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AGENCY FOR INTERNATIONAL DEVELOPMENT

WASHINGTON D.C. 20523

TANZANIA

ZANZIBAR MALARIA CONTROL PROJECT

621-0163

PROJECT PAPER SUPPLEMENT 1

UNCLASSIFIED

July 1985

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AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

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

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: United Republic of Tanzania

3. PROJECT NUMBER: 621-0163

4. BUREAU/OFFICE: Africa Bureau — 06

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

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 81 B. Quarter 4 C. Final FY 82

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

A. FUNDING SOURCE	FIRST FY 81 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	7,268	192	7,460	7,268	192	7,460
(Grant)	( )	( )	( )	( )	( )	( )
(Loan)	(7,268)	(192)	(7,460)	(7,268)	(192)	(7,460)
Other U.S. 1.						
Other U.S. 2.						
Host Country	987	2,408	3,395	987	2,408	3,395
Other Donor(s)						
TOTALS	8,255	2,600	10,855	8,255	2,600	10,855

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)	HE		542	-0-	11,771	-0-	- 4,311	-0-	7,460
(2)									
(3)									
(4)									
TOTALS				-0-	11,771	-0-	- 4,311	-0-	7,460

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 510, 520, 530, 560

11. SECONDARY PURPOSE CODE: 600

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

A. Code	BR	DEL	ENV	PART	TECH	TNG
B. Amount						

13. PROJECT PURPOSE (maximum 480 characters)

To reduce the prevalence of malaria on Zanzibar to a level at which it no longer constitutes a major public health problem, through the adaptation of known control methods to local conditions in such a way that the GOZ will be able to maintain effective control with its own resources.

14. SCHEDULED EVALUATIONS
Interim MM 11 YY 83 — MM 11 YY 85 — Final MM 06 YY 87

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

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

To reduce the life-of-project loan financing from $11,771,000 to $7,460,000 and reduce the scope of Project activities, including the elimination of mass chemoprophylaxis as part of the control program because of the possibility of promoting chloroquine resistant malaria.

17. APPROVED BY
Signature: Frederick E. Gilbert
Title: Acting Director, USAID/Tanzania
Date Signed: MM 05 DD 23 YY 85

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

AID 1330-4 (8-79)

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TABLE OF CONTENTS

ZANZIBAR MALARIA CONTROL PROJECT, 621-0163

PROJECT PAPER SUPPLEMENT NO 1

	Page
Title Page	
Project Data Sheet	i
Project Authorization Amendment No. 1	ii
Table of Contents	i
List of Tables	vii
Glossary of Terms	viii
I. SUMMARY AND RECOMMENDATIONS	
A. Recommendations	1
B. Summary of Revised Project	1
C. Summary of Findings	2
D. Contributors to the Project Paper Supplement	3
II. BACKGROUND	
A. Zanzibar and Malaria Control Programs	4
B. Project Implementation Progress and Problems	7
III. REVISED PROJECT DESCRIPTION	
A. Goal and Purpose	12
B. Project Components	12
1. Surveillance Operations	12
2. Chemotherapy	13
3. Chemoprophylaxis	14
4. Malaria Vector Control Operations	14
5. Epidemiology	17
6. Public Health Education and Community Participation	19
7. Operational Research	21

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C. Malaria Control Operation Plan: Coordination and Evaluation of Components 2[illegible]

D. Organization and Staff Levels of the Malaria Control Program 27

E. Administration 31

F. Project Coordination with Other Ministries and Entities 33

G. Revised Outputs and End of Project Status 34

H. Inputs 3[illegible]

1. Technical Assistance 3[illegible]
2. Training 3[illegible]
3. Commodities and Other Costs 4[illegible]

IV. COST ESTIMATES AND FINANCIAL PLAN 3[illegible]

V. IMPLEMENTATION PLAN 1[illegible]

A. Implementation Schedule 1[illegible]

B. Procurement Plan 4[illegible]

VI. PROJECT ANALYSES 47

A. Technical Feasibility 47

B. Administrative Feasibility 53

C. Social Soundness Analysis 54

D. Economic Analysis 55

E. Environmental Concerns 59

VII. CONDITIONS, COVENANTS AND NEGOTIATING STATUS 6[illegible]

VIII. EVALUATION PLAN 61

7

ANNEXES

A. Revised Logical Framework

B. First Evaluation (Bound Separately)

C. SOZ Request for Project Amendment

D. Malaria Control Organization Chart

E. Malaria Control Program Staffing

F. Training Program Summary Charts

G. Health Education Plan of Operation on Zanzibar Malaria Control Program 1984-87

LIST OF TABLES

Table	Title	Page
1	Population of Zanzibar	4
2	Summary Cost Estimate and Financial Plan	32
3	Projection of Expenditures by Fiscal Year	33
4	Detailed Revised Budget	34
5	Comparative Cost of Revised Project Budget	37
6	Summary of GOZ Fiscal Support to the Health Sector	56
7	GOZ Malaria Control Program Recurrent Budgetary Support	57
8	Recurrent Cost Requirements of Malaria Control Project	58
9	Targets for Evaluating Project	63

GLOSSARY OF TERMS

Abiotic Mosquito Control:- Control of mosquitoes by environmental manipulation, such as evaporation, shading, exposure to sunlight, salinification, etc.

Active Case Detection (ACD): Part of surveillance activities in which the formal malaria project actively searches for malaria cases through the collection of blood slides and epidemiological investigations.

Adulticide : In mosquito control, any chemical used to kill the adult (imago) stage. Loosely applied also to repellents.

Annual Parasite Incidence (API): The proportion of cases of malaria detected on an annual basis in relation to the unit of population in which malaria occurs.

Anopheles : Genus (or subgenus) of mosquitoes of the subfamily Anopheline.

Anopheline Density: The number of female anophelines in relation to the number of specified shelters or hosts (e.g., per room per trap, or per person) or to a given period (e.g., overnight or per hour), specifying the method of collection.

Application Rate: May vary according to insecticide being used. DDT and malathion are applied at 2 gms of technical material per 1 sq. meter of sprayable surface for residual application.

Average Enlarged Spleen: The weighted average spleen size of those subjects with a palpably enlarged spleen in a specified age group of the population sample examined. This index is obtained by multiplying the number of individuals in each arbitrary classification of enlarged spleen by class number, adding the products, and dividing the total by the number of individuals whose spleen is palpable. For the purpose of splenometry the classification of Hackett (1944), in which spleen size ranges between grade 0 (not enlarged) and grade 5, has become the generally accepted standard.

Biossay: In applied entomology, the testing of the biological effectiveness of an insecticide by deliberately exposing insects to it.

Biological Control: Use of a virus or any living form, from a microorganism to a vertebrate, to control the population of a vector, pest animal, or pest plant (weed).

Biting Rate: The proportion of female mosquitoes caught biting a bait at certain stated times during a specified time period.

Breeding Place: A location, or water collection site where female mosquitoes lay eggs and in which immature stages (larvae and pupae) develop. Some workers prefer the term "mosquito source" and use it synonymously for "breeding place".

Carrier: Person harbouring malaria parasites with or without clinical evidence of infection.

Chemoprophylaxis: Protection from or prevention of disease by chemotherapeutic means (the use of drugs before infection).

Cholinesterase: An enzyme in the blood that is normally present and necessary for proper blood functions.

DDT: A chlorinated hydrocarbon insecticide used widely as a residual wall spray in malaria control programs.

Endemicity: A constant measurable incidence of natural transmission over a succession of years in a particular area.

Falciparum Malaria: Falciparum malaria is a severe type of malaria (malignant tertian) caused by Plasmodium falciparum, a species of malaria parasite.

Intradomiciliary Spraying: Residual insecticides spraying of households.

Larviciding: The application of larvicides to the surfaces of mosquitoes breeding sites.

Malathion: A relative short shelf life insecticide, both more toxic and more expensive than DDT.

WDP: Water dispersable powder.

WHO TACTICAL VARIANTS CLASSIFICATION FOR MALARIA CONTROL

In 1979 WHO developed a series of alternative approaches to malaria control which could be used in different settings. There are four basic alternatives which WHO refers to as "tactical variants," as follows:

Tactical Variant No. 1: Reduction and prevention of mortality due to malaria. This variant utilizes only chemoprophylaxis and chemotherapy. It is intended for settings in which the disease prevalence is very high, but there is little organizational development to target high risk groups, and could include some vector control activities;

Tactical Variant No. 2: Reduction and prevention of mortality and morbidity with special attention to reduction of morbidity in high-risk groups. This variant is possible when there is when there is sufficient organizational development to target high risk groups and could also include some vector control activities;

Tactical Variant No. 3: Same as No. 2 plus reduction in the prevalence of malaria. This variant becomes possible where there exists a sufficient number of trained personnel to conduct the surveillance necessary to evaluate the effectiveness of the malaria control measures used. It also requires governmental commitment to long-term support of control activities, intersectoral coordination, and community involvement; and

Tactical Variant No. 4: Countrywide malaria control with the ultimate objective of eradication. This variant must be reserved for settings where there has been a long experience with antimalaria programs, a growing professional technical and management capability, an expanding economic base, a firm political commit- ment and a strong, stable level of public participation.

The application of these alternatives of malaria control to the situation prevailing in Zanzibar is presented in Section II-C.

I. SUMMARY AND RECOMMENDATIONS

A. Recommendations

It is recommended that the Acting Mission Director approve:

1. The Zanzibar Malaria Control Project Paper Supplement No. 1, which provides for a simplified malaria control program

and

2. A reduction in life-of-project funding from $11,771,000 to $7,460,000.

B. Summary of Revised Project

The goal and purpose of the amended Zanzibar Malaria Control Project remain unchanged from the original PP. The purpose of the project is to reduce the prevalance of malaria on Zanzibar to a level at which it no longer constitutes a major public health problem, through the adaptation of known control methods to local conditions in such a way that the Government of Zanzibar (GOZ) will be able to maintain effective control with its own resources. Generally, the experience and knowledge gained during the first two years of the project support the fact that the Malaria Control Project can substantially reduce the incidence of malaria and achieve the project purpose. However, the general program as described in the PP was overly ambitious in the level and type of activity expected to be sustained by the GOZ. The revised program is simplified and less complex, although generally it still fits within WHO's Tactical Variant No. 3 classification (see the Glossary of Terms). Residual spraying of houses will continue to be the primary means of decreasing the incidence of malaria. The Active Case Detection Program will be limited until malarial incidence levels drop substantially. In the meantime, malariometric surveys will provide the basic data for program evaluation. The larviciding and source reduction activities are now planned to be much less extensive and more basic in their approach. Chemoprophylaxis will be eliminated altogether because of the fear of promoting chloroquine resistant malaria. The health education activities, case treatment and entomological work continue to be important in the revised project. The institutional development aspects of the project are designed to improve the administrative and management of the Zanzibar Malaria Control Unit, upgrade personnel skills in

the program, and improve information and education systems. Additionally, the malaria control program, to the extent practicable, will be integrated into the islands' primary health care system.

To achieve the Project objectives, the AID loan finances a long-term malaria control advisor and approximately 40 pm of short-term consultant assistance. AID is also funding long and short-term training, a portion of the anti-malaria drugs, insecticides other commodities and some expendable supplies.

The Government of Zanzibar contribution will finance personnel costs, operation and most maintenance of vehicles, a portion of the drugs and insecticides, as well as part of the cost of in-service training. Project funding requirements for the original and revised project are presented in the financial analysis section of this paper.

C. Summary of Findings

1. The analyses undertaken in this Project Paper Supplement found the revised project to be technically, economically, socially and financially sound, administratively fesible with environmental concerns fully addressed and concluded that the project is ready for implementation.

2. The need to assist the Government of Zanzibar in its efforts to control malaria is critical since the disease continues to be a priority health problem on the islands and there is increasing evidence that the P. falciparum species of malaria is developing a higher level of resistance to chloroquine. It is felt that the Malaria Control Project will assist the GOZ in the control of malaria to a level at which it no longer constitutes a major public health problem.

3. The technical design and cost estimates are reasonable and adequately planned pursuant to Section 611 (a) of the Foreign Assistance Act.

4. The timing and funding of project activities are approximately scheduled.

5. Sufficient planning has been made for the monitoring and evaluation of the project.

6. All statutory criteria have been satisfied. The economic aspects of the proposed project have been closely examined and despite the large expenditure planned for insecticides and training, the project represents the most realistic alternative to accomplish its goals and objectives, taking into consideration the ability of the GOZ to meet its financial obligations during and after the life of the project.

7. The GOZ is firmly committed to the project, and the GOZ has started its willingness to fully support the project in terms of personnel, budget and the recurrent costs associated with the project. The technology and operational approach proposed for the project are the most viable among the many alternatives considered for the islands.

D. Contributors To The Project Paper Supplement

Zanzibar Ministry of Health

1. Dr. Juma Muchi - Director, Zanzibar Malaria Control Program
2. Hamad Juma Haji - Parasitologist/ Entomologist, Zanzibar Malaria Control Program
3. Robert Turner - Malaria Advisor

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1. Larry Cowper - Health Science Administrator, Office of Health, S/T, AID/W
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3. Leslie Dean - Program Officer, USAID/T
4. James Dempsey - Project Development Officer, REDSO/ESA
5. Janet Schulman - Project Development Officer, USAID/T
6. Zainab H. Daruger - Secretary, USAID/T

II. BACKGROUND

A. Zanzibar and Malaria Control Programs

In 1964 the island nation of Zanzibar and the mainland nation of Tanganyika were joined to become the United Republic of Tanzania. Since that time the islands and the mainland have shared the same head of State, President Julius Nyerere. The current Vice President of Tanzania and President of Zanzibar is Ali Hassan Mwinyi. With the exception of the Ministries of Foreign Affairs, Interior and Defense, Zanzibar is still served by its own, autonomous government. The Zanzibar Ministry of Health, which asked AID for support in developing the Zanzibar Malaria Control Program (ZMCP), operates independently of the mainland Ministry of Health.

Zanzibar is made up of two small islands (Unguja and Pemba) in the Indian Ocean about 25 miles off the north-eastern coast of the Tanzanian mainland. The total land mass is 2,332 square kilometers, and the most recent (1982) demographic data are given in Table 1.

