall be financed only on flag vessels of the United States and the Cooperating Country.

b. Conditions Precedent to Purchase of a Facility for the National Malaria Training Center (NMTC)

Prior to the disbursement under this Project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made for the purchase of a building for the NMTC, the Grantee shall, through its Directorate of Malaria Control (DOMC), provide evidence, in form and substance satisfactory to A.I.D., that:

i. six new positions have been approved by the Grantee for the NMTC and that the NMTC is actively recruiting one senior scientific officer, one senior malaria superintendent to supervise field research, one senior entomologist, two technical assistants for the entomologist, and one health educator.

ii. the proposed building is adequate for the needs of the NMTC, is in good physical condition, and is reasonably and fairly priced.

iii. the Grantee has agreed to cover all operating and maintenance costs for the new building.

c. Conditions Precedent to Renovation of the Building Purchased for the NMTC

Prior to the disbursement under this Project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made for the renovation of the building purchased for the NMTC, the Grantee shall, through its

DOMC, provide evidence, in form and substance satisfactory to A.I.D., that adequate designs have been prepared for the renovation of the building and responsive local contractors have been selected to do the renovation work in accordance with A.I.D. competitive procurement procedures for host country contracting.

d. Conditions Precedent to Release of Urban Malaria Control Vehicles and Equipment

Prior to the release to municipal corporations of urban malaria control vehicles and ultra-low volume (ULV) fogging machines procured under this project, the municipal corporations shall, unless A.I.D. otherwise agrees in writing, provide to the DOMC, with copies to A.I.D., epidemiological evidence based on passive case detection and/or entomological data, that malaria is a public health problem in the municipality based on the criterion of an annual parasite incidence (API) of 0.5 or more cases per thousand population.

e. Conditions Precedent to the Procurement of Insecticides in FY 1983 - FY 1986

Prior to the disbursement under this project or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made each year for the procurement of insecticides in FY 1983 through FY 1986, the Grantee, acting through the DOMC, shall furnish to A.I.D., in form and substance satisfactory to A.I.D. except as A.I.D. may otherwise agree in writing, evidence that insecticides procured by A.I.D. for the preceding year's program have been effectively utilized for the program, and, for the succeeding year's program, the amounts, specifications, and scientific basis for calculating the insecticide requirements.

f. Covenants as to Documentation Required from the Grantee

i. The Grantee, through the DOMC, shall prepare by no later than March 1 of each year, and provide copies to A.I.D., an annual plan detailing safety measures and procedures to be employed in the application of all insecticides used in the program.

ii. The Grantee, through the DOMC, shall prepare in consultation with A.I.D., by no later than January 1 of each year, and provide copies to A.I.D., an annual program evaluation plan outlining criteria and benchmarks for each program component to be assessed during the annual February/March program review.

iii. The Grantee, through the DOMC, shall prepare in consultation with A.I.D. and provide copies to A.I.D.: (a) a plan of operations (PC-1) for the period 1984 - 1986 by no later than July 1, 1983; (b) annual plans of operation each year during the period 1983 - 1987 by no later than April 1 of the preceding year covered by the plan, which shall include: (1) a description of the responsibilities of all other agencies and institutions involved in malaria control activities such as Municipal Committees, Cantonment Boards, as well as responsiblities of other government and semi-government agencies; (2) a timetable for project activities; and, (3) an itemization of the program budget including external sources of assistance; and (c) an extended plan of operation for malaria control covering a period of at least three years following the completion of the A.I.D. project, i.e., September 30, 1987 by no later than July 1, 1987.

g. Covenant as to Participant Training

The Grantee shall make every reasonable effort to require that each participant trained overseas under this Project works in malaria control activities in Pakistan for not less than three times the length of time of his or her training program provided, however, that in no event shall the participant be allowed to work for less than one year nor be required to work for more than five years from the date of the participant's return to Pakistan.

h. Covenant as to Safety of Insecticide Handling

The Grantee shall take appropriate safety measures for the use of insecticides financed under this program, including the provision of safety equipment to insecticide handlers, training of handlers and supervisory personnel in the risks associated with the insecticides, and instruction in proper procedures for safe handling. The Grantee shall also maintain rigid control over the quality of insecticides procured for the program to ensure that they meet WHO and A.I.D. technical requirements.

APPROVED: _____
M. Peter McPherson

DATE: _____

AGENCY FOR INTERNATIONAL DEVELOPMENT

ADVICE OF PROGRAM CHANGE

COUNTRY:	Pakistan
PROJECT TITLE:	Malaria Control II
PROJECT NUMBER:	391-0472
FY 1982 CP REFERENCE:	None
APPROPRIATION CATEGORY:	Economic Support Funds
LIFE OF PROJECT FUNDING:	$41,000,000 Grant
INTENDED FY 82 OBLIGATION:	$ 1,500,000 Grant

This is to advise that A.I.D. intends to obligate $1,500,000 of Economic Support Funds in FY 1982 for the Pakistan Malaria Control II Project. This is a new project and was not included in the FY 1982 Congressional Presentation.

This project will build on the achievements of the previous A.I.D.-assisted Malaria Project (1975-1980) by providing technical assistance, training, support for basic and operational research, and commodities to assist the Government of Pakistan to contain or further reduce the incidence of malaria.

ANNEX: Activity Data Sheet

ACTIVITY DATA SHEET

PROGRAM: PAKISTAN

TITLE	FUNDS	PROPOSED OBLIGATION (In thousands of dollars)		
Malaria Control II	ESF	FY 82: 1,500	LIFE OF PROJECT: 41,000	
NUMBER 391-0472 GRANT ☒ LOAN ☐ NEW ☒ CONTINUING ☐	PRIOR REFERENCE: None	INITIAL OBLIGATION FY 82	ESTIMATED FINAL OBLIGATION FY 86	ESTIMATED COMPLETION DATE OF PROJECT FY 87

Purpose: To assist the Government of Pakistan to contain or further reduce the incidence of malaria.

Background: Malaria has been identified as a major disease in Pakistan since ancient times and still persists as a serious public health threat to the country's economic and social well-being. The large size of the country, the variety of geographical and demographic conditions, the large refugee population, and the mobility of the population contribute significantly to the malaria control problem.

In response to the resurgence of malaria in Pakistan in the mid-1970's, the GOP undertook an Extended Malaria Control Program (1975-1980) which was supported by A.I.D.'s Malaria Control Project. This program achieved substantial reductions in the annual parasite incidence rate from 138 cases per 1,000 in 1976 to 0.5 cases per 1,000 population in 1980. However, without appropriate support, the epidemiological situation can rapidly deteriorate with extremely serious consequences. It is therefore critical that the GOP continue the surveillance and insecticidal spraying activities that have reduced malaria incidence from epidemic to manageable proportions.

Project Description: This project is designed to assist the Government of Pakistan implement its Malaria Control Program under the New Extension Plan of the GOP for the period 1980-1983, and beyond through 1987. The Malaria Control II project will build on the achievements of the previous project by: (1) expanding the capacity and increasing the capability of the federal, provincial, and municipal health services to effectively control malaria; and, (2) assisting the MCP move from a vertically organized program emphasizing total coverage house-spraying and active case detection surveillance methods to an integrated program utilizing a selective mix of vector control measures and a better balance between active and passive case detection and treatment methods. The Malaria Control II Project consists of four components, under which assistance will be provided as follows: (1) Program Management: short and long-term technical assistance to strengthen the GOP Malaria Control Program in the areas of program management, evaluation, epidemiology, surveillance, urban malaria control, and the safe handling of insecticides; (2) Training: short-term technical assistance to strengthen the capability of the National Malaria Training Center (NMTC) to meet the training and research needs of the Malaria Control Program; support for the purchase, renovation and equipping of a new facility for the Center; and, short-term fellowships and in-service training programs for malaria and general health services personnel in specific aspects of malaria control; (3) Basic and Operational Research: short-term technical assistance, supplies and equipment, and budget support to conduct a variety of field studies; (4) Commodity Support: insecticides, urban malaria control vehicles, ultra - low volume (ULV) spraying machines, and other necessary commodities. The project will also include a Rs 21 million Mondale rupee component to finance all the local costs under the project.

Relationship of Project to A.I.D. Country Strategy: This project will promote at least three major objectives of A.I.D.'s strategy in Pakistan. It will provide quick disbursing assistance to support Pakistan's balance of payments situation by financing the importation of a substantial amount of insecticides required for the malaria control program and will contribute directly to the improved health of the population and to increased agricultural productivity.

Over 75 percent of Pakistan's rural and urban areas are at risk of malaria. Epidemiologic investigations have identified moderate to highly endemic malarious areas in the fertile Indus River basin. Since agriculture is the single most important sector of Pakistan's economy, A.I.D.'s strategy accords highest priority to this sector. Because success in the agriculture sector depends, among other things, on the existence of a healthy and productive work force, this project makes a key contribution to A.I.D.'s development strategy in Pakistan.

Unfortunately, peaks of malaria transmission occur in Pakistan during the peak planting and harvesting seasons. This project will therefore contribute to increased productivity by minimizing one of the major public health constraints to agricultural production and socio-economic development.

Beneficiaries: The Malaria Control II Project will provide direct and immediate benefits to all inhabitants of malarious sections of the country, which is the majority of the population. Spraying and other vector control measures, case detection, and treatment are designed to reach all affected persons in a given area to interrupt malaria transmission. Because spraying and active case detection are conducted on a house-to-house basis, the project will reach a segment of the population frequently missed by many social sector programs, namely, women and small children. These groups, whose limited physical access to health facilities is compounded in Pakistan by cultural factors, will receive preventive and curative malaria services, which will reduce morbidity among all age groups and mortality among infants and increase female productivity. The project will also seek ways to increase the participation of females, both as providers and recipients of services, in surveillance activities.