Table 1

POPULATION OF ZANZIBAR

(Percentages of Age Distribution)

	Total Estimated Population	Percent Below 15	15-64	65+
Unguja	310,000	45.9	49.4	4.6
Pemba	223,000	52.1	43.7	4.2
Total	553,000	48.6	47.0	4.4

Source: Statistical Abstract, Department of Statistics, Ministry of State (Planning), Tanzania, June 1982

The Zanzibar islands have a hot and humid tropical climate. There are two marked rainy seasons each year, a long one from April to June and a shorter season from October to December. Because the

islands are fertile, most of the people are farmers, cultivating cloves and coconuts as cash crops and cassava, bananas, maize and rice as food crops. There are also a few fishermen. The annual per capita GNP in Zanzibar is estimated at $250.

The Ministry of Health of Zanzibar has established a hierarchical network of health facilities staffed mostly by paramedical health workers. This system is quite extensive and offers an excellent base for primary health care. Two specific objectives of the GOZ primary health care program are (1) the development of an informed citizenry who will be able to participate actively in safeguarding their own health through preventive means, and (2) the elimination of the major diseases of the islands. Malaria is considered to be the most serious disease in Zanzibar at this time. As in much of Sub-Saharan Africa, the hot and humid tropical climate and changing political and economic conditions have contributed to the difficulties in reducing malaria in Zanzibar from its prominent place in disease-related morbidity and mortality.

Descriptive epidemiology of malaria prevalence and vector distribution in Zanzibar began in the early decades of this century. It was not until 1958, however, with the launching of the GOZ/WHO/UNICEF Malaria Control Program, that a full-scale coordinated effort at disease reduction occurred. Consistent with prevailing WHO public health policy at that time, the program was upgraded to an eradication program in 1961.

The Zanzibar Malaria Eradication Program resulted in a remarkable reduction in the prevalence of the disease, through semi-annual residual insecticide spraying of the interior walls of all houses and the distribution of anti-malarial drugs to populations at risk. Although malaria prevalance was reduced to a low level, the interuption of transmission was not achieved. WHO program personnel were withdrawn in 1968. At the time of the termination of the eradication campaign, the percentages of blood smears showing parasites in suspected fever patients were only 7.8% on Unguja and 1.7% on Pemba, but the prevalence of malaria began to increase as soon as the campaign stopped. By 1972 the disease had again become such a serious problem the Government of Zanzibar re-established the Malaria Service without external assistance. Distribution of antimalarial drugs was restricted in 1973 and residual spraying was resumed in 1975, but lack of resources limited the frequency and coverage of both these efforts, and the continued effects of irregular program activities and possible insecticide resistance permitted continued resurgence of the disease. By 1978, it had reached endemic levels, nearly as high as seen before any control or eradication interventions had been made.

13

In 1979 the Government of Zanzibar and USAID/Tanzania came together to discuss possible solutions to the malarial problem. These discussions led to completion of a PID and PP for the Zanzibar Malaria Control Project.

An Agreement for a project with a total cost of $16,030,000 signed between the GOZ and AID for the ZMCP. AID agreed to [illegible] $11,771,000 and the Zanzibar Government planned to provide $4,259,000, or approximately 27 percent of total project costs. Approximately 30 percent of the host country contribution was planned for foreign exchange costs. This project was, and continues to be, the only AID-funded activity directly assist[illegible] the Zanzibari Government.

The purpose of the project is to reduce the prevalence of [illegible] on Zanzibar to a level at which it no longer constitutes a major public health problem. This reduction will be accomplished [illegible] adapting known control methods to local conditions so as to assure that the Zanzibar Government will be able to maintain effective control of the disease with its own resources. The Malaria Control Program covers the two islands of Zanzibar [illegible] benefits the islands entire 820,000 population.

To effect a reduction in malaria prevalence, the project is implementing a five point control program:

1. Reduction of mortality through prompt treatment [illegible] chloroquine of suspected cases;

2. Reduction of morbidity through prophylactic [illegible] chloroquine in high risk population groups (infants, children [illegible] expectant mothers);

3. Reduction of vector populations through residual spraying of all houses in rural and peri-urban areas and by [illegible] elimination of breeding sites by anti-larval activities or treatment in urban and peri-urban areas;

4. Increasing community participation in the malaria control program by developing an effective health education campaign; and

5. Operational research or adaptation of the above mentioned control methods to Zanzibar conditions through continuous monitoring of all Project activities.

The institutional development aspects of the project are designed to improve the administration and management of anti-malarial programs, upgrade personnel skills, especially those related to application of control techniques, improve information distribution systems and integrate the Malaria Control Program into the Island's primary health care system.

To achieve the project objectives, AID planned to finance two long-term malaria technicians and short-term consultants in related health fields. AID funding also provides long and short-term training, commodities and some expendable supplies. The host country contribution finances the staff of the Malaria Control Unit, a portion of the costs of insecticides, larvicides, drugs, and in-country training costs.

B. Project Implementation Progress and Problems

1. Summary of AID Project Activities

a. Technical Assistance

The technical advisor/malariologist has been in place only since May 1983. This is approximately 18 months later than originally planned. The Project Paper called for two U.S. technicians, but USAID/Tanzania decided, after consultations with the RDC, that only one U.S. technician would be assigned to the Project. The basis for the agreement to eliminate one position was the understanding that WHO short- and long-term consultants could be made available to share the workload. However, these WHO technicians did not arrive as planned. To date, three short-term consultants financed by the project and an AID/Washington funded malariologist have assisted in project planning and operations. In November of 1983 an evaluation team conducted a review of the ZMCP to help redirect the project. Overall, the provision of technical assistance is substantially behind schedule.

b. Training

Long-term training for five individuals and numerous courses were planned in the PP for the first two years of the project. To date, two long-term participants have left for training and five project staff participated in a short course given at the University of Connecticut. No in-country short courses have been conducted, although in-service training is continuing.

15

The Assistant Director of the ZMCP participated in a short-term training tour for two weeks in the Sudan. Project funds were used for the ZMCP Director to attend a workshop on malaria control in primary health care in Africa as well as a four-month WHO assisted course on malaria in Rome, Accra and Palermo. The MOH Principal Secretary and the Project Director attended a short course in primary health care in Honolulu and upon its completion visited malaria-related activities in the U.S. prior to their return.

c. Commodities

Commodities including ten Land Rovers, eight trucks, spare parts, motor scooters, chloroquine, insecticides, laboratory equipment, audio-visual equipment, furniture and appliances have either been delivered or are on order. The Land Rovers and trucks have arrived and are in use in the program. Insecticides (DDT and Malathion) and a large shipment of antimalarial drugs have been received. Laboratory equipment has been received and is now being installed.

d. Other costs

The largest item to be financed in this category is vehicle maintenance and operation, which was estimated to cost $1,110,000 over the life of the project. The GOZ decided that it would bear the cost of this item from its recurrent budget rather than use AID loan funds. To date no expenditure has been made in the "Other Costs" category.

2. Government ZMCP Activities

Since the signing of the Loan Agreement in September 1981, the GOZ has taken a number of actions to upgrade the ZMCP. First, the Active Case Detection (ACD) Agents have selectively collected blood smears and have provided treatment to malaria patients visited. The ACD approach has identified some areas of high incidence and has provided basic raw data for ZMCP planning.

Since July of 1982 the GOZ has purchased $320,000 of antimalarial drugs. Through the ACD Agents, hospitals and clinics, 8 to 10 million tablets per year of chloroquine are available for distribution to malaria patients. To provide backup for this treatment program, education and ULV spraying is continuing. The GOZ hired a former PCV to help the ZMCP develop and prepare health education materials.

3. Problems Impeding Progress in the Zanzibar Malaria Control Program

There have been a number of problems which have impeded project progress and which are discussed in detail in the November 1983 Evaluation. The key problems identified in the evaluation included:

a. The USAID Project Paper for the Zanzibar Malaria Control Project was developed without the benefit of an approved long range GOZ Plan of Operations for malaria control. AID policy on malaria control assistance since 1973 requires a National Plan of Operations as a prerequisite to the provision of USG assistance. Due to the absence of this National Plan of Operations the USAID Project Paper developed malaria control targets and objectives which may not be agreeable to the GOZ. In any case the PP end-of-project objectives are not documented as GOZ approved program targets for malaria control.

b. Specific yearly workplans for the past two years have not been developed since the loan agreement was signed. This workplan would outline ZMCP activities and provide bench- marks for evaluation purposes.

c. The Project has fallen seriously behind its original implementation schedule and is not only beginning to develop along the lines foreseen in the Project Paper. Late delivery of ordered insecticides delayed progress in implementing the planned spray operations. The slow recruitment of the additional project personnel has hindered the implementation of project activities. This problem is particularly serious in relation to the delays in the collection and mapping of basic entomological data. Training activities have often not been initiated in a timely manner. The original implementation schedule is out of date and a revision of it as well as some of the project targets is required.

d. The project was originally designed to use chloroquine both as treatment and prophylaxis. Investigations carried out in July/August of 1982 by a team from CDC and WHO indicated that chloroquine may not be useful as a prophylactic drug because of the presence of chloroquine resistant Plasmodium falciparum

17

e. The project had planned to use residual insecticides in its field operation. It was decided at the time of project preparation that DDT was the insecticide of choice. It now appears that the major malaria mosquito vector, Anopheles gambiae, may be resistant or highly tolerant to DDT and an alternative insecticide should be considered. The alternative insecticide Malathion is approximately twice the cost of DDT for the same six months spraying period. The project costs on insecticide were based on DDT cost levels (approximately $0.60/lb. FOB). With the evidence of chloroquine resistance, the vector control component of the program has to be dramatically increased to balance the lack of suitable mass drugs for reducing the parasite reservoir in the population. The possible application of Malathion 50% WDP on a widespread basis presents additional problems with regard to health safeguards, operations, training and budgetary adjustments.

The change of the ZMCP Director in early 1987 slowed down the decision making process in organizing and implementing the operational program. The present Director has not been previously trained in malaria control and is in the process of learning a difficult field in a short time.

f. The late recruitment of the U.S. technical advisor has slowed the planning and implementation of the program. Absence of the second technician who was to assist in training, spray operations and evaluation has thrown a heavier than [illegible] burden on the present U.S. technician. Local project personnel were in a holding pattern waiting for the contract technician to provide guidance and initiate activities such as training, administrative control, entomological studies, etc. Short-term U.S. technicians are vitally needed if the operational aspects of the project are to be implemented, personnel trained, needed baseline surveys completed and management systems put into operation.

g. A single MOH Health Educator is responsible for the health education work needed for the two islands as well as supervising teaching health education at the nursing school and teacher training colleges. Both Unguja and Pemba have one Project Health Advisor each.

h. The early arrival of the project vehicles with the contract technician on the island to assist in developing administrative plan for vehicle use resulted in the personal use of vehicles for non-program activities.

i. The Project was designed with emphasis on source reduction. The benefits of source reduction for the primary vector An. gambiae are doubtful in view of its ubiquitous breeding habits. Therefore , less ambitious, more basic antilarval methods are appropriate.

III. REVISED PROJECT DESCRIPTION

A. Goal and Purpose

Both the goal and purpose of the amended Zanzibar Malaria Control Project remain unchanged from the original PP. The purpose of the project is to reduce the prevalence of malaria on Zanzibar to a level at which it no longer constitutes a major public health problem, through the adaptation of known control methods to local conditions in such a way that the Government of Zanzibar will be able to maintain effective control with its own resources. Generally, the experience and knowledge gained during the first two years of the project supports the fact that the Malaria Control Project can substantially reduce the incidence of malaria and achieve the project purpose. However, the general program as described in the original PP was overly ambitious in the level and type of activity expected to be sustained by the GOZ. The revised program is less complex, although generally it still fits within WHO's Tactical Variant No. 3 classification. Residual spraying of houses will continue to be the primary means of reducing the anopheline mosquito reservoir of malaria. An Active Case Detection Program will continue until the malaria incidence level drops substantially. In the meantime, malariometric surveys will provide the basic data for program evaluation. The larviciding and source reduction activities are now planned to be much less extensive and more basic in their approach. Chemoprophylaxis will be eliminated altogether because of the danger of promoting chloroquine resistant malaria. Health education activities, case treatment and entomological work continue to be important in the revised project. The following section provides more detailed revised plans for each of the project components.

B. Project Components

1. Surveillance Operations

The surveillance operations in the field area will consist of a network of Active Case Detection (ACD) Agents each covering 4,000 to 5,000 individuals on a monthly basis. The primary duties for these ACD Agents during the FY 1985 period are case treatment. During this initial period, the ACD Agents will not routinely collect blood slides from fever cases for laboratory examination, unless directed to, but will concentrate on radical case treatment. Fever will be used as the screening

criteria. The amount of malaria now existing in Zanzibar is [illegible] such a level that routine blood slide collection and examin[illegible] does not not provide any meaningful epidemiological information. As all suspected cases are radically treated, the report of [illegible] laboratory-confirmed positive case only provides evidence [illegible] such a case was malaria. After a two year period when the [illegible] load reaches a designated level, the ACD system can be used [illegible] identify problem or unresponsive areas, and blood slides will [illegible] taken as a routine measure. Until the prevalence rates drop [illegible] below 3%, the MCP epidemiological assessment will be based on periodic malariometric surveys. Besides case treatment, the ACD Agents will take censuses in their areas, promote and organize some village source reduction activities as part of their [illegible] The ACD Agents will also participate in the periodic malariometric surveys which will be carried out to determine the [illegible] of the malaria control interventions in each Agent's area. Supervision of the ACD Agents will be done by District Supervisors equipped with motorcycles/scooters as well as other senior ZMCP personnel. The ACD Agents will use bicycles for their transportation.

The ZMCP will also use the health personnel stationed in hospitals, health centers and other institutions as a part [illegible] their surveillance program. Blood slides will be examined [illegible] hospital sources as well as selectively from randomly sampled [illegible] areas to check on diagnosis skill levels. The ACD Agents will [illegible] chloroquine for radical treatment during their monthly rounds.

The total ACD Agent staff is expected at the end of the project to total 142 people on both islands. At present, there are [illegible] ACD Agents on Unguja and 70 ACD Agents on Pemba. Six more will [illegible] recruited and trained. All ACD Agents will receive both basic [illegible] yearly refresher training.

2. Chemotherapy

The ZMCP has decided to retain chloroquine [illegible] first-line drug in spite of laboratory evidence that, although there is chloroquine resistant malaria present in Zanzibar, patients normally respond if proper dosages of chloroquine are taken as directed. The MCP is making every effort to standardize the chloroquine treatment schedule. Health education efforts will be increased to explain to the public the importance of taking a full treatment of anti-malarial drug.

The Evaluation Team suggested to the ZMCP that a supply of parenteral and oral quinine should be available to be used in those cases where (a) the infection is unresponsive to chloroquine or (b) the severity of infection demands [illegible] intravenous therapy. The ZMCP was encouraged to carefully monitor the storage, distribution and clinical use of [illegible] order to reduce the possibility of developing parasite resistance and problems of host toxicity, cardiovascular failure and malarial haemoglobinuria (Blackwater Fever).

All pharmaceuticals used in the ZMCP effort are required to be certified through the WHO world standard tests for quality.

3. Chemoprophylaxis

Unequivocal data on the prevalance of [illegible] resistant Plasmodium falciparum suggests that a program of chemoprophylaxis with chloroquine would not significantly [illegible] malaria related morbidity or mortality and would probably increase the prevalance of resistant malaria parasites [illegible]. The ZMCP may opt to use such chemoprophylaxis in selected [illegible] during the course of the revised project, but not at the [illegible] envisaged in the original Project Paper.

4. Malaria Vector Control Operations

a. Residual Spraying

The ZMCP will spray residual insecticide [illegible] to selected rural and peri-urban areas. Total coverage of sprayable surfaces is to be carried out using insecticide [illegible] rates proven to be effective. Spraying operations will be [illegible] on a planned schedule during the January April period [illegible] using both DDT and Malathion. Based on entomological and epidemiological evidence gathered during 1984 the insecticide of choice for 1985-1987 will be selected. Due to available evidence that increasing tolerance to DDT may be developing in the vector mosquito, it is expected that either Malathion or Fenitrothion will be applied during the FY 1985- 1987 period on both [illegible]. Hudson standard 10 litre spray pumps will be used. Spray personnel will be temporarily employed and will receive adequate training in spray application, health and environmental safeguards, as well as health education prior to initiating actual field operations. If Malathion or Fenitrothion is used in the

ZMCP, arrangements for cholinesterase testing will be made and periodically implemented. Atrophine and necessary training for its administration is to be available for the spray supervisors. Spraying will be limited to a single application prior to the major rainy season in 1985. As baseline operational data is not sufficiently clear, the project will consider the addition of a second cycle of spraying in 1985 and, if necessary, through 1987 in the September-October period just prior to the "short" rains. The final decision to increase this spraying schedule will be based on epidemiological data collected prior to the arrival of the External Evaluation Review Team which will evaluate the ZMCP in November of 1985. Adequate project funds are available if a second yearly spraying is deemed necessary.

b. Larviciding

As a supplementary measure, a program of larviciding will be organized and implemented in urban and peri-urban areas of high malaria prevalence. During 1985 a larvicide mixture consisting primarily of diesel oil and a surfactant or "Abate" granuals will be used.

The ZMCP is considering the use of "Abate" as a larvicide due to its cost effectiveness over oil-based larvicides and its low mammalian toxicity properties. Larviciding against anopheline species along with entomological evaluation will be essential elements of the anti-larval activities. Anti-larval applicators will be provided training on application of larvicides and health and environmental safeguards. Permanent areas to be treated will be mapped and measured in order to apply proper dosages. Cone nozzles will be used in three gallon pressurized sprayers.

The present normal larviciding cycle is two weeks for permanent breeding sites, but variations will depend upon entomological information.

c. Source Reduction

The ZMCP will carry out limited source reduction activities in urban and peri-urban areas using basic techniques of filling, draining, canalization and similar methods. The emphasis will be on using techniques which can be accomplished with unskilled laborers. The municipalities will be asked to supply labor and work costs and the ZMCP will provide technical guidance. The program will provide full time source reduction supervisors to insure that proper work activities are carried out by project laborers. The ZMCP will take a more

active role in those cases where urban or peri-urban [illegible] found to be not functioning at the level necessary [illegible] sources of anopheline breeding. Community participation [illegible] reducing mosquito breeding sources will be encouraged through [illegible] of community, CCM (political party) and school teachers [illegible] educational programs.

In cases where heavy equipment is required, the [illegible] arrangements with other GOZ agencies such as the Road Agency [illegible] to use their equipment on a reimbursable basis. The [illegible] reduction program as planned is suitable to the [illegible] project and is within the capability of the ZMCP to [illegible]

d. Space Spraying (ULV)

Ultra low volume (ULV) applications will be utilized against anopheline vector species in a manner which permits maximum coverage using a minimum amount of insecticide. All ULV applications will be scheduled against entomological assessment of the need to use this technique. The ZMCP will apply ULV operations only in urban or limited semi-urban areas during and immediately after the major rainy season or in emergency situations. The insecticide used in these ULV units will be selected after entomological assessment and applied at the lowest rate determined to be effective. Suitable safeguards against health and environmental hazards are to be applied. The ZMCP operators will be throughly trained in operating the equipment. The ZMCP is considering the use of pyrethroids in these units as this material will give fast knockdown action and has no negative environmental impact. The project has 7 units and 15 ULV machines in place on both islands.

There is concern with using this methodology with respect to cost effectiveness and the ability of the ZMCP to properly use such equipment in their program. However, if the ULV applications are used as a supplementry measure, it should further the reduction of vector mosquitoes.

5. Epidemiology

a. General Work Plan

The ZMCP epidemiological services consist of parasitology, laboratory and entomology units which operate under the direction of a senior scientist. During the 1985 period, these services will be engaged in establishing important malaria baseline data and in evaluating ongoing operational interventions. Epidemiology represents the "eyes and mind" of a malaria service as it directs the use of insecticides. It also determines wheather ZMCP interventions being employed are successful, compares and evaluates the parasitological data, and provides necessary laboratory services. In the 1985-1987 period after required staff have been recruited and trained, the emphasis will be in modifying the operational techniques to obtain technical efficiency and cost effectiveness. Careful monitoring of the level of chloroquine resistance and vector susceptability will be a responsibility of the Epidemiology and Evaluation Divisions.

b. Malariometric Surveys

The incidence of malaria on Zanzibar is determined for FY 1984 and FY 1985 through a series of malariometric surveys taken within indicator districts twice yearly. The first survey will be made just after the peak of transmission in July and the other survey in November. This methodology, if properly conducted, will provide point prevalance information on the impact of spraying operations, case treatment and other forms of malaria control interventions. If the incidence of malaria is reduced to levels which make the introduction of ACD slide collection useful, this will be initiated in 1985/86.

c. Entomology

The major mosquito vector of malaria in Zanzibar is Anopheles gambiae. All ZMCP operational interventions are aimed at reducing the impact of this malaria carrier on the population. The Entomology Section has as its initial objectives to build a proper entomological service and to collect baseline data. Specific objectives of the Entomological Section include: (a) routine anopheline density and prevalence assessments: (b) determination of trends of vector resting and biting densities in relation to parasitological trends throughout the year; (c) investigations into the bionomics of the vector under various

seasonal conditions) and (d) studies of susceptibility of the vector to insecticides utilized.

The Entomology Section will operate under a detailed implementation plan. This plan will be developed by identification of localities for routine field observations and areas of high parasite rates. On Pemba, a total of four indicator areas will be selected while in Unguja there will be six such indicator areas

The Entomology Section has established an insectary at ZMCP Headquarters on Unguja over the life of the project for use in bio-assay tests, ULV cage tests, teaching purposes and other scientific research.

Two assistant entomologists have been recruited to supervise the field activities and to develop these services, and in the absence of the senior entomologist for long-term training in U.S., a short-term consultant entomologist will be contracted to supervise the data collection and evaluation, and to provide planning and training advice.

d. Laboratory Services

The ZMCP has developed laboratories to carry out blood slide examinations. On Pemba, three such laboratories are located in the hospital facilities at Wete, Chake Chake and Mkoani. On Unguja, the major laboratory will be located at ZMCP Headquarters. The Unguja Island office laboratory will operate near the major medical facilities. It is expected that the Headquarters laboratory will provide cross-checking services as well as take part in other laboratory studies such as cholinesterase testing. Plans are underway to post one microscopist at each of the four cottage hospitals on Unguja and Pemba.

The present laboratories are well equipped and the project has sufficient microscopes. The Senior Laboratory Technician is well trained and there are adaquate, trained microscopists to serve the project.

e. Drug-related studies

The ZMCP is aware of the presence of chloroquine-resistant malaria in Zanzibar. Studies were done in mid-1982 to establish the present status of resistance in

26

Zanzibar City. Additional studies were carried out in June, 1982 by the ZMCP personnel trained during the previous surveys. The techniques and results of the June survey were found to be in accordance with sound scientific management of such tests. The ZMCP is capable of carrying out these chloroquine-resistant malaria studies and has developed a schedule for such activities in its Plan of Operation.

6. Public Health Education and Community Participation.

The goal of the health education component of the Zanzibar Malaria Control Program is to create a broader understanding in the community of the role that malaria plays as a determinant of health and an appreciation of the measures which can be taken to avoid the disease.

The Malaria Control Program will use a variety of vehicles to disseminate health education information and promote community participation. These include:

a. Recruitment of two full time qualified health educators (one for each island) and a health education artist for the project;

b. Setting up a fully functioning health education section within ZMCP;

c. Training all health workers to promote the program whenever they have the opportunity to discuss malaria with their patients and communities;

d. Reorienting all school teachers to instruct their students regarding the disease and the Malaria Control Program;

e. Introduction of malaria control in school syllabus;

f. Development of health education materials such as posters and panphlets on malaria control, which will be distributed and posted at all health centers, schools, factories, political party headquarters, and government institutions; and

g. Enlisting the national television and radio stations to participate in the campaign.

The Malaria Control Program will develop campaigns in the context of a carefully planned, integrated health education program. The planning will be partially based upon knowledge, attitude and practice surveys conducted by the ZMCP health educators.

Zanzibar presents a favorable situation for launching an effective health education and community motivation campaign because the population has had a long exposure to antimalaria activities and has recently developed a high level of anxiety as a result of the resurgence of malaria to epidemic levels.

In addition to the promotional and education campaign aimed at communities and individuals, there will be a series of orientation meetings for rural health workers, institutional cadres such as the police and army, political leaders and school teachers. Orientation sessions will be conducted for each of these groups to gain their support for malaria control.

Using both the National Malaria Control Committee and promotional efforts aimed at specific ministries, professions or industrial groups, the Malaria Control Program will involve many organizations outside the health sector in the national malaria control effort. This involvement will include participation in antimalaria activities and avoiding activities which might have a negative impact upon the Malaria Control Program such as inadvertent creation of new mosquito breeding sites. In addition to the governmental organizations which should be involved, such as the Ministries of Agriculture, Industry, Road Works and Education, non-governmental groups will play a role in making the malaria control effort a success. Such groups include the women's branch of the political party, the Parents' Association and special clubs such as youth groups and community music clubs.

Annex G shows the planned areas of community participation expected in the ZMCP.

In addition, an office set up for the production of educational materials will be established. This office will develop all health education materials for the malaria control program. These will include posters, pamphlets, booklets and photographs. The unit will also develop, produce and distribute all the

training materials for the project. Present plans call for: (a) a manual on the correct chloroquine dosage for ACDs and health attendants; (b) a public information campaign bulletin to be used by health workers, MCH attendants and rural health workers; (c) a manual describing residual spraying for spraymen; and (d) readiness to revise a malaria curriculum booklet for school teachers. In addition the office will develop radio and TV programs on malaria control.

This project amendment will provide a health education specialist as short term consultant to help organize and plan communications resources more effectively for the Malaria Control Program.

7. Operational Research

The program will carry out limited operational research aimed at solving identifiable field problems. It was suggested by the Evaluation Team of November, 1983 that three operational problems be considered by the ZMCP for inclusion in their operational research plans. These suggestions were (a) biological control of mosquitoes through use of larvivorous fish; (b) determining the cause of chloroquine-induced pruritus (itching); and (c) community involvement in malaria control. Other possible areas for such operational research are modified spray applications, variable dosage rates and variations in the antimalaria drug schedules.

If the ZMCP does initiate field research, it will be necessary to consider whether such studies will draw off too much of the available manpower from the required operational program. The ZMCP does have personnel who could successfully carry out a variety of operational research activities, although trained staff are limited.

C. Malaria Control Operation Plan: Coordination and Evaluation of Components

To achieve an effective malaria control program, the individual project components discussed in the previous section cannot be planned and implemented independently of each other. For example, the malaria control operations of anti-larval measures, residual spraying and source reduction must be coordinated to make the program cost effective. Active Case

Detection or malariometric surveys are needed to measure the impact of control and provide data for the next cycle of vector control. A three to five year Plan of Operation that describes the goals and purposes, sets out a plan for integration and evaluation, and then provides technical, administrative and management guidelines, is essential for an effective malaria control program. Based on this document, a yearly work plan is prepared which identifies specific objectives for the individual components. Schools and clinics in these villages might also be identified in the work plan for special malaria education efforts.

The Malaria Control Unit in Zanzibar has been run without either a Plan of Operation or specific yearly work plans. This lack of plans has contributed significantly to the slow start-up of AID's Zanzibar Malaria Control Project. With the assistance of the recently arrived Malaria Advisor and the guidance provided by the Evaluation Team of November 1983, the Malaria Control Unit has completed a Plan of Operation. AID will make preparation of the Plan of Operation and its approval by the GOZ, with favorable review by AID, a condition precedent to the purchase of additional drugs and insecticides by the project. Yearly work plans, favorably reviewed by AID, are also required.

D. Organization and Staff Levels of the Malaria Control Program

The Zanzibar Malaria Control Program Organization is shown in Annex D. The new staffing requirements are different from those called for in the original Project Paper. The new figures reflect a re-thinking of personnel requirements as a result of the evaluation, over two years after the approval of the original Project Paper.

Since the spraymen, 120 on each island for a total of 240, will be daily paid employees, they are not included in the program staffing table. These spraymen will be employed only for the periods of time required for their training and when they are actually spraying.

E. Administration

The Zanzibar Malaria Control Project will be within the existing administrative framework of the Government of Zanzibar which has been involved formally in anti-malaria

activities in one form or another for over 27 years. The executing agency for the project will be the Ministry of Health and the existing Malaria Control Program. Figures 1 and 2 in Annex D indicate the location of the Malaria Control Program within the administrative organization of the Ministry and the internal organization of the program respectively.