Host Country and Other Donors: The GOP will contribute the equivalent of $39,700,000 to the program over the next five years. This amount consists of $16,025,000 to support the federal program of the Directorate of Malaria Control and $4,375,000 annually or a total of $23,675,000 over the project period to support all four of the provincial malaria control programs. With the exception of the equivalent of $2,400,000 in foreign exchange which the GOP used to purchase insecticides for the 1982 spraying season, all costs supported by the GOP will be local costs. The GOP contribution does not include urban malaria control program costs which are borne by municipal corporations. At the present time only two other donors have made pledges of support to the national malaria control program. The Government of Japan has provided $2,000,000 worth of insecticide for the 1982 spraying season and may provide additional support in future years. The World Health Organization has budgeted $200,000 annually over the next five years for malaria control activities. In addition, the United Nations High Commission for Refugees has been providing funds specifically for malaria control activities in the Afghan refugee camps located in the Northwest Frontier Province and Baluchistan and has budgeted about $2,500,000 for this purpose for 1982.

Major Outputs:	All Years
Malaria cases avoided	21 million
Trained personnel	668
Training facility purchased, equipped and staffed	1
Operationally effective urban malaria control programs	50

Criteria for selection of appropriate insecticides and effective biological control methods are identified and applied in the program.

Annual plans of operation and insecticide handling	5
3-year Extended plan of operation beyond 1987	1
Annual Evaluations	5

A.I.D. Financed Inputs:	Life of Project ($ 000)
Technical Assistance	786
Training	22
Commodities	39,772
Other Costs	420
TOTAL	41,000

U.S. FINANCING (In thousands of dollars)	Obligations	Expenditures	Unexpended
Through September 30, 1979	-	-	-
Estimated Fiscal Year 1980	-	-	
Estimated through September 30, 1980	-	-	
		Future Year Obligations	Estimated Total Cost
Proposed Fiscal Year 1982	1,500	39,500	41,000

PRINCIPAL CONTRACTORS OR AGENCIES

Center for Disease Control and Other U.S. Contractors.

DRAFT PROJECT DESCRIPTION FOR INCLUSION IN THE PROJECT AGREEMENT

This project is designed to assist the Government of Pakistan implement its Malaria Control Program (MCP) under the New Extension Plan (PC-1) of the MCP for the period 1980-1983, and beyond through 1987. The previous A.I.D.-assisted malaria project, which ended in 1980, was successful in achieving an annual parasite incidence (API) of 0.5 cases per thousand or 500 cases per one million population. The Malaria Control II Project will build on the achievements of the previous project by assisting the Government of Pakistan to contain or further reduce the incidence of malaria. This will be accomplished by: (1) expanding the capacity and increasing the capability of the federal, provincial, and municipal health services to effectively control malaria; and, (2) assisting the MCP move from a vertically organized program emphasizing total coverage house-spraying and active case detection surveillance methods to an integrated program utilizing a selective mix of vector control measures and a better balance between active and passive case detection and treatment methods. Successful execution will depend on a number of key variables, including vector resistance to the organophosphorous insecticides, epidemiologically accurate direction of spray operations, cooperation and participation of the general public and general health services staff, reduction in the incidence of P. falciparum malaria, collaboration of municipal authorities, and expanded use of feasible alternative control measures.

The Malaria Control II Project consists of four components, under which assistance will be provided as follows: (1) Program Management: short and long-term technical assistance to strengthen the GOP Malaria Control Program in the areas of program management, evaluation, epidemiology, surveillance, urban malaria control, and the safe handling of insecticides; (2) Training: short-term technical assistance to strengthen the capability of the National Malaria Training Center (NMTC) to meet the training and research needs of the Malaria Control Program; support for the purchase, renovation and equipping of a new facility for the Center; and, short-term fellowships and in-service training programs for malaria and general health services personnel in specific aspects of malaria control; (3) Basic and Operational Research: short-term technical assistance, supplies and equipment, and budget support to conduct a variety of field

studies; and, (4) Commodity Support: insecticides, urban malaria control vehicles, ultra-low volume (ULV) spraying machines, and other necessary commodities.

A summary of project costs by expense category and source of funding for FY 1982 and for the life of the project is shown below.

SUMMARY OF PROJECT COSTS BY EXPENSE CATEGORY AND SOURCE OF FUNDING

EXPENSE CATEGORY	FY 1982			Life of Project		
	A.I.D.		GOP	A.I.D.		GOP
	Dollar Grant (in $000)	Mondale Rupees (in Rs 000)	(in Rs 000)	Dollar Grant (in $000)	Mondale Rupees (in Rs 000)	(in Rs 000)
1. Technical Assistance						
a. Short-Term	100	232	-	176	1,252	-
b. Long-Term	322	1,170	-	610	6,154	-
Sub-Total	422	1,402	-	786	7,406	-
2. Training						
a. Third Country	6	26	-	22	365	-
b. In-Country	-	114	-	-	1,574	-
Sub-Total	6	140	-	22	1,939	-
3. Commodities						
a. Vehicles	-	-	-	1,126	1,002	-
b. Fogging Machines (Sprayers)	-	-	-	953	-	-
c. Insecticides	1,000	-	25,000	37,643	-	25,000
d. Trg/Res. Equipment	-	-	-	50	500	-
Sub-Total	1,000	-	25,000	39,772	1,502	25,000
4. Other Costs						
a. Building Purchase/ Renovation	-	-	-	-	6,000	-
b. Evaluation	19	116	-	115	866	-
c. Research	-	104	-	-	1,373	-
d. Salaries, Rent, Operating Costs	-	-	77,840	-	-	389,071
Sub-Total	19	220	77,840	115	8,239	389,071
TOTAL	1,447	1,762	102,840	40,695	19,086	414,071
Contingency	53	177	-	305	1,914	-
GRAND TOTAL	1,500	1,939	102,840	41,000	21,000	414,071

INITIAL ENVIRONMENTAL EXAMINATION (IEE)

PROJECT LOCATION:	Pakistan
PROJECT TITLE:	Malaria Control II
LIFE OF PROJECT:	FY 1982-1986
FUNDING (000):	A.I.D. = $41,000 Rs 21,000 GOP = $39,700
IEE PREPARED BY:	Lawrence T. Cowper, Regional Malaria Advisor
ENVIRONMENTAL ACTION RECOMMENDED:	Negative Determination. No further environmental analysis is required. If new chemical, biological, or physical malaria control methodologies are introduced into the program after the approval of this project, the environmental impact will be reviewed, and, if necessary, environmental studies or assessments will be carried out.
MISSION DIRECTOR'S CONCURRENCE:	Signature Donald Zu. Lein Date April 2, 1982
DECISION OF ASSISTANT ADMINISTRATOR FOR ASIA:	Approved R Halligan Disapproved _____ Date 23 April 1982

INITIAL ENVIRONMENTAL EXAMINATION

I. Project Description

This project will provide technical assistance, support for applied research in malaria control, training, and commodities to assist the GOP to implement its Plan of Operations for a nationwide malaria control program. The project will provide funding to be used in an effective malaria control program focusing on the rural population of Pakistan, thus enhancing economic and social development in the fields of health and agriculture. The program will also contain an urban malaria control component which will encourage environmental improvements, larviciding, water management, and limited ULV adulticide activities. The project will enhance the quality of the environment in those rural and urban areas where source reduction and water management practices are made a part of the program. Insecticides will be used in the program, but these chemicals, which have been used in Pakistan with no adverse effects over the last five years, will be applied in a manner which is not detrimental to the environment. Health safeguards are in place in the field program, and careful attention will be paid to training and supervision in the handling of insecticides.

II. Evaluation of Environmental Impact

The A.I.D. Environmental Impact Statement (EIS) included an in-depth review of the impact of malaria programs on the environment. The conclusions of the EIS were that the major insecticides used in malaria control programs have a favorable risk-benefit impact on the environment due to their method of application in public health programs. In 1977, a comprehensive Environmental Assessment undertaken in Sri Lanka concluded that malathion was an acceptable insecticide for use in malaria control efforts. In May, 1980, an Environmental Assessment carried out on the use of malathion in India's malaria control activities reached similar conclusions.

One of the purposes of the comprehensive EIS submitted by A.I.D. and accepted by the Environmental Protection Agency (EPA) was to avoid duplicating environmental review efforts for projects of a similar nature in countries with comparable conditions. Environmental studies have been made on malaria control programs in the last four years in India, Thailand, Nepal, and Sri Lanka with a similar favorable risk-benefit conclusion. The points of similarity between this project and previous environmental studies, both of malathion use and other methods of malaria control, should obviate the need for another analysis. All the above reports are available in AID/Washington.

In addition to DDT, BHC, and malathion, the Pakistan malaria program has been applying the organophosphorus insecticide fenitrothion in its spray operation program since 1977 in limited areas of the country. Under this project, the GOP does not plan to use the insecticides DDT and BHC, but is expected to apply fenitrothion on a broader scale than before as well as continuing the large-scale application of malathion. Both of these insecticides are bio-degradable. The environmental impact of malathion has been reviewed in previous environmental documentation for Pakistan and hence is not repeated in this IEE.

Fenitrothion has gone through the seven stage trials of screening by the World Health Organization (WHO) and is one of the compounds recommended by WHO for residual spraying in malaria control programs. Fenitrothion like malathion does inhibit cholinesterase activity, but to date, Pakistan has not experienced any health problems in its spray operations with this insecticide due to the safeguards built into the program of protective clothing, frequent testing of cholinesterase levels in personnel, adequate supervision, regular and refresher training, and proper storage and distribution practices. Fenitrothion has been used in Haiti and India in their operational malaria programs and is being scheduled for use in Thailand this year. All three of these malaria control programs are also being assisted by A.I.D. Fenitrothion is registered in the U.S.A. with the Environmental Protection Agency (EPA) for a variety of uses. There have been numerous significant studies on the environmental impact of fenitrothion since it was reported as a chemical in 1956. These studies include tests on man, cows, dogs, rats, rabbits, fish, birds, steers, and sheep. In a WHO program using fenitrothion as a residual insecticide in Kisumu, Kenya, only one mild case of intoxication was reported in 2000 man-days of spraying. Fenitrothion was applied widely as a residual spray in the Punjab Province in 1981, and no intoxication of spraymen or villagers was reported.