It is proposed that the current permanent program staff of 325 be increased to 349 over the life of the project. The one long-term position (Malaria Advisor) will not be a permanent position in the administrative organization.

Additional office space should be provided for the staff of the Unguja Island office. This may or may not require moving to a new building provided by the GOZ.

The Malaria Control Project should have its own vehicle maintenance facility given the number and types of vehicles either already on hand or ordered. The project will be responsible for constructing such facilities along with adequate storage space for vehicle spare parts. Proper stock control procedures for these parts and supplies will be instituted. The ZMCP will establish a system to insure that AID-funded project vehicles will be used for Malaria Control activities only. The system should be closely monitored by the ZMCP Administrative Officer and the two Island Officers.

A qualified Administrative Officer, who possesses a diploma in administration, has been recruited. This officer has been given responsibility over personnel management, commodity procurement, stock control, maintenance records, training and transportation activities.

F. Project Coordination with Other Ministries and Entities

A National Committee or Malaria Control will be established with representatives from the Ministries of Health, Education, Agriculture, Industry, Planning, Finance, Public Works, Culture and Information and Communication. In addition to these, the Chama Cha Mapinduzi (Party of the Revolution) should be represented.

This committee will be chaired by the Ministry of Health and should meet at least quarterly to monitor program progress and advise on program activities.

3. Revised Outputs and End-Of-Project Status

The following lists of EOPS and outputs present targets to be achieved by the end of the project. Some of these targets are changes in specific indices of performances and others are processes which are to be established or strengthened. As a whole they represent a summary of expected achievements in the project components listed in the previous section. The revised end-of-project status is as follows:

1. End-of-Project Status

a. Malaria parasite rates as determined by malariometric surveys are not to exceed 3% in children 2 through [illegible] old;

b. Organized and operating larviciding programs are in place in Zanzibar Town, Chake Chake, Wete and Mkoani. The program has mapped permanent breeding sites, a regular written schedule of work is used, and 90 personnel have been trained in larviciding techniques;

c. A ULV spraying program has been developed with clear policy and program guidelines, and a work plan, and 20 operators have been trained in ULV application;

d. Residual spray coverage in targeted structures is no less than 85% during any given round of spraying;

e. The out-patient malaria attendance rates in hospitals and health clinics should not exceed 10% of total patients in attendance;

f. The malaria case fatality (laboratory confirmed) rate in hospital-admitted cases should not exceed 0.4%;

g. Ninety-five percent of all houses in rural

37

areas of the country are visited by the malaria active case detection agents at least once every month;

h. One hundred percent of all SOZ health institutions have received directives describing the appropriate drug treatment schedules for malaria and are fully supplied with malaria treatment and preventive drugs; and

i. An adequate system of technical and operational evaluation is in place within the program with trained supervisory staff.

2. Project Outputs

The revised project outputs are listed below:

a. The organization of the Malaria Control Program;

b. The establishment of a larviciding source reduction program;

c. The organization and implementation of a limited space spraying source reduction program;

d. The establishment of effective vector control measures including an effective intradomiciliary spray program;

e. The establishment of an effective health education and community motivation program;

f. A monitoring and evaluation program in place;

g. Integration of other sectors into the control program established;

h. The establishment of in-service and other types of training programs as necessary to develop and maintain technical skills of all levels of malaria control workers; and

i. The establishment of an epidemiological evaluation system.

77

The evaluation plan of this PP Supplement, Section VIII, includes quantifiable yearly progress indicators for the outputs and EOPS.

This information will assist in the informal and formal evaluations of the project.

H. Inputs

1. Technical Assistance

Only since May of 1983 has the long-term consultant, an entomologist, been working as an advisor to the Director of the Malaria Control Unit. This advisor has broad malaria control experience and is responsible for coordinating all AID inputs into the project. He also gives advice and assistance in the policy, planning and implementation of the overall GOZ malaria program. Although a counterpart to the Director, the advisor provides on-the-job training and technical assistance to the other senior staff of the program. Since the Zanzibar Malaria Control Program is still in a formative stage, the advisor's general guidance in the wide range of project components, as discussed in Section III B, is required. However, realizing the technical limitation of one individual, the revised plan for consultant assistance calls for the provision of substantial short-term advisory assistance. More than three person years (40 person months) of technical assistance in the field will be financed by the project. Although the ZMCP is relatively small, there are a large number of components whose development and maintenance are crucial to ensure program effectiveness. The provision of short-term technicians to help with the ZMCP's many activities is most appropriate and cost effective. Funds have also been included in the project for consultant assistance in the three evaluations. The scope of their work is discussed in the Evaluation Plan.

2. Training

The objective of the project training is to establish a basic, in-service training capacity to develop and maintain the skill of all malaria control workers. It is through this training that a capable cadre of technicians will be established which can carry on the ZMCP once AID assistance is terminated. The training plan emphasizes in-country, in-service training because it is most cost effective and much of the

training will be at a basic operational level. However, in addition to this training there is a need for professional and scientific training in other countries to create a core group of highly skilled individuals that can manage the program when U.S. assistance is completed. Additionally, from this group will come the instructors for many of the basic in-service courses.

a. In-Service Training

Because of the slow start of the Project and the planned increase in ZMCP staff this year, training, especially at the field level, must be one of the first concerns of the project. Over 20 different areas of special training are required to provide the initial or basic training for the Malaria Control Program personnel. The AID-provided technician, with the help of short-term training consultants as necessary, will assist the ZMCP and the Ministry of Health to develop curricula and conduct courses in speciality areas during the duration of the project. Most of these initial courses can be delivered during short sessions lasting only a few days. Initial training will be aimed at program supervision and those needed to perform the preliminary monitoring activities. This training is for the following list of technicians. Senior laboratory technicians

Source reduction supervisors	4
Senior health inspectors	2
Regional rural health assistants	5
District rural health assistants	10
Spraying supervisors	10
Malaria agent supervisors	17
Health educators	2
Assistant parasitologists	2
Microscopists	12
Cartographers/draftsmen	1
Entomology assistants	5
Entomology aides	10

These staff members will receive initial general training as a group regarding the objectives and organization of the program with specific attention given to the interdependence of the various program activities and the responsibilities of each category of malaria control worker. The group will then be split up for a review/training session concerning the specific areas of expertise which each group must have. In each case the ZMCP Director and Deputy Director, the contract malariologist and senior Ministry of Health officials will play a major part in conducting the courses. The above staff, once through their

initial training, will become involved in collecting the baseline data needed to determine where project activities will begin and train other members of the project staff, which include:

Medical Recorder	1
Drivers/mechanics	17
Pump mechanics	6
Larvaciders	20
Sprayers	250
Malaria agents	125
Government Area Coordinators	3,000
School teachers	3,000
Rural health workers	300

The latter three groups will receive training in the form of seminars and workshops. Once the basic training objectives have been met for each category of Malaria Control Program personnel, they then will be kept up to date regarding the program and encouraged to make their respective inputs into the evaluation of the program through a series of regular in-service seminars and workshops.

b. U.S. and Third Country Training

Six senior project personnel are scheduled to be trained in degree programs during the life of the project. The plan for the life-of-project calls for long term training as follows:

--3 MPH degrees in the USA for the Director, Deputy Director, and one other key person.

--2 MSc degrees in entomology/parasitology

--1 MSc degree in epidemiology

In addition, seven participants will attend short courses in the U.S. in areas of malaria control operations; twenty-one participants are scheduled for short courses in third country programs on specific IMCP activities in Nigeria, Italy, Sudan, etc. Six participants are scheduled for three months of epidemiology training in India, Pakistan or Malaysia.

Study tours to third countries with malaria control programs for periods ranging from three to six weeks are planned for nine [illegible]

36

staff. Each of the three senior project staff, i.e., Director, Deputy Director and contract malariologist, are expected to attend international conferences to keep their technical malaria knowledge current.

A summary of all training and cost estimates appear in the training plan tables (Annex F).

3. Commodities and Other Costs

In order to support the revised program, AID will purchase essentially the same commodities as originally planned only in changed amounts to reflect the amended program plans. Commodity support provided by AID includes chloroquine and other anti-malarial drugs for treatment, insecticides (mostly malathion), larvicides, diagnostic and laboratory equipment, sprayers and sprayer spare parts. To provide mobility to project personnel, and having already purchased maintenance equipment, AID will finance for ZMCP ten replacement 4WD vehicles in 1984, one additional 3 ton truck to bring the fleet to five, and motorcycles, scooters and bicycles for the field staff. Waivers to purchase these vehicles from 935 sources were included in the PP Authorization. AID loan funds will finance the purchase of spare parts. Because of the severe foreign exchange shortages, local dealer purchases of spare parts have been drastically curtailed. Thus, AI[illegible] will finance for the ZMCP the purchase of vehicle spare part[illegible] ; well as petrol, oil and lubricants (POL) for project vehic[illegible] Costs of maintenance will continue to be the responsibility [illegible]e GOZ. To assist the Malaria Unit in fleet maintenance, [illegible] will finance the construction of, and equipment for, vehicle maintenance facilities on both islands.

Two small computers have been purchased to store and analyze malaria-related data, control program accounts and provide word processing facilities. Because of the poor communication system between the islands, ZMCP Headquarters and the mainland, four radios will be purchased. Finally, a small amount of office equipment and furniture will be purchased. The estimated cost of the commodities is included in the detailed budget within the Financial Plan, while the timing and procurement procedures are presented in the implementation plan.

IV. COST ESTIMATES AND FINANCIAL PLAN

Table 2 presents the summary of local and foreign cost estimates for GOZ and AID contributions to the project, while Tables 3 and 4 provide the detailed budget and financial plan presented by yearly expenditures. The recurrent cost analysis appears in the economic analysis.

A comparison of the original life-of-project funding levels with the revised amounts recommended in the amendment appears in Table 5. The revised plan reduces by approximately $4.3 million the PP's estimated AID funding level of $11,771,000. Although there was a slow startup to the project, the rescheduling of project inputs and activities through August of 1987 (PACD: September 30, 1987) to a large extent compensates for the slow start.

A proportion of the reduced cost estimates results from a lower than expected inflation rate. The difference in the inflation line item of the two budgets in Table 5 amounts to almost $3.0 million. However, to some extent inflation is already reflected in the higher cost of commodities ($4,116,000 versus $2,915,000) in the amended budget.

For technical assistance, the original Project Paper budgeted $150,000 in 1982 dollars for the annual cost of a technical advisor. Inflation was then added to this first year figure. This has turned out to be substantially more than what the actual costs have been (a cost of approximately $115,000 in 1984).

Additionally, because WHO had promised a vector control specialist, AID funding is no longer necessary for the second advisor. These factors explain the $1.6 million reduction in spending on technical assistance in the amended project budget.

The amended AID portion of the project budget includes a 9.5% contingency to ensure that the project has the flexibility to respond to some possible changes in the program. There is potential for expanding the program in FY 86 after the next major evaluation. Initially, very little progress had been accomplished The first major spraying on both main Islands commenced in February 1985. Although the November 1983 Evaluation Team recommended only one spraying each year, the possibility exists that a second spraying may be required. Secondly, chloroquine resistant strains of malaria are appearing on the island. If

the program has to shift to other antimalarial drugs, they could possibly cost substantially more than the relatively inexpensive chloroquine. The cost of evaluating and studying the problem of chloroquine resistance could also be expensive. The GOZ contribution, which totals $3,395,000 (31% of project costs), finances personnel, operation costs and miscellaneous expenses. The allocation which appears in the GOZ budget and is cited in the economic analysis (T.Shs.34,606,919 for 1982/83) does not include drugs, insecticides and most of the personnel costs. The personnel estimates in the detailed budget are based on the salaries of those actually working in the ZMCP and planned additions to the staff. Because of the large purchase of drugs and insecticides by the project in 1983/84, no GOZ purchases were planned for 1985. At present, the Ministry of Health, which purchases drugs and insecticides out of its general budget, has no plans for procurement in fiscal years 1985/86, 1986/87 or 1987/88. Procurement will be based on the success and the direction of the ZMCP. The estimated cost for drugs and insecticide for FY 1985/1986-1987/88 were based on the average purchase over the last two years. A 6.7% inflation factor is calculated into all cost estimates.

In summary, the revised project budget reflects significant changes in the expected project costs. In addition, there is sufficient contingency in the budget to allow for possible project adjustments. The GOZ will contribute 31% of all costs. The project's financial plan is sound.

Table 2

SUMMARY COST ESTIMATE AND FINANCIAL PLAN

(U.S. $000)

SOURCE/ USE	AID FX	AID LC	GOZ FX	GOZ LC	TOTAL
1. Project Staff	-	-	-	1,445	1,445
Technical Assistance:					
Long-term	500	22	-	-	522
Short-term	472	-	-	-	472
2. Training:					
Long-term	225	-	-	-	225
Short-term	403	170	-	170	743
3. Commodities	4,220	-	549	-	4,769
4. Petrol/Diesel	-	-	55	-	55
5. Other Costs	50	-	-	1,176	1,226
6. Construction	191	-	-	-	191
7. Contingency (9.5%)	708	-	-	-	708
8. Inflation (6.7%)	499	-	-	-	499
Sub Totals	7,268	192	604	2,791	10,855
Totals (FX/LC)	AID 7,460	(63%)	GOZ 3,395	(31%)	10,855

Table 3

PROJECTION OF EXPENDITURES BY FISCAL YEAR
($000)

Fiscal Year	AID	GOZ	Total
82	409	763	1,172
83	154	801	955
84	1,467	546	2,013
85	1,399	552	1,951
86	1,591	585	2,176
87	1,233	148	1,381
Inflation (6.7%)	499	-	499
Contingency (9.5%)	706	-	706
Total	7,460	3,395	10,855

Table 4
DETAILED REVISED BUDGET

($000, AT 1984 PRICES)

AID FISCAL YEAR	82	83	84	85	86	87	TOTALS
AID CONTRIBUTION							
A. TECHNICAL ASSISTANCE							
Malariologist (4 1/3 YRS)	0	50	115	115	115	105	500
Short Term Advisors (40 PM at $120,000/mo.)	28	0	144	162	72	66	472
Administrative Assistant (Local Hire)	0	0	4	6	6	6	22
TOTAL TECHNICAL ASSISTANCE	28	50	263	283	193	177	994
B. TRAINING							
U.S. Long Term (9 PY at 25000)	0	25	50	75	75	0	225
U.S. Short Courses (5 at $6,000/course)	0	0	12	12	6	0	30
Third Country Short Courses (21 at $6,000)	0	0	30	48	30	18	126
Third Country Training in Epidemiology (5 at $8,000)	0	0	16	16	16	0	48
Asia Study Tours (9 at $3,000)	0	0	7	7	12	7	33
Inservice Staff Training	0	0	65	65	65	65	260
Local Leadership Malaria Orientation/Training	0	0	5	5	5	5	20
Other Local Training	0	0	5	5	5	5	20
International Conferences (9 at $4,000/Trip)	0	0	8	12	12	4	36
TOTAL TRAINING	0	25	198	245	226	104	798

42

AID FISCAL YEAR	82	83	84	85	86	87	TOTALS
C. COMMODITIES							
Land Rovers (20)	135	0	0	0	150	0	285
-Spare Parts	0	20	10	15	20	35	100
Trucks (9)							
3 Ton (5)	36	0	36	0	0	18	90
Pick-up (4)	20	0	22	0	0	0	42
-Spare Parts	0	18	10	12	17	10	67
Scooters and Motorcycles	0	0	16	0	0	16	32
-Spare Parts	0	0	4	1	1	4	10
Vehicle Maintenance Facility Equipment	0	0	30	2	2	2	36
Bicycles (200)	0	0	0	0	25	0	25
-Spare Parts	0	0	3	3	3	5	14
Insecticides							
- Malathion/Spray	0	0	160	640	640	640	2080
- DDT/Spray	0	0	128	0	0	0	128
- Pyrethroids	0	0	15	15	15	15	60
Antimalaria Drugs	80	0	405	55	162	153	855
Sprayer, Parts and Protective Clothing	0	0	65	10	30	23	128
Computer & Accessories	0	0	5	1	1	1	8
Health Education Equip.	0	41	2	2	2	3	50
Radios (4) and Maintenance	0	0	15	2	2	2	21
Laboratory Equipment	70	0	2	5	5	5	87
Office Furniture	0	0	12	0	5	0	17
Household Goods and Misc. Equipment	30	0	20	5	5	25	85
TOTAL COMMODITIES	381	79	956	771	1091	952	4230

AID FISCAL YEAR	82	83	84	85	86	87	TOTALS
D. OTHER COSTS							
Construction	0	0	0	100	91	0	191
Other	0	0	50	0	0	0	50
SUBTOTAL AID CONTRIBUTION	409	154	1467	1399	1591	1233	6253
E. INFLATION (6.7%)	N/A	N/A	N/A	78	185	236	499
F. CONTINGENCY (9.5%)	N/A	N/A	N/A	209	250	249	708
TOTAL AID CONTRIBUTION	409	154	1467	1686	2026	1718	7460

GOI CONTRIBUTION

	82	83	84	85	86	87	TOTALS
Personnel	175	300	281	298	315	76	1445
Other Overhead Costs	240	220	215	229	235	37	1176
Petrol and Diesel	10	20	25	0	0	0	55
Drugs and Insecticides	313	236	0	0	0	0	549
Training (Short-term in-country)	25	25	25	25	35	35	170
TOTAL	763	801	546	552	585	148	3395

Table 5

COMPARATIVE COST OF REVISED PROJECT BUDGET

($000)

Input Category	PP Estimated LOP Funding		Amended LOP Funding	
USAID Contribution				
Technical Assistance	2,626	(22.3%)	994	(13.3%)
Commodities	2,915	(24.8%)	4,220	(56.6%)
Training	731	(6.2%)	798	(10.7%)
Construction	-0-	(0.0%)	191	(2.5%)
Other Costs	1,318	(11.2%)	50	(0.7%)
Inflation	3,422	(29.1%)	499	(6.7%)
Contingency	759	(6.4%)	708	(9.5%)
Sub Total	11,771	(100%)	7,460	(100%)
GOI Contribution	4,259		3,395	
Grand Total	16,030		10,855	

V. IMPLEMENTATION PLAN

A. Implementation Schedule

The following revised schedule provides a basis for project planning and implement-tion for the period April 1985-September 1987. A revision of this schedule will follow from the evaluation planned for November 1985. The activities listed have been developed jointly by GOZ/MCP and USAID.

1985 (beginning April)

April
- Health education.
- Completion of spray round.
- Repair and maintenance of spraying equipment.
- Routine entomological activities.
- Anti-larval operations.
- ULV spraying, Zanzibar Town.
- Training of PHC personnel in-country to standardize malaria treatment activities.
- Management short course, Arusha.
- Budget and fiscal planning.
- Final report, residual spraying operation.

May
- Bio-assay tests.
- Chloroquine sensitivity testing.
- Routine entomological studies.

June

- Quarterly Report.
- Mass blood survey.
- Routine entomological studies.
- Chloroquine sensitivity testing.
- Anti-larval activity.
- ULV in Zanzibar Town.
- Health education activities.

July

- Mass blood survey.
- Routine entomological studies.
- Anti-larval activity.
- ULV in Zanzibar Town.
- Health education activities.
- Initiate final arrangements for study tours.
- Update geographical reconnaissance.
- In-service training for malaria agent supervisors and malaria agents.
- Diagnosis and treatment seminar for medical assistants, and Rural Health Assistants (RHAs) of rural health centers.
- Chloroquine sensitivity testing.

August

- Mass blood survey.
- Study tour, Sudan or other opportunity.
- Routine entomological studies.
- Chloroquine sensitivity studies.

- Planning for focal residual spraying in September.
- Training of spray personnel.
- Bio-assay testing.
- Anti-larval activities.
- ULV Activity.
- Bio assay testing.
- Cholinesterase testing.

September

- Initiate focal spraying activity.
- Routine entomological studies.
- Continue study tours.
- Scientific meeting/conference, international.
- Review plan for anti-larval activities.
- Review ULV plan.
- In-country training and external study tours, staff and PHC participants.
- Annual Report.

October

- Ongoing MCP activities, parasitology, entomology, anti-larval measures, ULV.
- Complete focal spraying.
- In-country training.
- Study/observation tours.
- Cholinesterase tests.

48

November

- Evaluate focal spray operation.
- Short course/observation.
- In-country training.
- Study/observation tours.
- Bio-assay tests.
- Second external evaluation of project.
- Initiate planning for residual spraying activities 1986.

December

- Routine entomology and parasitology activities.
- Quarterly Report.
- General equipment repair.
- Final planning for residual spray application.
- Spray equipment repair.

1986

January

- Spray operations initiated.
- Action on long-term technician's contract (TA).
- Health Education Program approval - for months January to December.
- Entomological activities and plan approved. January-December for monitoring entomological parameters.

February	–	Spray operation training.
	–	Baseline cholinesterase testing.
	–	Village health education for spray operations.
March	–	Quarterly Report.
April	–	Spray operations completed - April 15.
	–	Budget/fiscal planning initiated.
	–	Workplan for 1986/87 prepared.
	–	Susceptibility tests - April-August.
May	–	Personnel appraisal completed (May-June).
June	–	Quarterly Report.
	–	ULV applications as required.
July	–	Malariometric surveys completed - July-August
	–	Bio-assay tests - July-August.
	–	Procurement process initiated.
August	–	M.Sc. candidate leaves for U.S. training.
	–	Procurement process continues.

50

September
- Annual Report completed.
- Quarterly Report.

November
- Malariometric surveys.

December
- Quarterly Report.
- Internal Evaluation.
- ZMCP personnel conference.

1987

January
- Initiate spray operations.
- Equipment repair and maintenance.
- Training session for senior staff on field operations.
- Laboratory services for B.S. examination December-January.
- Bio-assay tests January-February.

February
- Training of spray personnel.
- Health evaluation in villages on spray operations.

March
- Quarterly Report.
- Cholinestense testing of personnel who will spray malathion.

April
- Completion of work plans for FY 87/88.
- Initiation of spray operation.
- Susceptibility tests (April-August).
- Final procurement planning.

May
- Personnel appraisal (May-June).
- Procurement documentation forwarded for commodity order.
- Completion of spray operations.

June
- Quarterly Report.
- ULV applications, as required.

July
- Malariometric surveys completed (July-August).

August
- Initiate final report.
- Final evaluation of project.

September
- Quarterly Report completed.
- Final report completed.

B. Procurement Plan

The commodity component of this revised project consists of insecticides, drugs, furniture; vehicles, laboratory equipment, source reduction equipment, health eduction equipment, and anti-mosquito equipment.

The procurement plan sets out the various commodities that will be purchased under this project as delineated in the detailed budget and in the implementation plan. As previously stated, this project will be implemented through the Government of Zanzibar Ministry of Health. Technical assistance is provided by a malaria advisor on a Personal Services Contract working through normal AID contracting procedures with the collaboration and approval of the Zanzibar Government. Various short-term technicians, a total of 40 pm, will be contracted for with the help of S&T/Health. The nature of this project and commodities to be purchased will lead to commodity procurement by a number of different entities.

In accordance with Handbook 1B Chapter 3, the Government of Zanzibar will be responsible for purchasing all motor vehicles and bicycles for the project. To assist in this process and to expedite timely arrival of the vehicles, upon which much of the project implementation depends, it is expected that the Mission will be requested by the Government of Zanzibar to request AID/W issuance of a direct letter of commitment to the supplier of the vehicles. A USAID PIO/C may be used to expedite arrival of furniture and applicances.

Handbook 1B further states that a contractor may be selected to procure commodities and services on behalf of the grantee, when the magnitude of purchases, necessity of careful timing of purchases and the non-availability of technical expertise in the Government necessitates such arrangement. Managerial control is still exercised over this procurement by AID through the contractual relationship. In this project the GOZ will procure the office equipment, health education equipment, furniture and appliances and source reduction equipment through a procurement services agent. This mechanism is preferred over Mission or AID/W procurement both for policy reasons, as stated in Handbook 1B, and because of the limited number of direct hire staff at the Mission.

Handbook 15, Appendix D7 states that commodities to be purchased in support of malaria control activities must be procured through a PIO/C issued by AID/W. Thus, the chloroquine, insecticides and control equipment to be purchased under the AID portion of the project budget will be purchased under a PIO/C issued from AID/W with supporting information supplied to AID/W by the Mission and project officials. The Government of Zanzibar will purchase the choloroquine as detailed in the GOZ portion of the project budget.

VI. PROJECT ANALYSES

A. Technical Feasibility

1. General

The project amendment provides for support of a level of malaria control activity which the Zanzibar Malaria Control Program (ZMCP) can be expected to implement over the [illegible] of the project, as well as maintain after the project's completion. The technology being applied in the ZMCP over the next three-year period is based on known successful malaria control interventions which are used worldwide. The key to successful application of these interventions is the adaptation of appropriate malaria control technology to Zanzibar conditions in a manner which the host country can be expected to support on a long-term basis. This project amendment changes the technical complexity of the malaria control effort described in the original Project Paper to a less complex and more manageable program activity. During the next three years (FY 1985-1987), the emphasis will be on developing program planning and specific workplans, implementing a series of elementary malaria control field techniques, organizing technical and management services and installing a workable evaluation system. The feasibility of carrying out this level of activity is technically possible and well within the capability of the Zanzibar MCP structure. The activities of the redesigned project will be accomplished through a viable ZMCP institution using appropriate technology, additional trained manpower, increased community involvement, health education and effective administrative methodologies. It is expected that through operational research and field experience the ZMCP will modify existing program methodologies to fit Zanzibar conditions. The technical components of the project are discussed below in the context of the revised project outputs.

2. Surveillance Operations

The field surveillance program over the project period will be carried out by 130 Active Case Detection (ACD) workers, or malaria agents, each of which is assigned to cover a population in a given area of about 4,000 to 5,000 people. Due to the high malaria rates and the ZMCP policy of providing radical treatment at the time of the ACD agent's visit, the program will not routinely collect blood slides from fever

55

patients but only treat detected/suspected cases in FY 1985. If the disease is responding as expected, the ZMCP will begin to collect blood films from suspected cases of malaria in FY 1986 in order to have more specific information on malaria foci or unresponsive areas within the control area. The ACD system as planned is an acceptable method and is used worldwide in one variation or another. The system requires careful scheduling and training of ACD workers as well as consistent supervision and logistical support to make the system operate as planned. The emphasis on using only case treatment over the next year is both feasible and sound. It will allow for clinical relief of patients, eliminate a large amount of laboratory work which would produce only limited and marginal evaluative information, and reduce the cost of the program. The ACD workers over the next two to three years will also assist in the malariometric surveys.

The ZMCP has planned to standarize radical treatment using chloroquine at all health centers and institutions. The Evaluation Team of November 1987 found a wide variation in radical treatment dosages and supported such a plan. In addition, it was recommended by this Team that quinine and tetracycline be available under medical supervision at hospitals and clinics. This recommendation is in accord with WHO recommendations for life-saving events. Fansidar was not recommended by the Team for wide-scale use at this time.

3. Chemoprophylaxis

The decision not to carry out mass chemoprophylaxis programs using chloroquine with major population groups such pregnant mothers, infants and school children reverses the Project Paper's original proposal and is a major change in the redesign of the project. At the time of the Project Paper, chloroquine resistance was not considered a major technical problem in Zanzibar. In the four year period since the PP preparation, it has become evident that chloroquine resistance is present in Zanzibar and is spreading. The use of chloroquine in a mass chemoprophylaxsis program would only result in increasing the spread of chloroquine resistant malaria and intensifying the level of resistance. The available drugs must be held for treatment as alternative drugs are much more expensive, i.e. Fansidar. There may be exceptions to not programming chemoprophylaxis and the MCP will make adjustment for these exceptions. At the 1985 evaluation, a closer examination on the status of the drug resistant parasite will be done. For the present, the decision not to move ahead on the mass chemoprophylaxis program is considered technically sound.

56

4. Malaria Vector Control Operations

a. Residual Spraying

The ZMCP plans to use residual spray operations in selected rural and peri-urban localities of Zanzibar to reduce malaria transmission. Residual spray application methodology is well known and understood by the MCP senior operational staff as it was the major malaria control technique used in the WHO Zanzibar Malaria Control effort in the late 1960s. These spray techniques are easily taught to unskilled laborers in a few days. The ZMCP recognizes that temporary spray personnel must not only know spray techniques but understand the health and environmental safeguards which must be taken to protect themselves and the community. These aspects are built into the present ZMCP training program and it is expected that the training will be carried out successfuly.