As fenitrothion is a wide-spectrum insecticide, it is apt to kill a number of non-target organisms in the areas where it is used unless accurate operational techniques are adopted. This insecticide is highly toxic to bees, but as its primary use in malaria control is as an indoor residual spray, this should not cause environmental problems. Additional information on fenitrothion is available in various EA's prepared for other malaria control programs.

III. Recommendation

In view of the above examination of the environmental issues of this project, it is recommended that a negative determination be made for this program.

PROJECT-SPECIFIC DATA

EPIDEMIOLOGICAL REPORT AND S.IDE POSITIVITY RATES (%) BY YEAR (1978-1981)

Province	Total Slides	F a/	V b/	M c/	Mixed d/	Total Positive Slides e/	SPR(%)
1 9 7 8							
Punjab	1,533,603	1,677	6,165	3	26	7,819	0.51
Sind	388,067	3,420	3,955	-	57	7,318	1.89
NWFP	608,838	84	565	-	3	646	0.11
Baluchistan	57,749	136	245	-	4	377	0.65
Sub-Total	2,588,257	5,317	10,930	3	90	16,160	0.62
Azad Kashmir	22,345	-	244	-	-	244	1.09
TOTAL	2,610,602	5,317	11,174	3	90	16,404	0.63
1 9 7 9							
Punjab	1,611,677	2,409	3,425	-	27	5,807	0.36
Sind	412,434	1,990	2,376	-	35	4,331	1.05
NWFP	583,179	389	1,436	-	10	1,815	0.31
Baluchistan	79,334	133	235	-	3	365	0.46
Sub-Total	2,686,624	4,921	7,472	-	75	12,318	0.45
Azad Kashmir	42,024	-	254	-	-	254	0.60
TOTAL	2,728,648	4,921	7,726	-	75	12,572	0.46

a/ Plasmodium Falciparum

b/ Plasmodium Vivax

c/ Plasmodium Malarare

d/ Mixed Parasites

e/ Total Positive Slides = F + V + M - Mixed ÷ Total Slides

Province	Total Slides	F a/	V b/	M c/	Mixed d/	Total e/ Positive Slides	SPR(%)
1 9 8 0							
Punjab	1,829,733	1,912	7,319	-	31	9,200	0.50
Sind	456,274	1,211	2,301	-	20	3,492	0.77
NWFP	663,120	401	4,160	-	18	4,543	0.69
Baluchistan	57,497	273	216	-	17	472	0.82
Sub-Total	3,006,624	3,797	13,996	-	86	17,707	0.59
Azad Kashmir	47,368	-	316	-	-	316	0.67
TOTAL	3,053,992	3,797	14,312	-	86	18,023	0.59
1 9 8 1 (Through September)							
Punjab	1,197,560	743	10,442	-	11	11,174	0.93
Sind	333,798	721	1,880	-	22	2,579	0.77
NWFP	378,215	56	2,396	-	4	2,448	0.65
Baluchistan	16,939	21	43	-	-	64	0.38
Sub-Total	1,926,512	1,541	14,761	-	37	16,265	0.84
Azad Kashmir	35,774	-	238	-	-	238	0.67
TOTAL	1,962,286	1,541	14,999	-	37	16,503	0.84

EPIDEMIOLOGICAL REPORT AND SLIDE POSITIVITY RATES (%) BY PROVINCES (1978-1981)

Year	Total Slides	F	V	M	Mixed	Total Positive Slides	SPR(%)
PUNJAB							
1978	1,533,603	1,677	6,165	3	26	7,819	0.51
1979	1,611,677	2,409	3,425	-	27	5,807	0.36
1980	1,829,733	1,912	7,319	-	31	9,200	0.50
1981	1,197,560	743	10,442	-	11	11,174	0.93
TOTAL	6,172,573	6,741	27,351	3	95	34,000	0.55
S I N D							
1978	388,067	3,420	3,955	-	57	7,318	1.89
1979	412,434	1,990	2,376	-	35	4,331	1.05
1980	456,274	1,211	2,301	-	20	3,492	0.77
1981	333,798	721	1,880	-	22	2,579	0.77
TOTAL	1,590,573	7,342	10,512	-	134	17,720	1.11
N W F P							
1978	608,838	84	565	-	3	646	0.11
1979	583,179	389	1,436	-	10	1,815	0.31
1980	663,120	401	4,160	-	18	4,543	0.69
1981	378,215	56	2,396	-	4	2,448	0.65
TOTAL	2,233,352	930	8,557	-	35	9,452	0.42

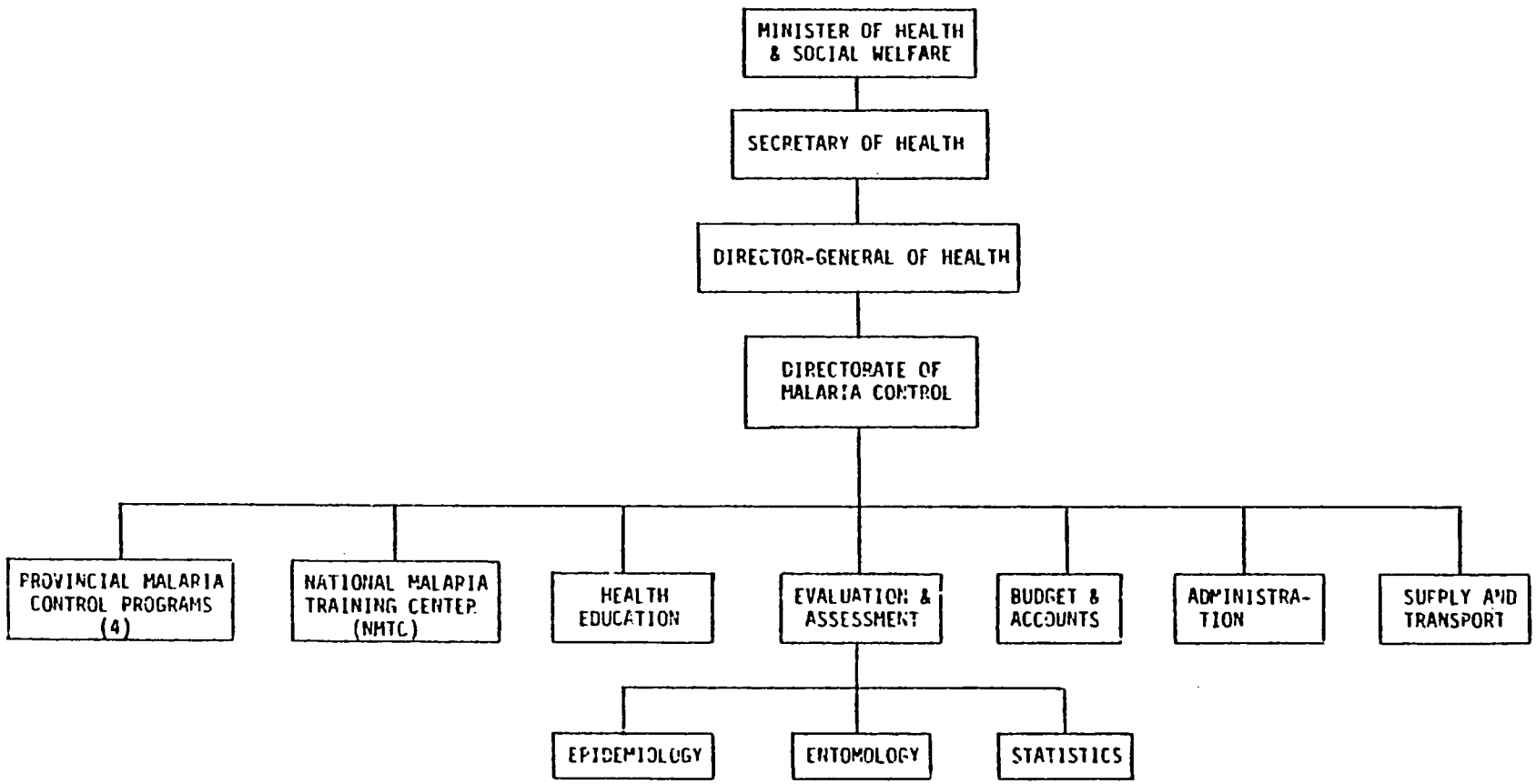
BALUCHISTAN

Year	Total Slides	F	V	M	Mixed	Total Positive Slides	SPR(%)
1978	57,749	136	245	-	4	377	0.65
1979	79,334	133	235	-	3	365	0.46
1980	57,497	273	216	-	17	472	0.82
1981	16,939	21	43	-	-	64	0.38
TOTAL	211,519	563	739	-	24	1,278	0.60

AZAD KASHMIR

1978	22,345	-	244	-	-	244	1.09
1979	42,024	-	254	-	-	254	0.60
1980	47,368	-	316	-	-	316	0.67
1981	35,774	-	238	-	-	238	0.67
TOTAL	147,511	-	1,052	-	-	1,052	0.71

ORGANIZATION CHART OF THE
DIRECTORATE OF MALARIA CONTROL (DOMC)



ANNEX K

A SUMMARY OF THE TRAINING AND RESEARCH ACTIVITIES OF THE NATIONAL MALARIA TRAINING CENTER DURING THE FIVE-YEAR EXTENSION PLAN OF MALARIA CONTROL (1975-1980) 1/

1. Introduction

The National Malaria Training Center was established on the 27th of March, 1961 to cater for the training needs of the original 14-year plan for the eradication of malaria (1961-1974). Originally, it was housed in a wing of the College of Community Medicine but was shifted in 1975 to its present rented premises when its building was handed over to Allama Iqbal Medical College.

The Training Center is now completing 20 years of its existence. Over the years, the scope of its activities has widened to include applied field research projects during the period under review. This has been an important step forward that will usher in a new role for the Training Center during coming years.

2. Administrative Set-Up

The Training Center is a subordinate office of the Directorate of Malaria Control, Ministry of Health and Social Welfare. The existing organization is shown on the chart on the following page.

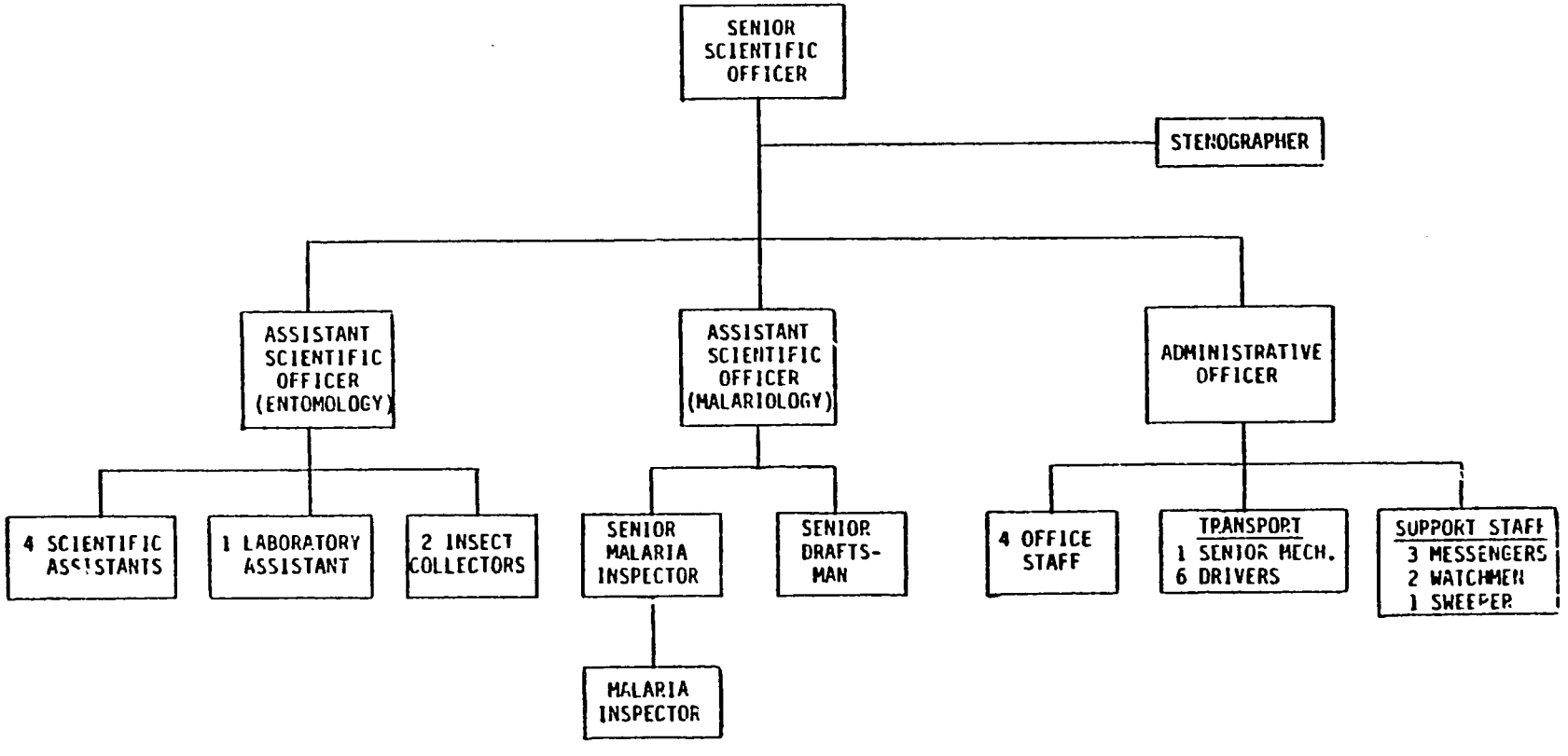
3. Courses Offered

During the past five years, the National Malaria Training Center has offered courses in accordance with the needs of the Malaria Control Program. The contents of various courses have been suitably revised to meet the changing requirements of the Malaria Control Program. Some altogether new courses were offered during this period to meet specific training requirements.

The courses offered by the Training Center can be divided into two categories: Basic and Refresher.

1/ Prepared by the National Malaria Training Center, Lahore, 1980, and retyped by USAID/Pakistan.

ORGANIZATION CHART
OF THE
NATIONAL MALARIA TRAINING CENTER (LAHORE)



3.1. Basic Courses

The basic courses offered by the Training Center are designed to meet the pre-service training requirements of various categories. Since the Training Center caters for training of basic laboratory workers and middle and top tiers of field supervisory staff, therefore, the following types of basic courses were offered during the period of the Five-Year Extension Plan:

3.1.1. Senior Course
3.1.2. Junior Course
3.1.3. Microscopist Course

3.1.1. Senior Course

This course is intended to train physicians, malaria superintendents, and entomologists. The malaria superintendents and entomologists are at least university graduates, preferably with science. Duration of the course is 12-14 weeks. The participants of the course received lectures, demonstrations, practical and field work in parasitology, laboratory technology, epidemiology, entomology, and field operations. The major emphasis of the training at the Training Center is in practical field training. External specialists are invited to deliver lectures at the Training Center when required.

Normally one Senior Course is offered each year and is considered sufficient to meet the need of replacements of officers (total strength = 150) through resignations, etc. The following table summarizes the output of Senior Courses during the period under review:

TABLE I

OUTPUT OF SENIOR COURSE DURING 1975-1980

Year	Course Number	No. of Participants Inducted						No. Qualified					
		Punj.	Sind	NWFP	Bal.	A.K.	Total	Punj.	Sind	NWFP	Bal.	A.K.	Total
1975	16th	3	-	8	-	-	11	3	-	6	-	-	9
1976	17th	3	10	-	5	-	18	2	9	-	5	1	17
1977	-	-	-	-	-	-	-	-	-	-	-	-	-
1978	18th	-	6	-	-	4	10	-	4	-	-	2	6
1979	19th	-	-	-	-	10	10	-	-	-	-	9	9
1980	20th	-	-	-	2	5	7	-	-	-	1	3	4

3.1.2. Junior Course

This is intended for junior field supervisory personnel, i.e. assistant malaria superintendents, malaria inspectors, and assistant malaria inspectors. They are at least matriculates, but some are intermediates. Duration of the course is 10 weeks. The trainees receive extensive oratical and practical training. Major subjects taught are malaria control, parasitology, and field operations. In this course still greater stress is laid on practical field work.

The output of junior courses during the period under review is summarized in Table II.

TABLE II

OUTPUT OF JUNIOR COURSES DURING 1975-1980

Year	Course Number	No. of Participants Inducted						No. Qualified					
		Punj.	Sind	NWFP	Bal.	A.K.	Total	Punj.	Sind	NWFP	Bal.	A.K.	Total
1975	22nd	-	-	2	7	5	14	-	-	2	5	5	12
1976	-	-	-	-	-	-	-	-	-	-	-	-	-
1977	23rd	-	8	4	-	5	17	-	8	4	-	5	17
1978	24th	-	8	-	-	-	8	-	8	-	-	-	8
1979	25th	-	-	-	10	9	19	-	-	-	6	9	15
1980	26th	-	-	5	7	23	35	-	-	5	5	16	26

3.1.3. Microscopist Course

The course aims at training microscopists of MCP. The trainees are first class matriculates with science. Duration of the course is 10-12 weeks. Intensive training in parasitology, microscopy, and laboratory technology is imparted.

The wastage rate of microscopists is very high because an unskilled worker having a minimum of basic education is turned into a skilled laboratory worker and many lucrative job opportunities become available to him both within and outside the country. Therefore, two or sometimes even three microscopist courses are offered each year as is evident from Table III.

TABLE III

OUTPUT OF MICROSCOPISTS COURSES DURING 1975-1980

Year	Course Number	No. of Participants Inducted						No. Qualified					
		Punj.	Sind	NWFP	Bal.	A.K.	Total	Punj.	Sind	NWFP	Bal.	A.K.	Total
1975	40th	-	1	2	1	1	5	-	1	2	-	1	4
	41st	-	7	-	-	-	7	-	6	-	-	-	6
1976	42nd	1	6	6	2	3	18	1	4	5	1	3	14
	43rd	13	8	1	1	-	23	10	7	1	1	-	19
1977	44th	-	24	8	5	-	37	-	24	8	2	-	34
	45th	9	8	1	-	-	18	8	7	1	-	-	16
1978	46th	-	9	-	-	5	14	-	9	-	-	5	14
	47th	-	-	10	4	7	21	-	-	10	2	5	17
1979	48th	15	4	2	-	5	26	14	4	2	-	4	24
1980	49th	-	-	-	-	7	7	-	-	-	-	5	5
	50th	14	6	3	-	-	23	12	4	2	-	-	18

4. New Courses Offered During Five-Year Extension Plan

During the implementation of the Five-Year Extension Plan of Malaria Control, need was felt for specialized training in certain fields to meet specific needs of the Malaria Control Program.

Prominent amongst the specific needs was safe handling of insecticides, training of district health officers, and other staff of the health department, training of urban malaria workers, and training in the use of and preventive maintenance of ULV machines. It was for the first time in the history of the Training Center that special courses were organized to cater for the above mentioned specific needs of the Malaria Control Program.