The decision to use DDT or Malathion in the ZMCP program depends on the susceptibility of the vector mosquito. On Pemba, the decision has been made to use Malathion or some other organo-phosphate compound such as Fenitrothion in the spray operation due to vector resistance to DDT. On Unguja, the ZMCP plans to continue to use DDT in selected localities where it is still effective and Malathion or other organo-phosphate insecticide in the remaining areas. Both DDT and Malathion are acceptable residual insecticides for use in malaria control programs because of their operational, technical, environmental and cost affectiveness. Asian, African and Latin American entomologists use these two insecticides in their anti-malaria efforts with excellent results and without creating any health or environmental hazard. It is considered that the ZMCP entomology and operations personnel can select the appropriate insecticide for the localities to be sprayed, train personnel and apply these insecticides effectively.

The program plans to use Hudson X-Pert Spray pumps to apply the insecticide. This type of pump has been successfully used over the last thirty years by literally thousands of unskilled laborers and has been found reliable and practical. The ZMCP has ordered spare parts for these sprayers and this stock will assist in keeping the sprayers operational.

b. Larviciding

The selection of sites for larviciding will be made on entomological investigation and evaluation by larval collections and vector density surveillance. Larviciding will be carried out by using a mixture of diesel, oil and spreader. Imported larvicides are not expected to be used in the ZMCP during the during FY 85 period. Hudson sprayers with cone nozzles are to be used, standard larviciding equipment for small scale operations. The ZMCP has proposed a strict protocol for monitoring the effectiveness of the larviciding and to safeguard the environment. Training schedules for the larviciders will be prepared and implemented assuring correct larvicide dosages being applied to measured areas. Protective clothing such as boots, gloves and uniforms has been procured. These plans and schedules are in accordance with standard larviciding practices and a reduction in the densities of the vector mosquito should occur if implemented as planned.

c. Source Reduction

The use of source reduction techniques will be confined to activities which can be primarily carried out by unskilled laborers in urban and peri-urban areas. Source reduction methodologies through draining, filling or canalization are well known and can be accomplished with a minimum of equipment. It is possible that larger drain and fill operations will require short-term use of heavy equipment, but such equipment is available from the Zanzibar Road Works. It is imperative that source reduction be based on entomological evaluations both before and after the intervention through the use of vector density surveys including household resting surveys and human night biting collection. The ZMCP plans to involve communities in assisting in the reduction of sources of mosquitoes around their homes and general areas by clearing and canals, filling water pools on their premises and eliminating other possible water sources which might lead to mosquito breeding. Similar community involvement has been successful in the past.

d. Ultra Low Volume (ULV) Spray Operations

The ZMCP has a total of 15 Micro-Sen ULV machines five shoulder models, five units scheduled for mounting on pick-up trucks, and five units which are to be placed on carts. ULV applications are being planned to bring about a short-term reduction in the anopheline vector mosquitoes in focal urban r-

peri-urban malaria areas. The ZMCP does not plan to use this technique on a regular basis, but will periodically intervene in specific problem situations where ULV can be used as a supplementary control measure.

Recent development of the ultra-low-volume (ULV) technique (which is the dispersal of fine liquid particles of pesticide concentrates containing 90 percent or more active ingredients at application rates of one liter or less per hectare) has reduced formulation costs, equipment operating time and the probability of community intoxication to a level where ULV spraying can be effectively added to a malaria control program to complement residual spray activities by temporary reduction of densities of mosquito vectors. All ULV applications will be guided by entomological assessment and evaluation from the ZMCP. The ZMCP has stated that no ULV operations will be initiated until operators have been trained, not only in proper ULV methodology, but in health and environmental safeguards. The insecticide of choice will be selected on the results of entomological susceptibility studies of the concerned anopheline species. Such ULV applications are supplementary or emergency measures and can be of short-term assistance to the program.

5. Epidemiology

a. General

Through a combination of parasitological, laboratory and entomological activities the program can be guided in a technically sound manner. In malaria control programs, epidemiological services are even more critical than in malaria eradication efforts as operational interventions must be rapid, flexible and economical if a sound program is to be developed. For the next two years the Epidemiology and Evaluation Division, which includes the Entomology Section, will be preparing baseline parasitological data, carrying out susceptibility tests, organizing chloroquine resistance tests, completing required entomological work, evaluating known operational techniques and preparing the laboratory services to support field ACD activities. These activities are in accord with good malaria control practices and are technically correct and feasible.

b. Malariometric Surveys

Over the FY 1984 period the incidence and [illegible] of malaria has been evaluated through two point-prevalence sur[illegible] and this practice will be continued through FY 1985. The ZMCP is using index areas for these surveys, which provide the data for the program. These surveys indicate the impact of the operational interventions and provide insight as to their effectiveness. This method has been widely used for many [illegible]ades and provides reliable information.

If the parasite rates fall to a level where ACD can be [illegible]y used, then the ZMCP proposes to use that method. The plan is sound and in accord with malaria control principles.

c. Entomology

The Entomology Section has been charged with establishing baseline information on the vector mosquito, evaluating operations, carrying out a series of basic entomological surveys, and completing susceptibility tests. All the functions assigned to this group are standard and required. It is of concern that trained entomologists and assistant entomologists are in short supply at the ZMCP and the lack of skilled personnel will impose a heavy burden on existing staff. The ZMCP has recruited two additional professional entomologists who [illegible] presently on board.

A major responsibility of the Entomology Section which demands immediate attention is the completion of susceptability tests for the ZMCP. It is imperative that the insecticides procured for the anti-malaria effort be effective against the vector mosquitoes. Some work has been done but much more effort is required.

d. Laboratory Services

The present laboratory services are an excellent base for carrying out blood slide examinations. The ZMCP laboratory is equiped with adequate microscopes and has sufficient supplies. The expected workload should be managed in a

satisfactory manner over the life of the project. The ZMCP is proposing to provide periodic refresher training for the microscopists and this type of training is considered essential. The laboratory will also be involved in chloroquine-resistant testing; staff have proven capable of using these techniques in a satisfactory manner.

e. Chloroquine - Resistant Tests

The ZMCP plans to carry out additional chloroquine resistance tests during the life of the project using in-vitro and in-vivo techniques. These plans are sound and in accord with good scientific practice.

B. Administrative Feasibility

The revised project has simplified the administration of the ZMCP, and better matched program management requirements with ZMCP staff skills. Administrative feasibility is further supported by the strong commitment of the GOZ to malaria control. The project is being implemented within the existing administrative framework of the Government of Zanzibar which has been engaged formally in anti-malaria activities of one form or another for over 25 years. The administrative arrangements of the project are comparable with that of the health sector in general and, particularly, the primary health care system. The organizational hierarchy of the malaria control program corresponds to that of the rest of the health system.

The Ministry of Health will be joined by representatives of other involved ministries in an inter-ministerial Malaria Control Program Committee at the national level. Committee representation will include, inter alia, the Ministry of Health, the Ministry of Education, the Department of Road Works, the Ministry of Agriculture, and other government agencies concerned with the control of malaria. This committee, which is chaired by the Principal Secretary, Ministry of Health, will meet quarterly to monitor program progress but in ordinary circumstances will not be involved in routine project management. The long-term technician provided by A.I.D. is intended to serve as a catalyst to the Project, and will have a government counterpart, but will work at all levels of the Project. The counterpart will be the Director of the Malaria control Program. During the life of the Project the technician will play a major role in the development of program materials, training and stimulating activities at all levels.

61

A second committee, the Malaria Control Advisory Committee, consists of the Principal Secretary - Ministry of Health, (chairman), Director of Community Health and Preventive Services. Director of Curative Services, Island Medical Officers of Unguja and Pemba, Director of the Malaria Control Program, Senior Malariologist, representatives of bilateral agencies and an other person designated by the Ministry of Health.

The present program staff of 216 will be increased to 349 over the life of the project (see Annex E). In line with the requirements of a larger staff, the organizational and management relationships are restructured to provide adequate supervision of the increased numbers of field workers involved. Each of the major Each of the major project activities is, or will be, staffed with an adequate number of field personnel who are supported by supervisors and technical advisors. Temporary field agents will be hired to do the residual spraying and larviciding.

Administrative and management shortcomings have been partially responsible for the slow start of ZMCP. Short-term project consultants were utilized early in 1984 to provide specific operational training to project administrators, and this will be reinforced by the presence throughout the life of the project of the long-term malaria advisor who has broad experience in [illegible] programs. The administrative and management capability of the program staff will be further strengthened by the project's support of training for field and senior staff in the areas of health sciences, administration, epidemiology, entomology, vector control and health education.

These interventions, together with the GOZ commitment to ZMCP and the organizational structure of the program, will create an administratively feasible and manageable project.

C. Social/Soundness Analysis

The changes proposed for the Zanzibar Malaria Control Project do not alter the conditions and social impact as analyzed in the original PP.

A key social parameter is the Zanzibari population's concern about the present malaria epidemic and their commitment to

malaria control. The Islands' long exposure to malaria pro[illegible] has made the people fully aware of the program's requirements and potential impact. There is no doubt that the program will be accepted and that it is socially beneficial and sound.

D. Economic Analysis

1. Economic Feasibility

The original economic analysis pointed out that like most AID projects in the health sector, the Zanzibar Malaria Control Project is not designed to generate any revenue. Its economic justification is established on the basis of its be[illegible] less expensive than alternative approaches, directed at a sufficiently large number of beneficiaries, capable of gener[illegible] significant financial savings through the reduction of malar[illegible] related economic costs, and capable of increasing individual productivity on the islands through the decline of the debil[illegible] ting effects that the disease has upon the population. The revisions in the project do not change the original conclusio[illegible] about the economic feasibility and desirability of the proje[illegible] First, the changes in the program that make it less complex and costly, strengthen the arguments that the least expensive alternative has been identified. Cost considerations as well as technical feasibility were important in selecting the methods employed to implement each component. The residual spraying program, once yearly, should reduce substantially the incide[illegible] of malaria. Similarly, the drug requirements of the program ha[illegible] been reduced through a simplification of treatment and elimination of the prophylaxis program. Secondly, although certain programs have been simplified or cut, the number of beneficiaries remains essentially unchanged. In fact, the 198[illegible] evaluation believed that the point incidence of malaria could drop to 3% by project end. Thirdly, the lowered cost of the program and the possibility of a greater-than-planned drop in [illegible] incidence of malaria, would raise the internal rate of return (IRR), net present value (NPV) and the benefit/cost ratio (calculated in the PP respectively as 11%, $1.1 million and [illegible] Thus, the project becomes an even more attractive investment. Lastly, although the investment analysis took into account loss days of work caused by malaria attacks, there would also be a benefit of increased productivity resulting from healthier workers. This increased productivity would be substantial [illegible] the high incidence of malaria now existing on Zanzibar.

2. Recurrent Costs

On the islands of Zanzibar, malaria control is of the highest priority and the GOZ commitment to substantial support for ZMCP has been proven. However, the GOZ is facing serious budgetary and foreign exchange problems which are restricting its capability to fully fund even the highest priority programs. Its commitment to the health of its people is demonstrated in Table 6 showing that approximately 10 percent of the government budget is spent on health, double the average budget percentage in other African LDCs.

Table 6

SUMMARY OF GOZ FISCAL SUPPORT TO THE HEALTH SECTOR

(millions of Tanzanian shillings)

Fiscal Year	Total National Budget	Health Ministry Budget	% of Health in Total Budget
1980/81	715	75	10.5
1981/82	939	80	8.5
1982/83	1,000	90	9.0
1983/84	1,110	110	9.9

The Ministry of Health budget requests for the Malaria Control Program are increasing, but actual expenditures, although also increasing, have been substantially below requests. The following table shows requests and expenditure for the recurrent budget of the ZMCP. Drug and insecticide procurement as well as some personnel costs are not included in the budget.

Table 7

GOZ MALARIA CONTROL PROGRAM RECURRENT BUDGETARY SUPPORT

(in shillings)

Fiscal Year	Budget Request	Budget Expended
1980/81	2,955,680	2,955,680
1981/82	5,540,000	3,283,688
1982/83	7,000,000	3,606,919
1983/84	8,400,000	3,672,000 (estimated)
1984/85	8,800,000	-
1985/86	9,200,000	-

A second important fact related to the recurrent cost question is that the ZMCP has been redesigned to be less complex and costly. The objective is to establish a program that the GOZ can administratively and financially maintain which at the same time reduces the incidence of malaria to levels identified in the PP. The revised project components setting out technically feasible and administratively manageable activities are presented elsewhere in the PP, while the Financial Plan provides estimates of the costs of the ZMCP. Based on this information it is estimated that the recurrent cost requirement in FY 87/88 of the revised program will be $1,038,000 for program inputs as shown in Table 8.

65

Table 8

RECURRENT COST REQUIREMENTS OF MALARIA CONTROL PROJECT

Item	In FY 86/87 Paid for By	FY 87/88 (Estimated in FY 87 dollars)
Personnel	GOZ	$310,000
Technical Assistance	AID	-
Petrol, Oil & Lubricants	AID	31,000
Vehicle Parts and Other Equipment	USAID	37,000
Drugs	GOZ/AID	125,000
Insecticides	GOZ/AID	225,000
Other Overhead Costs	GOZ	310,000
Total		$1,038,000

The residual spraying and other vector control activites of the ZMCP will cut the malaria incidence substantially by 1987. The residual spraying in 1988 will be required only once a year in target areas. Thus it is estimated that only 50 MT of Malathion will be required for the ZMCP. For the same reason the need for chloroquine will be cut at least by a third to an estimated six million tablets per year. Other antimalarial drugs will be cut by similiar proportions. It is assumed that no additional technical assistance will be required after completion of the project and that all training will be in-service and in-country.

The purchase of additional equipment or vehicles will not be required until 1991; the only additional recurrent costs for the items will be that of replacement parts for existing equipment and vehicles.

The estimated FY 1987/88 recurrent cost of the Zanzibar ZMCP, $1,038,000, is only 3.5% greater than the projected FY 86/87 expenditures by the GOZ on the program. The government is capable

of absorbing the additional expenses, and thus, of fully financing the recurrent costs of the program.