4.1. Course of Safe Use of Organophosphate (O.P.) Compounds

Despite the timely circulation of instructions for safe handling of malathion, there were some tragic cases of malathion poisoning amongst spraymen during the 1976 spraying campaign. To forestall the possibility of such unfortunate happenings in subsequent years, special courses for safe

handling of O.P. compounds were organized in collaboration with the Center for Disease Control, Atlanta, Georgia. In addition, short courses for determining cholinesterase levels through tintometric and Michel methods were also organized for laboratory staff. Output of such courses is summarized in Table IV.

TABLE IV

OUTPUT OF COURSES FOR SAFE HANDLING OF INSECTICIDES DURING 1976-1980

Year	Course Number	No. of Participants Inducted						No. Qualified					
		Punj.	Sind	NWFP	Bal.	A.K.	Total	Punj.	Sind	NWFP	Bal.	A.K.	Total
1977	1st	27	11	11	4	2	55	27	11	11	4	2	55
1978	2nd	60	-	-	-	-	60	60	-	-	-	-	60
1979	-	-	-	-	-	-	-	-	-	-	-	-	-
1980	3rd	20	-	-	-	-	20	20	-	-	-	-	20

4.2. Special Course in Epidemiology and Control of Malaria for District Health Officers

The Malaria Control Program in the Punjab was provincialized and merged into the Communicable Disease Control Program in 1977. Under the new set-up, district health officers were made responsible for implementation of the Malaria Control Program at the district level. Despite their wide experience, district health officers were not familiar with the working of the Malaria Control Program. Therefore, it was felt that a two-week course in epidemiology and control of malaria was necessary for successful implementation of the Five-Year Extension Plan. Accordingly, two such courses were organized during 1979, and 17 district health officers were trained.

4.3. Condensed Junior Course

The establishment of the CDC Program in the Punjab brought in a number of mid-level supervisory workers from B.C.G., smallpox, and general health services. While these workers were trained in their own specialities, yet they had little knowledge about malaria and malaria control operations. These CDC Inspectors are the backbone of the Program and their proper training is crucial for the success of antimalaria

activities. They had been brought in when the 1977 spraying campaign was halfway through, therefore, their training had to be completed between the end of the 1977 spraying and the beginning of the 1978 spraying season. Therefore, as many as five condensed junior courses were conducted between January and May 1978, and 171 CDC Inspectors were trained during this period.

4.4. Junior Course in Urban Malaria Control

Malaria control activities have been extended to urban areas in a systematic and organized manner for the first time in Pakistan. Municipalities did employ some staff for antimalaria activities, but they had no specialized training for the job assigned to them. Therefore, the Junior Course in Urban Malaria Control was initiated in 1978 to train antimalaria staff of local bodies in techniques of urban malaria control. In all, three such courses were conducted: during 1978 (2 courses) and 1979 (one course), and 40 participants out of 56 qualified in these courses.

4.5. ULV Machine Course

The course on the proper use and preventive maintenance of ULV machines was designed to meet another specific need of urban malaria control. Necessity for this course was highlighted by the poor condition of these machines in the provinces.

In addition, the National Malaria Training Center also organized lectures/demonstrations for D.C.H. classes at the Postgraduate Medical Institute.

4.6 List of Courses During 1981 2/

Course No.	No. of Participants Inducted	No. Qualified
27th Junior Course	14	12
8th Refresher Course in Entomology	8	8
9th Refresher Course in Entomology	26	26
51st Microscopist Course	17	17
52nd Microscopist Course	16	12
21st Senior Course	In Progress	
4th Urban Malaria Control Course	In Progress	

2/ Updated December 1981.

5. Research Studies

Despite limitations of time and staff, the National Malaria Training Center carried out a number of field research studies during the Five-Year Extension Plan period. Prior to this, training was the only activity of the Training Center. The major field research projects carried out during this period are as follows:

5.1 Sensitivity of P.falciparum to Chloroquine

Realizing the rapid geographical spread of chloroquine resistance in P.falciparum and the consequent dangers for the progress of malaria control activities as well as individual patients, the Training Center has carried out a series of in vivo field tests for determining the sensitivity of local strains of P.falciparum to a standard dose of chloroquine. In addition, 50 in vivo tests were also carried out during 1976 in collaboration with W.H.O.

The results of in vivo tests carried out are summarized below:

Month & Year	District	No. of Tests	Findings	Remarks
Dec 1977 Jan 1978	D.I. Khan	58	Sensitive	Report prepared at the National Seminar on Research in Communicable Diseases held in Islamabad under the auspices of the Pakistan Medical Research Council.
Nov/Dec 1978	Bahawalpur	27	Sensitive	
Oct/Nov 1980	Gujrat	60	Sensitive	

It is proposed to carry out in vivo field tests in the Khairpur district of Sind Province during January 1981.

5.2. Field Trial of Larvicides

Anticipating the increasing role of larvicides in malaria control, field studies were undertaken to assess candidate chemicals like Abate, Dursban, Actallic, and Pirimacid. These trials were conducted at the village level or in sizeable urban areas. Findings are summarized below:

i. Abate

0.5. kg/hact dose is effective for about 10 days while 1.0 kg/hact treatment can be repeated after 15 days in rural conditions.

ii. Dursban

In urban environment (polluted and stagnant waters), it can control culicine breeding up to 3 weeks.

iii. Pirimacid

175 gm a.i./hact of this larvicide kills the larvae 100% and retreatment is required every 9-10 days.

iv. Actallic

(a) 125 gm a.i./hact is the minimum dose which kills anopheline larvae in clean waters. It has no residual effect. (b) In polluted and foul waters, however, 250 gm a.i./hact dose is the appropriate treatment to be repeated every 10 days.

5.3 Susceptibility Testing of Vectors

In the three districts of the Punjab, sensitivity tests were carried out to assess the susceptibility level of main vectors of malaria in the area against chlorinated hydrocarbons. It was generally found that A.culicifacies and A.stephensi are highly resistant to DDT and B.H.C.

5.4. Field Investigation of Malathion Poisoning

The protocol for field investigation of malathion poisoning was prepared by the Training Center. The staff of the Training Center also collaborated with the team from the Center for Disease Control, Atlanta, Georgia, who carried out this investigation during 1977.

5.5. Field Trial of Sumithion (Fenitrothion)

The staff of the Training Center also participated in field trials of Sumithion (fenitrothion) carried out in district Kasur during 1978.

5.6. Malaria Survey in Northern Areas

This territory had not been brought under regular malaria control activities till 1978. Therefore, a malaria survey was carried out in this area during 1978 under the supervision of the Directorate of Malaria Control, Rawalpindi. Findings of the malaria survey revealed low and patchy prevalence of malaria in this region on account of natural constraints on malaria transmission.

6. Problems Faced by the National Malaria Training Center

The foregoing account of the achievements of the National Malaria Training Center will not be complete without a mention of various problems faced by the Training Center during this period.

The present hired building is not sufficient for our needs. Furthermore, there is no hostel accommodation, and there is no provision for stipends for the trainees, some of whom are not even paid salaries during their period of training.

A SUMMARY OF OBSERVATIONS OF INSECTICIDE HANDLING PROCEDURES IN PAKISTAN 1/

The PP design team devoted major attention to this question in the course of their assignment in December 1981 because of the problem encountered early in the previous Project. The team reviewed GOP guidelines for testing, handling, and storing insecticides and observed the actual practices followed in NWFP and the Punjab.

The team's findings and conclusion are reported below:

1. Only insecticides meeting Environmental Protection Agency and A.I.D. specifications and standards are to be used in the project.

2. Procurement procedures will include testing of insecticides at the time of manufacture and at other important times as may be determined along the schedule leading to the application at the village level.

3. There is a concerted effort on the part of the GOP to store insecticides properly, not only at the provincial level but also at district and village levels. Field checks made on provincial insecticide storage facilities during the course of preparing this Project Paper indicated that stock control and warehousing practices were satisfactory. The provincial warehousing reviewed in the NWFP was secure, and was well drained, and cement floors and walls provided protection from rain and sun. Careful inspection was made of the residual insecticide containers which were stored in the warehouse. There were damaged boxes of insecticide, but generally speaking,the warehousing situation was satisfactory. The External Review Team (ERT) in January 1981 reported that with only a few exceptions, warehouses were well-maintained and stores accurately accounted for. A.I.D.-supplied malathion was packed in clearly labeled boxes made of suitable fiber material. This packaging is consistent with A.I.D. specifications which will be followed in this Project. There is a detailed caution label on each box. The date of production, batch number, manufacturer's name and location, product name, chemical breakdown, and expiration date are all on this label. Theft of organo-phosphorous (OP) insecticides is uncommon, and unauthorized use of this product should not be a problem in this program.

1/ Prepared by the Malaria Project Design Team consisting of Larry Cowper, RMA, USAID/Sri Lanka; Dr. Thomas Vernon, Epidemiologist, Center for Disease Control; and Mr. Alton Wilson, Health Educator, December 1981.

4. From the province and district warehouse, boxes are moved to village locations just prior to spraying. Investigations made during the in-depth external evaluation in January 1981 indicated that temporary village stores were satisfactory for the short period of time that the insecticides are stored there. Every effort is made to find village storage which is secure and which protects the insecticide from adverse weather conditions. Warehousing needs continual supervision but is considered adequate.

5. Field teams using OP insecticides in the districts are given training in proper handling prior to the operational season. A chain of directives was reviewed starting at the DOMC Headquarters and leading organizationally to province malaria offices and to the districts. The basic DOMC directive on malathion was dated mid-1976. Additionally, circulars based on this directive on malathion usage and care have been issued to all district health officers.

6. A review of the protective equipment issued to each sprayman was made. Each sprayman is given two sets of clothes, which includes a set of gloves and face mask. In some spray operations, eye goggles are issued, but the spray personnel rarely use this equipment over any extended period. The team believes eye goggles to be more of a problem than a help, and that the use of such equipment is optional. Soap is issued for washing the clothes. Spraymen are instructed to wash frequently during the day and prior to smoking or eating.

7. Supervision of the teams is done by the provincial malaria officers and the officials of the district health office. Spraymen may work a six-day week in the operational season, but if signs of depressed cholinesterase appear, spraymen are assigned to other duties.

8. A review of the cholinesterase testing procedures was done in Punjab Province during the preparation of this Project Paper. The Provincial Malaria Director again confirmed that cholinesterase testing is done on each sprayman and supervisor prior to the initiation of spraying each season primarily in order to screen out persons who have abnormally low cholinesterase levels at the outset. Those so identified would either not be hired or be assigned to duties not associated with spraying. During the 1981 operation, random sampling was carried out by selecting two squads each day in each district and checking all members for cholinesterase levels prior to work and at the end of the day. All results were checked by a provincial safety officer and re-checks were instituted if required. All personnel engaged in the operation receive training on insecticide management and safety. In 1981, no incidences of insecticide intoxication were reported by the Province. All the other provinces follow similar safeguards.

A SUMMARY OF THE

PUNJAB MALARIA CONTROL PROGRAM WORKING METHODOLOGY[1/]

1. Geographical Reconnaissance (G.R.)

G.R. is conducted at the start of the program in a malarious area and then is updated every year in the months of January and February. This information is collected through house to house visits regarding houses, number of rooms, and inhabitants. The figures thus collected are used as a basis for planning of different field operations (spraying, surveillance, and malariometric survey).

2. Spraying Operations

Residual house spraying with proper dosage and effective insecticides is carried out before the onset of the malaria season to cut the transmission by reducing the density of the vector mosquito. The spraying operation in the Punjab starts from mid-June and is continued till the end of September.

3. Surveillance Activities

Surveillance operations aim at detection and treatment of malaria cases to eliminate the reservoir from the host.

Activities consist of:

a. Active Case Detection (ACD);
b. Passive Case Detection (PCD);
c. Malariometric Surveys;
d. Presumptive and Radical Treatment; and,
e. Investigation of Foci.

a. Active Case Detection (ACD)

ACD is carried out in all the rural areas in monthly rounds through house to house visits throughout the year. Blood smears are prepared for all the fever and fever history cases and sent to the district laboratories for microscopic examination. A CDC Supervisor working in a sub-sector covers 3000 to 3500 houses every month with a population of 15,000 to 18,000.

1/ Excerpts taken from "Brief of CDC (Malaria Control) Activities in Punjab", Punjab, December 1981.

b. Passive Case Detection (PCD)

Blood slides of fever cases are prepared by the staff working in the health institution and sent to the district laboratories for examination.

c. Malariometric Surveys

From time to time, malariometric surveys are also carried out in selected areas. Selection of the area is made on epidemiological grounds and on a random basis to find out the prevalence of the disease, active foci, the impact of residual spray, and to evaluate the work carried out routinely by the field workers.

d. Presumptive and Radical Treatment

Presumptive treatment is given in a single dose at the time of taking blood slides. Radical treatment is given for three days for P. falciparum and five days for P. vivax to all the confirmed malaria cases by the field CDC staff.

e. Case Investigation

The manageable number of confirmed positive cases is investigated to find out the active foci or the source of infection for timely remedial measures.

4. Laboratory Services

Laboratory services are provided in each district to examine the blood slides collected through different sources. The laboratory is supervised by a Senior Microscopist under the overall supervision of the Assistant Entomologist/District Health Officer.

A Provincial Reference Laboratory has been set up at the CDC Office Health Directorate, Lahore to check and supervise the efficiency of district laboratories from which a monthly quota of negative and positive slides are received for rechecking.

5. Entomological Studies

Routine entomological studies are carried out by the Assistant Entomologist of the district throughout the year. Localities for density studies are selected on epidemiological grounds and on a random basis. Susceptibility tests are also conducted on different insecticides to judge their efficacy.

6. Supplies (Insecticides, Sprayers, and Other Equipment)

The position of the sprayers remained satisfactory throughout the year except some forms and spare parts of Hudson/X-pert sprayers. Some districts had purchased locally manufactured spare parts for Hudson/X-pert sprayers direct from the Pakistan Industries (PIR) Lahore during 1980. The position of antimalaria drugs is quite satisfactory as a sufficient quantity of choloroquine and primaquine is available in the general store of the Directorate as well as in the districts.

7. Transport

The position of transport in the Province is satisfactory except that spare parts of Nayadaur Jeeps and Toyota Jeeps/ Pickups are not readily available in the market due to which many difficulties are being faced for repair of these vehicles.

Though many spare parts for the old Willy's jeeps are available in the general store of the Directorate, most of the essential and fast moving parts have to be purchased to put the vehicles on the road. Many of those parts are not readily available because the vehicles are obsolete models. Moreover, these vehicles still would not be dependable as the chassies and bodies are badly eaten up by rust.

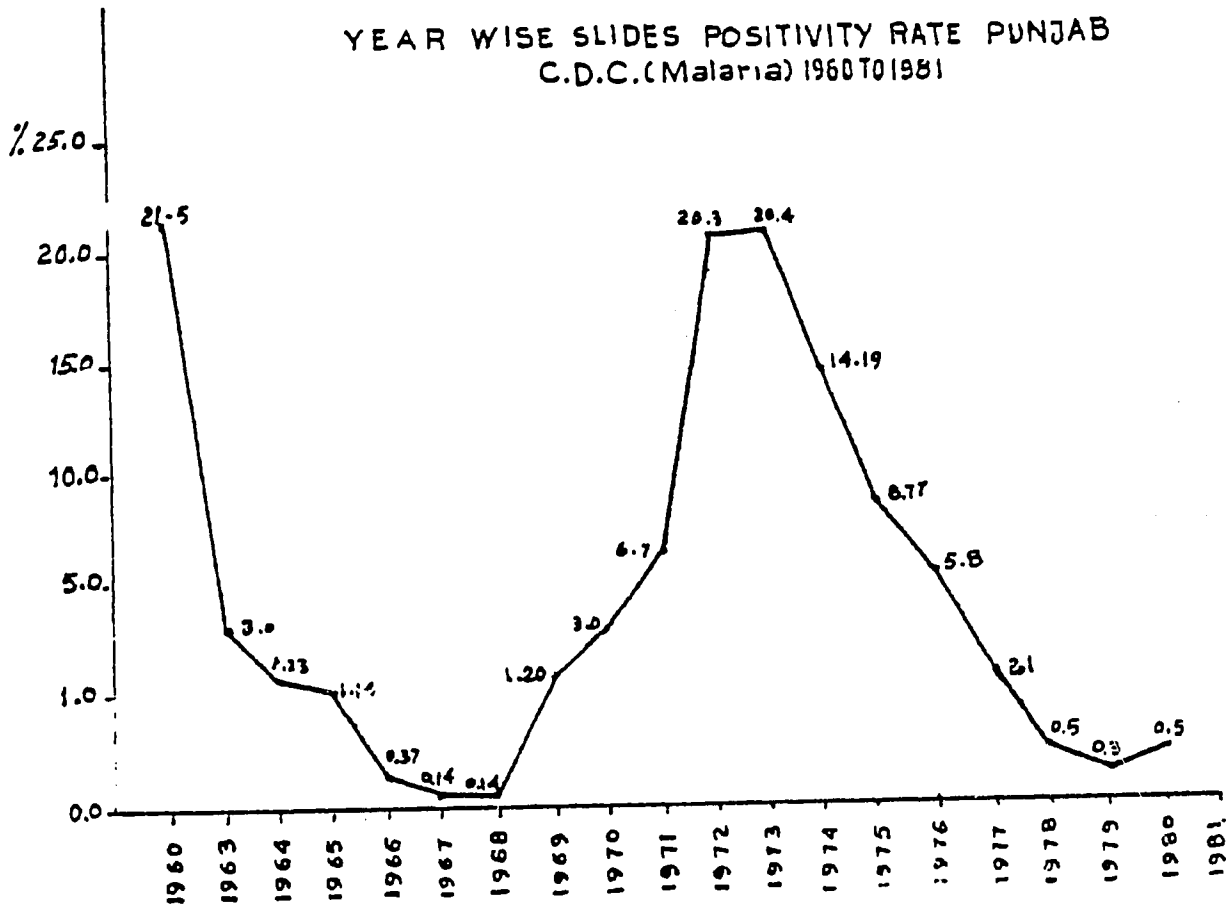
YEARWISE SPRAYING OPERATIONS
CDC (MALARIA)
PUNJAB