E. Environmental Concerns

The Project Paper for the Zanzibar Malaria Control Program included an Initial Environmental Examination (IEE). The project was granted a negative determination at the time of the PID approval based on this IEE.

The modified activities described in the Project Paper Supplement do not have any additional or new environmental implications. The insecticides described in the Project Paper and the justifications for their use in the Zanzibar Malaria Control Project are the same insecticides now being used.

The ZMCP has already obtained protective clothing for its spray personnel. Training schedules for operational activities give specific attention to health and environmental safeguards. It has been agreed that cholinesterase testing will be periodically carried out on all spray persons. A cholinesterase testing kit has been procured and is available at the ZMCP office.

It is possible that another organo-phosphorous insecticide, Fenitrothion, may be used in the program during the life of the project. This insecticide is now being used in the AID-assisted malaria programs in Pakistan, Haiti and Thailand. All these programs have received a negative determination on their IEEs.

The ZMCP is to use source reduction and water management techniques in the project as described in the Project Paper. The Project Paper concluded that such activities will result in a direct improvement in the environment because there will be a resultant decrease in available breeding places.

VII. CONDITIONS, COVENANTS AND NEGOTIATING STATUS

A. Conditions and Covenants

All conditions precedent and covenants included in the original Project Loan Agreement will remain in full force.

B. Negotiating Status

Government of Zanzibar officials have assisted in and been consulted on various aspects of the preparation of the Project Paper Supplement. GOZ officials have reviewed it and are prepared to sign a Project Loan Agreement Amendment reflecting the revised project design contained in this Supplement.

VIII. EVALUATION PLAN

The Evaluation Plan for this project includes the ongoing, day-to-day review of the effectiveness of different aspects of the program as well as the three major external evaluations and USAID/Tanzania's yearly reviews.

Since operational research is an integral part of adaptive technology, monitoring and evaluation have already been discussed as two of the major project activities. Operational research will be carried out for each of the major project activities to permit the continued refinement of methodologies required to adapt malaria control technology to Zanzibar and to evaluate the cost effectiveness of each activity. Nearly every program activity will require a baseline analysis to aid in the selection of malaria control techniques or educational methodologies, and there will have to be repeated subsequent surveys to judge the effectiveness of project activities and to guide their adaptation. Hence, evaluation is a continuous feature of the Zanzibar Malaria Control Project. Some of the baseline studies are completed or in process. The malariometric surveys will be conducted in accordance with the plan discussed in the revised project component section of this Supplement. In addition to this ongoing continuous evaluation, there will be two major project evaluations (in addition to the November 1983 evaluation) scheduled to review all aspects of the project and to permit dissemination of lessons learned to other countries trying to address malaria control. These evaluations are scheduled for November 1985 and June 1987.

The November 1985 evaluation will be important for assessing the impact of ZMCP interventions on the disease. The findings will influence several important program decisions including:

(a) The addition or deletion of a second spraying round;

(b) The initiation of ACD slide collection and examination instead of malariometric surveys;

(c) determination of management and administrative improvements which have occured since November 1985;

(d) evaluation of the extent of training accomplished against planned program targets;

(e) review of the status of chloroquine resistant malaria and suggested changes, if necessary, in chemotherapy activities;

(f) assessing the level of insecticide resistance found in Zanzibar and its relation to the ongoing program;

(g) study of the financial support given to the ZMCP by GOZ and USAID over the reporting period and its implication to the future program;

(h) review of the quality of and program compliance to a long-term plan of operation and yearly workplans; and

(i) recommend future directions for the remaining life of the project.

The final June 1987 evaluation will review achievement of the end of project status and the outputs, along with a list of more specific objectives set out at the time of the 1985 evaluation. To assist both the internal and external evaluations, intermediate and final progress indicators are presented in the following table. These are initial estimates and should be reviewed and updated yearly.

Table 9

TARGETS FOR EVALUATING PROJECT

Quantifiable Progress Indicators	1984	1985	1986	1987
1. Plan of Operation for FY 1984-1987 approved by GOZ and USAID	1	-	-	-
2. Yearly plans of action (workplans) prepared	1	1	1	1
3. Residual spray operations should cover at least 85% of all target structures during each spray round	85%	85%	85%	85%
4. Larviciding source reduction (ULV) spraying	Targets to be set in annual work plans			
5. Malariometric survey carried out in FY 1984 and FY 1985	1	2	-	-
6. Entomological indication areas selected and working on Pemba (P)	2	4	6	6
and Unguja. (U)	2	2	6	6
7. Standardize chloroquine treatment schedule done in all health institutions	all	all	all	all
8. Malariometric survey results incidence of malaria: children 2-9 years	30%	20%	10%	5%
9. Malaria case fatality rate in hospital admitted cases	4%	3%	1%	0.4%
10. Operational research subprojects	-	2	4	4
11. Senior staff trained: US professional level	1	2	-	-
12. US and third country short course attendees	9	12	11	2
13. In-service training completed	50	150	150	93
14. Teachers trained	1	1	1	1

Quantifiable Progress Indicators	1984	1985	1986	1987
15. Special health/malaria education programs conducted	1	1	1	1
16. Stock records system complete	–	1	1	1
17. Vehicle maintenance and control system complete	–	1	1	.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project
From FY 81 to FY 96
Total U.S. Funding $7,460,000
Date prepared: April, 1

Title & Number: Zanzibar Malaria Control (6[illegible]-0103)

RRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal			
Zanzibar Develop a servicen system which rove the health stat people sufficiently n to enjoy life, par- fully in community ment activities and ute to the goal of lizance.	20% increased individual engagement in productive activities.	Longitudinal monitoring of random sample of population.	1. That time and energy gained through malaria control will be applied to productive activities.
Purpose	**EOPS**		
oduce the prevalance of on Zanzibar to a level h it no longer constti- major public health , through adaption of ntrol methods to local ons in such a way that ernment of Zanzibar will to maintain effective with its own resources.	1. Malaria parasite rates as determined at the end of the project malario-lometric surveys are not to exceed 3% in children 2-9 years old.	1. Active case finding surveys.	1. That the goverment and people continue to place high priority on con- trolling malaria.
	2. Organized and operating larvicidding Programs are in place in Zanzibar town,	2. Entomologic monitoring.	

IVE SUMMARRY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT AS. MPTIONS
	2. Cont'd Chake Chake, Wete and Mkoani. The program has mapped permanent breeding sites, a regular written schedule of work is used, and 90 personnel have been trained in larviciding techniques.		
	3. ULV spraying program has been developed with clear policy and program guidelines, a work plan and 20 operators have been trained in ULV application.	3. Program activity records.	
	4. Residual spraying coverage in targeted structures is no less than 85% during any given round of spraying.	4. Program activity records.	
	5. The out-patient malaria attendance rates in hospitals and health clinics should not exceed 10%.	5. Entomologic monitoring.	
	6. The malaria case fatality rate in hospitals and health clinics should not exceed 0.4%.	6. Health facility records.	
	7. 95% of all houses in the rural areas of the country are visited by the malaria case finding mechanism at least once every month.	7. Health facility records.	

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
	8. 100% of all GOZ health institutions have received directives describing the appropriate drug treatment schedules for malaria and are fully supplied with drugs.	8. KAP survey.	
	9. An adequate system of technical and operation is in place within the program with a trained staff.	9. Program activity records.	
Outputs			
1. Malaria Control Program organization.	1. The organization of the Malaria Control Program.	1. Program records.	1. That the individual identified for program positions will be reliable and able to perform their job.
2. Larviciding source reduction program.	2. The establishment of a larviciding source reduction program.		2. That the project is not disrupted by war, political upheaval or other externalities.
3. Space spraying source reduction program.	3. The organization and implementation of a space spraying source reduction program.		
4. Intradomiciliary spraying program.	4. The establishment of effective vector control measures including an effective interdomiciliary spray program.		
5. Health education and community motivation program.	5. The establishment of an effective health education and community motivation program.		

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
5. Monitoring and evaluation program.	6. A monitoring and evaluation program in place.		
6. Integration of other sectors into control program.	7. Intergration of other sectors into control program established.		
7. Basic and in-service training programs.	8. The establishment of in-service training programs as necessary to develop and maintain all levels of malaria control workers.		
8. An epidemiological evaluation system in place.	9. The establishment of an epidemiological evaluation system.		

Inputs*

AID		($000)	
Technical assistance			
1 Long-term technicians	4.4 py	522	AID project records, PIO/s PILs, etc.
Short-term consultants	40 w/m @ $12,500	472	
3 Evaluations contractors	9 w/m @ 12,500	113	
1 Local hire		22	
Training			
6 Long-term participants	@ $25,000	225	
5 short-term participants	@ $6,000	30	
In-country		300	
Third Country training		207	
International conference/ visits	9 @ $4,000	36	

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
pmmodities			
Vehicles/Motorcycles/bicycles		630	
Drugs and insecticides		3,154	
Equipment & Furniture		386	
ther Costs (construction of maintenance garage)		50	
nflation (6%)		499	
ontingency		899	
	AID SUBTOTAL	2,460	
oz			
ersonnel		1,445	
rugs and Insecticides		549	
ther overhead costs & training		1,346	
etrol and diesel		55	
	GOZ SUBTOTAL	3,395	
	PROJECT TOTAL	10,855	

Annex E

SERIKALI YA MAPINDUZI YA ZANZIBAR

SIMU Namb. 2911 na 2163

SIMU YA UPEPO: HEALTHIM

NAM: AU/7/20 A

WIZARA YA AFYA NA UTIBABU,

S. L. P. 236,

ZANZIBAR.

Tarehe 11th Jan.

The Health, Nutrition, Population Office,
United States Agency for
International Development,
Luther House,
P. O. BOX 9130,
DAR ES SALAAM.

Attention: Mr. Joseph Jacobs
Project Officer.

Dear Mr. Jacobs,

Certain changes in methodologies and procedures, as detailed in the original project paper for the Zanzibar Malaria Control Project, were discussed by the U.S.AID Malaria Control Project Evaluation Team. (November 3rd - November 23rd, 1983)

The Government of Zanzibar agrees, in principle, that the original project design set forth in the Project Paper Authorization, dated 28th September 1981, be amended by U.S.AID. Said amendement should be in general conformance with the recommendations of the Evaluation Team. However, the Government of Zanzibar reserves the right to discuss the proposed amendment before final agreement is made.

Sincerely yours

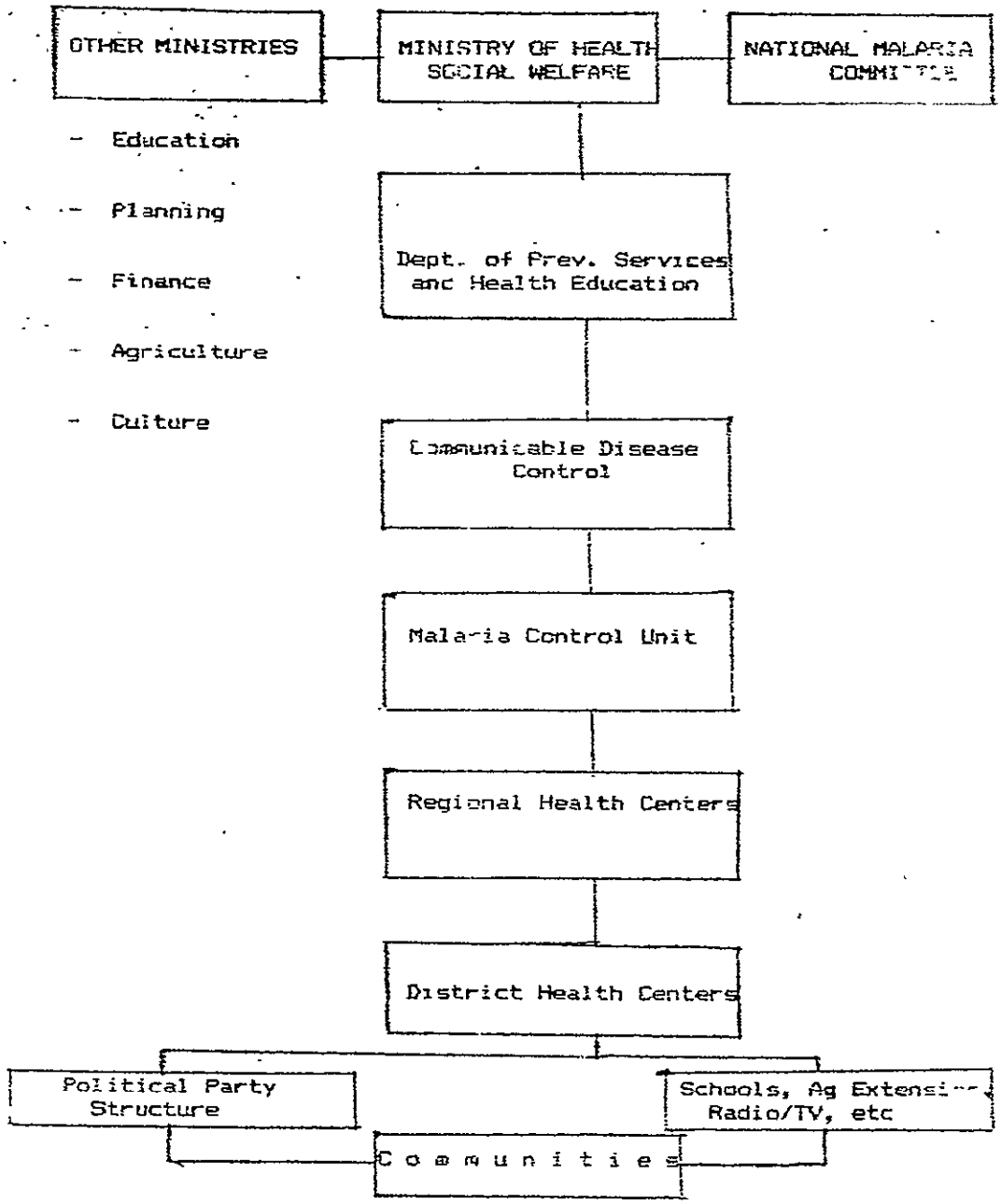
M. I. H Hassan

Dr. Mahmoud Idi Hassan.
Assistant Minister
(M.O.H)