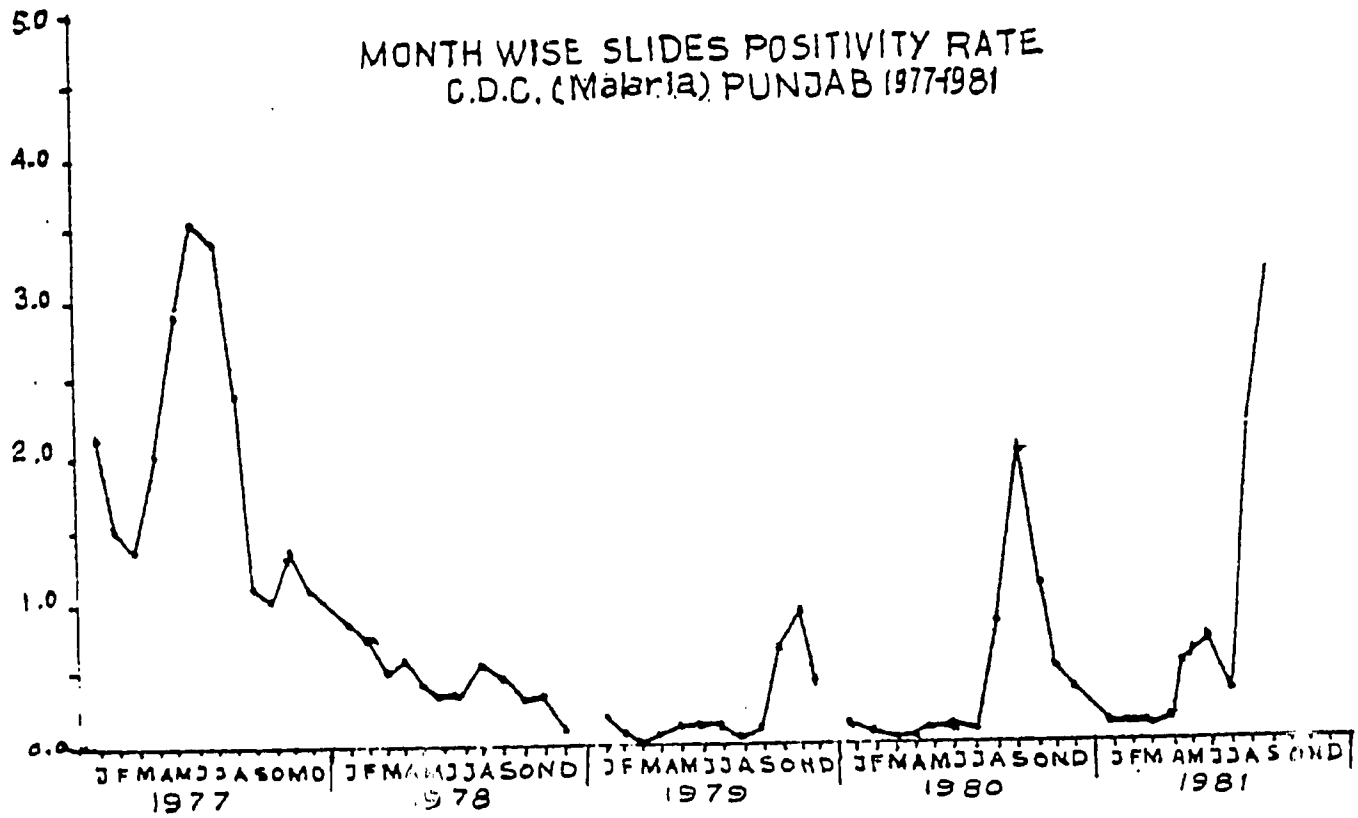
YEAR	TOTAL SUB-SECTORS	PLANNED						ACHIEVED							
		TOTAL S.S.	DDT	BHC	MAL.	SUM.	ACTELLIC	TOTAL S.S.	DDT	BHC	MAL.	SUM.	ACT.	%age on plan	%age on existing
1977	2044	2016	280	355	1343	38	-	1829	273	254	1294	38	-	91.3	89.4
1978	2046	1992	34	352	1588	38	-	1934	30	320	1576	38	-	88.9	87.5
1979	2048	1038	-	146	885	7	-	1006	-	139	860	7	-	83.9	37.5
1980	2049	862	12	31	578	240	1	854	12	31	571	239	1	88.4	31.1
1981	2049	304	9	-	52	243	-	293	4	-	52	237	-	96.4	14.1

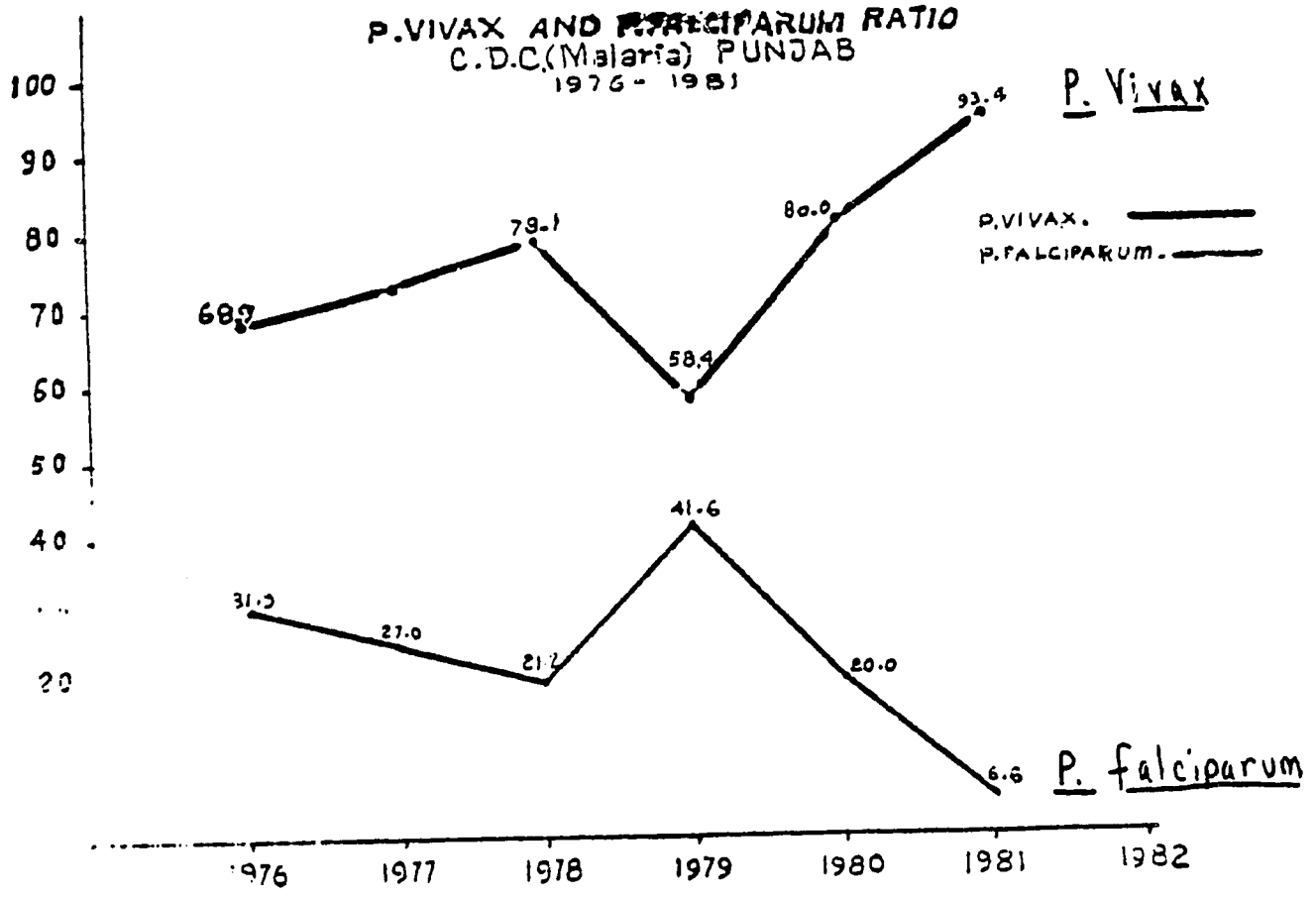
NOTE :- FOCAL SPRAY HAS ALSO BEEN CARRIED OUT IN AND AROUND POSITIVE FOCI DETECTED DURING THE YEAR 1981.

SUSCEPTIBILITY TESTS CONDUCTED 1976 - 1981
CDC (MALARIA) HEALTH SERVICE PANJAB.

YEARS	D.D.T. 4.0%								D.L.D. 4.0%								MALATHION 3.2%								SUMITHION							
	A.CULICIFICIES				A.STEPHENSI				A.CULICIFICIES				A.STEPHENSI				A.CULICIFICIES				A.STEPHENSI				A.CULICIFICIES				A.STEPHENSI			
	TOT	R	T	S	TOT	R	T	S	TOT	R	T	S	TOT	R	T	S	TOT	R	T	S	TOT	R	T	S	TOT	R	T	S	TOT	R	T	S
1976	107	86	20	1	61	41	20	-	143	109	30	4	98	83	13	2	100	-	-	100	83	-	-	83	-	-	-	-	-	-	-	-
1977	71	49	22	-	43	32	11	-	106	68	33	5	74	42	32	-	172	-	-	172	114	-	-	114	-	-	-	-	-	-	-	-
1978	59	41	17	1	60	46	12	2	67	33	25	11	75	58	17	-	79	-	-	79	76	-	-	76	1	-	-	1	5	-	-	5
1979	127	111	16	-	96	88	8	-	109	65	42	2	98	70	28	-	39	-	-	39	48	-	-	48	-	-	-	-	-	-	-	-
1980	106	106	-	-	64	64	-	-	77	77	-	-	59	59	-	-	125	3	4	118	41	-	-	40	-	-	-	-	-	-	-	-
1981	52	52	-	-	17	17	-	-	35	35	-	-	24	23	1	-	58	-	6	52	54	5	14	35	55	-	-	55	41	-	-	41


YEAR WISE SLIDES POSITIVITY RATE PUNJAB
C.D.C.(Malaria) 1960 TO 1981
%25.0
20.0
15.0
10.0
5.0
1.0
0.0
21.5
3.0
0.37
0.14
0.14
1.20
3.0
6.7
20.3
20.4
14.19
8.77
5.8
2.1
0.5
0.3
0.5
1960
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981


MONTH WISE SLIDES POSITIVITY RATE
C.D.C. (Malaria) PUNJAB 1977-1981
5.0
4.0
3.0
2.0
1.0
0.0
J F M A M J J A S O N D
1977
1978
1979
1980
1981



SURVEILLANCE ACTIVITIES
C.D.C. (MALARIA) PUNJAB 1976 - 1981

YEARS	ACD		PCD			E.C.S. & M.B.S. SURVEY		TOTAL ACTIVITIES					S.P.R.	A.B.E.R.	A.P.I.
	SLIDES	POSITIVE	POSTS	SLIDES	POSITIVE	SLIDES	POSITIVE	SLIDES	P.V.	P.f	Mix	TOTAL +ve			
1976	1869240	98284	572	35170	2252	897570	5016	1994160	[illegible]	33000	188	105552	5.3	6.10	3.23
1977	1616345	34030	698	20029	776	90639	2114	1727013	[illegible]	9970	72	36920	2.1	4.8	0.11
1978	1310339	6435	709	28450	413	193343	105[illegible]	1532132	[illegible]	1684	31	7830	0.5	3.8	0.22
1979	1385166	3611	5199	49473	360	178245	1857	1612884	[illegible]	2431	26	5820	0.3	4.10	0.16
1980	1596722	6965	7148	75963	730	165468	1042	1838153	[illegible]	1935	31	9537	0.5	4.7	0.01
1981	1078491 (up to Sept.1981)	8192	3389	32265	425	84675	2535	1195429	[illegible]	788	9	11112	0.9	3.07	0.31

ACD = ACTIVE CASE DETECTION
PCD = PASSIVE CASE DETECTION
ECS = EPIDEMIOLOGICAL CONTACT SURVEY
MBS = MASS BLOOD SURVEY

SPR = SLIDE POSITIVITY RATE
ABER = ANNUAL BLOOD EXAMINATION RATE
API = ANNUAL PARASITE INCIDENCE

EXCERPTS FROM THE JANUARY 1981 A.I.D. MALARIA CONTROL PROJECT TERMINAL EVALUATION

CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. ERT-81 [1/] recognizing the many difficulties inherent in the double transition from malaria eradication to malaria control and from a vertical malaria control program towards one integrated with the Basic Health Services, which process is now getting underway functionally, wishes to express its appreciation of the results obtained and the notable progress made by the DOMC and provincial organizations in reducing malaria incidence over the last five year period.

2. After review of the available data, and having had the opportunity to visit some field areas in the various provinces, the ERT wishes to state that, in its opinion, malaria control in Pakistan is now poised in a favorable, but delicate situation. This situation is one which, given continued appropriate effort, can lead to consolidation of gains achieved, and eventually to further progress, but is also one which, without appropriate support can rapidly regress with extremely serious consequences.

3. The instability of the present epidemiological situation is indicated by a combination of the following factors:

a. An apparent slight rise in overall case incidence during 1980.

b. A high *P. falciparum* ratio which shows an apparent tendency to increase in some districts.

c. As yet incomplete implementation of Urban Malaria Control.

d. High population mobility in some areas, including movements of refugees.

e. Disturbance of operational routine during the necessary period of transitional adjustment to the functional integration of MCP and BHS.

f. Traditional and social factors which appear at the present time to exclude segments of the female population from the case detection and treatment processes.

1/ 1981 External Review Team.

B. Recommendations

With the above general conclusions in mind, the ERT-81 would like to make the following recommendations:

1. The GOP is urged to recognize the magnitude of the success by the Malaria Control Program (MCP) during the Five-Year Extension Plan and, further, to recognize the fragile nature of that success. The 1981 External Review Team (ERT-81) strongly recommends continuation of the surveillance and insecticidal spraying activities that have reduced malaria incidence from epidemic to manageable proportions. Without these activities, the ERT-81 is convinced that the achievements of the past five years would be largely wasted and that epidemic malaria would resume in short order.

2. Toward this end, the ERT-81 recommends favorable Government consideration and funding of the proposed New Extension Plan (PC I Form) of the MCP for 1980-83, the main objectives of which are to maintain or reduce the incidence of malaria and to complete the integration of the MCP with the Basic Health Services.

Following the recommendations above, and in keeping with them, the ERT-81 wishes to draw the attention of the GOP to an additional listing that is intended to point up specific areas of importance and concern for the continued success of the Pakistan Malaria Control Program. The ERT-81 recommends:

1. that the directors and staff of all projects designed to strengthen any element of the Basic Health Services (BHS) be made cognizant of the needs and interests of all other elements of the integrated BHS, including the MCP;

2. that the GOP form an ad hoc committee, comprising the Ministers of Health, Agriculture, Finance, Local Government, and Interior, for the purpose of drawing up and coordinating plans of action that would lead to improved sanitation and the elimination of mosquito breeding sites;

3. that close cooperation be maintained by the Ministers of Health, Education and Public Information in the propagation of health education material on malaria prevention through the inclusion of malaria subjects in the public schools, newspapers, radio and television;

4. that the Director of Malaria Control assemble Federal and Provincial MCP officers at a seminar/workshop for the purpose of creating a Manual of Malaria Control using as its basis the aims and principles of the New Extension Plan

within the context of the integrated BHS, and setting forth procedures, job descriptions and organizational charts;

5. that the Director of Malaria Control invite Urban Malaria Control Chiefs to participate in a seminar for the exchange of ideas and plan improving the process regarding entomological monitoring and malaria case detection as well as the training of municipal squad leaders in geographic reconnaissance, larviciding, ULV adulticiding, maintenance of equipment, and pesticide safety measures;

6. that the Federal Directorate of Malaria Control be augmented by the addition of senior technical and Administrative staff for Program Evaluation, Program Coordination (with BHS, Ministries, Urban Malaria Control, etc.), Sanitary Engineering and Training and Research; and that an Epidemiologist and an Entomologist be added to the staff of each Provincial Chief of Malaria; this for the purpose of promoting integration of health efforts and assuring the flexibility of malaria control operations on a decreasing budget;

7. that the Annual Parasite Incidence statistic be used instead of the Slide Positivity Rate (SPR) for the assessment of malaria endemicity; that improved methods of data analysis be designed for implementation at the district level which will provide SPR data on males and females separately and by age group;

8. that the proposed Sanitary Engineer at the DOMC be charged with the development and execution of plans designed to replace the repetitive application of insecticides with more permanent and less costly vector control measures (e.g., engineering methods and larvivorous fish); that these plans and operations be coordinated with those of the Provincial MCP and Urban Malaria Control directors;

9. that malaria supervisors assigned to BHS units for the purpose of training personnel in PCD procedures be given reasonable schedules for completion of those assignments and a prompt return to their ACD activities;

10. that Rural Health Centers be equipped and staffed with microscopists well-trained in the laboratory diagnosis of malaria and PCD procedures;

11. that measures be taken to assure the adequate administration of presumptive treatment for malaria at the time that blood slides are taken; that sporontocidal

or gametocytocidal drugs (pyrimethamine or primaquine) be included in presumptive treatment to halt transmission of falciparum malaria from treated persons;

12. that efforts to recruit voluntary collaborators for PCD be continued and intensified;

13. that a network of responsible lookouts in urban and rural communities be established for the purpose of identifying unusual increases in mosquito density; that malaria inspectors and assistant entomologists make frequent rounds to collect and investigate the reports of these lookouts;

14. that the insecticides malathion and fenitrothion be applied in two spray cycles in those areas where two peak transmission seasons occur with a 2 - 4 month interval between peaks;

15. that refugees who have served with the Afghanistan Malaria Control Program be sought out and recruited to aid the Pakistan Malaria Control Program in the control of malaria in refugee camps;

16. In order to facilitate the integration process in respect of entomological services and provide a highly professional cadre with appropriate career structure, appropriate polyvalent training, with emphasis on epidemiology, should be provided for entomological staff. Consideration should be given to the formation of a fully integrated Vector-Borne Disease Control component at federal and provincial levels of the health services;

17. Due to the high resistance levels shown by the vector species to DDT and BHC at the present time, they should not be used for general operational purposes.

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO PAKISTAN

Cable : USAIDPAK

HEADQUARTERS OFFICE
ISLAMABAD

THE DIRECTOR

USAID/PAKISTAN MISSION DIRECTOR'S WAIVER FOR A.I.D. PAYMENT OF INTERNATIONAL PARTICIPANT TRAVEL COSTS

A.I.D. Handbook 10, Chapter 15B1, provides that the cost of international travel, including incidental costs en route as well as the cost of travel between the participant's city and the points of departure and return in the participant's home country, shall be paid by the host government or other sponsor unless, in the case of Mission-funded programs, the Mission Director has justified and authorized full or partial waivers and has so notified S&T/IT.

Training and institution-building are important components of the $1.625 billion economic assistance program negotiated between the Governments of the U.S. and Pakistan. USAID/Pakistan's experience, however, has been that the Government of Pakistan (GOP), due to serious foreign exchange and budgetary constraints, has been historically unable to fund international travel costs for short-term training programs. The consequence has been that Pakistani participants have, on numerous occasions, been denied worthwhile and much needed training, inhibiting the achievement of project targets.

I have carefully reviewed the advisability of requiring full GOP funding for travel costs for participant training of one year or less and the alternative of funding such travel with grant and loan funds provided through USAID/Pakistan to the GOP. Recognizing the objectives of many of our projects and the fact that project success will be enhanced by encouraging opportunities for short-term training, I have determined that it would be prejudicial to U.S. interests to require that the GOP pay the entire international participant travel costs for training programs of one year or less.

Therefore, on all Mission-funded training programs up to and including one year, USAID/Pakistan shall be responsible for the entire cost of the round-trip economy class air ticket and other necessary incidental costs en route. Where a PIO/P has been originally written for a program of one year or less, but, after the participant has initiated his or her program, the program is extended so that it exceeds one year in total, USAID/Pakistan shall also fund the round-trip ticket. The justification for funding programs that are extended is to minimize administrative problems which are otherwise likely to occur.

On the basis of the above justification and pursuant to Handbook 10, Chapter 15B1a, I, Donor M. Lion, principal officer of the Agency for International Development in Pakistan, do hereby waive the requirement that the host government fully fund international travel for training courses of one year or less and authorize payment with USAID/Pakistan loan and grant funds for travel costs as specified above.

Donor M. Lion

Donor M. Lion
Director
USAID/Pakistan

March 17, 1982

Date