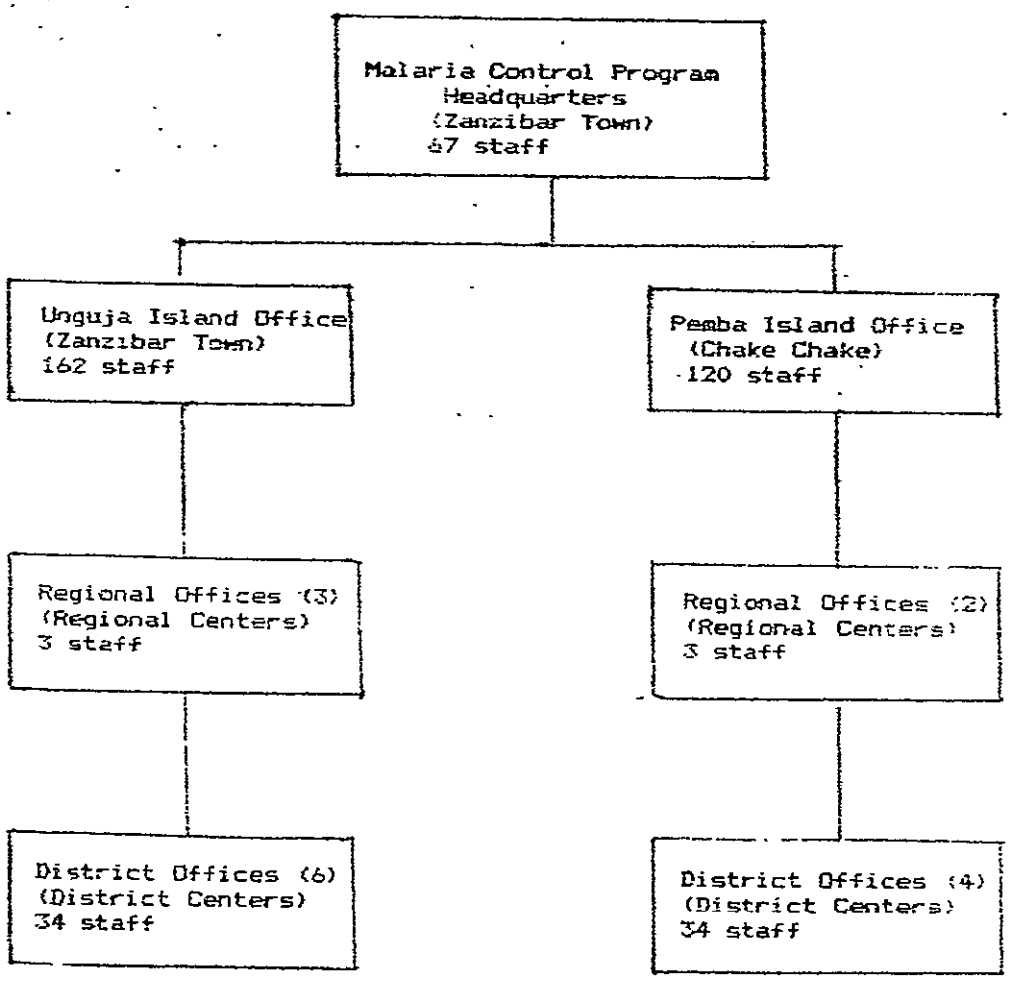
c.c. Dr. Juma A. Kuchi
Director - Malaria Control Project.

78

MANAGEMENT ORGANIZATION - ZANZIBAR MALARIA CONTROL



MALARIA CONTROL PROGRAM ORGANIZATION CHART



See Table 3 for a listing of personnel for each level of program organization.

MALARIA CONTROL PROGRAM STAFFING

Projections

HEADQUARTERS	Authorized
Director	1
Chief Parasit. + Entomology (PARENTO)	1
Assistant PARENTO	1
Administrator	1
General Services Officer	1
Store Keeper	1
Assistant Store Keeper/ Supply Clerk	1
Supply Aides	3
Secretary	1
Typists	2
Messenger	1
Orderly	1
Watchmen	8
Reproduction Asst/Med. Recorder	1
Reproduction Assistant	1
Draftsman	1
Health Education Studio Assts.	2
Health Educator	1
Chief Field Operations	1
Asst. Field Operations	1
Photographer	1
Senior Microscopist	1
Microscopists	6
Laboratory Attendants	3
Entomology Assistant	1
Entomology Aides	5
Mosquito Collectors	4
Drivers	8
Chief Mechanic	1
Assistant Mechanics	4
Garage Laborers	2
TOTAL	67

UNGUJA ISLAND OFFICE	Authorized
Island Chief	1
Chief Anti-larval Operations	1
ULV Squad Chief	1
ULV Applicators	9
Larviciders	25
Pump Mechanics	2
Typist	1
Clerk	1
Senior Microscopist	1
Microscopists	6
Laboratory Attendants	3
Drivers	4
Regional Malaria Officers	3
District Malaria Officers	6
Malaria Agent Supervisors	26
Orderly/Messenger	1
Malaria Agents	70
Medical Recorder	1
TOTAL	162

PEMBA ISLAND OFFICE	Authorized
Island Chief	1
Field Operations Officer	1
Assistant PARENTO	1
Senior Microscopist	1
Microscopists	5
Laboratory Attendants	2
Entomology Assistant	1
Entomology Aides	5
Typist	1
Store Keeper	1
Clerk	1
Drivers	7
Regional Malaria Officers	2
District Malaria Officers	4
Malaria Agent Supervisors	17
Malaria Agents	60
Health Educator	1
Orderly/Messenger	1
Pump Mechanic	1
Vehicle Mechanic	1
Watchmen	4
TOTAL	120

Training Program Summary Charts

PROPOSED U.S. AND 3RD COUNTRY TRAINING ACTIVITIES

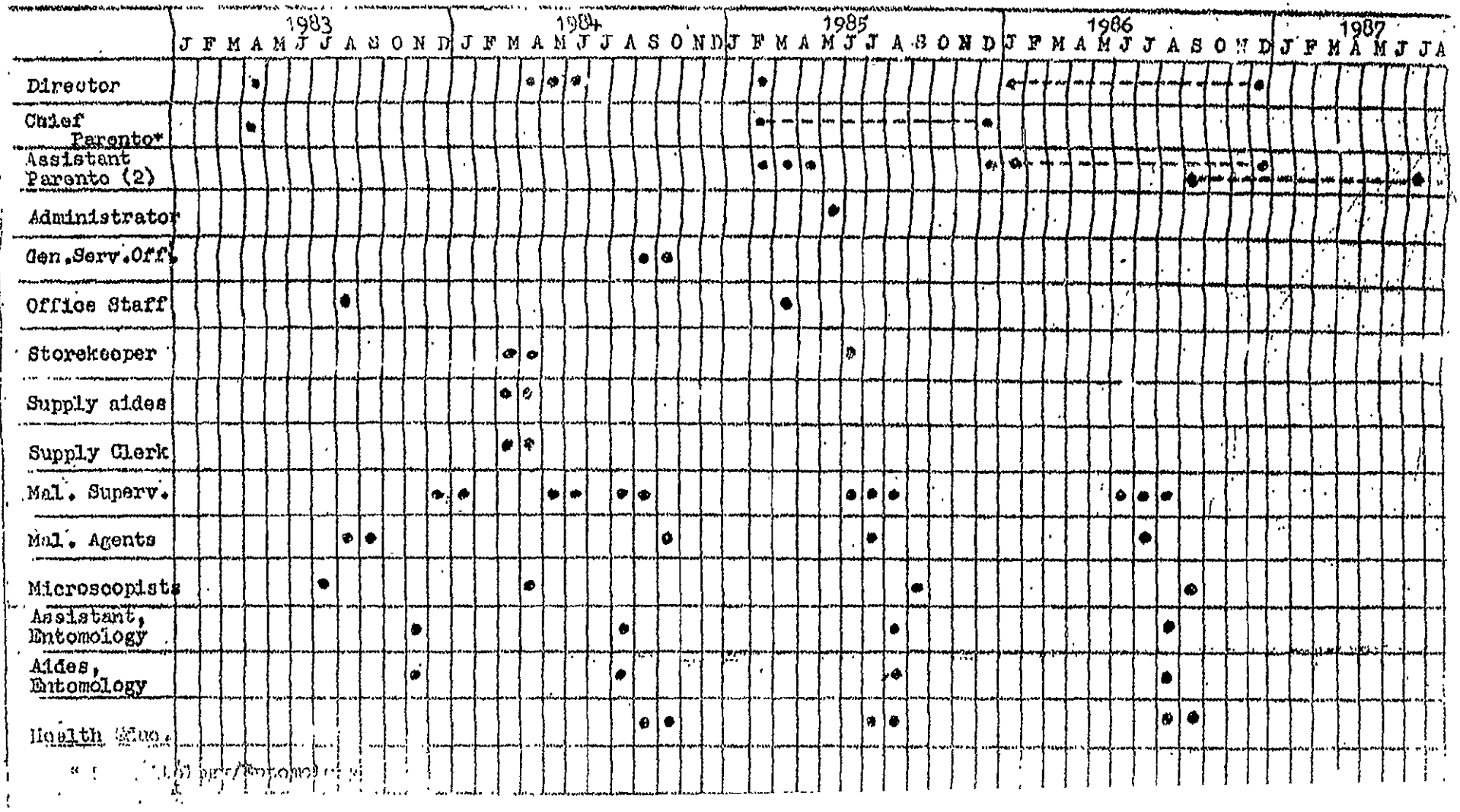
September 1983 - October 1987

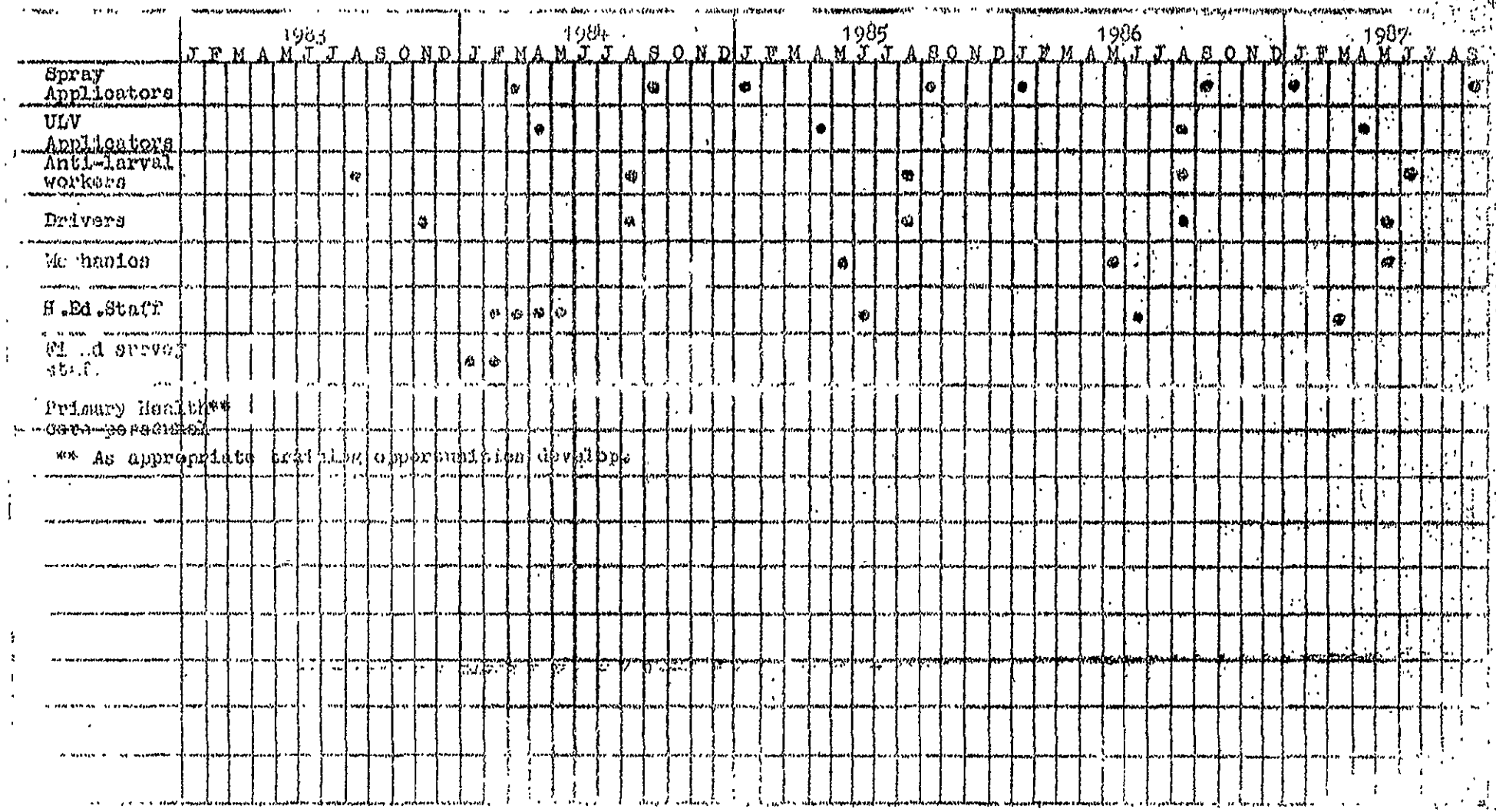
Category	Total Participant Proposed	Actual Date	FY 84	FY 85	FY 86	FY 87
U.S. academic MPH	3	1	1	1	-	-
Academic M.Sc Third Country Training in Epidomiology						
U.S. short course	5	-	2	1	[illegible]	-
Third Country Study Tour and Workshop 4 weeks	9	-	2	3	4	-
Third Country Short Courses	21	-	5	8	5	3
International Conferences	9	-	3	3	3	3
TOTALS	56	1	13	19	17	6

Category	Training	Actual	Comments
U.S. Academic MPH	3	1	Dr. O.J. Khatib MPH IN 1983/84, Harvard Deputy Director 1 year advanced degree in PH - training 1984/85 Tulane University) Director ZMCP MPH 1985-96 John Hopkins University
Academic M.Sc. U.S.A.	3	None	1. Epidemiology - 1984/85 2. M.Sc Par/Ent6. 1985/86 3. M.Sc Par/Ent. 1986/ 87
Third Country Short Course			1. Director - 1984 2. M.Sc pat/Ent. 1985/86 3. Reg. Officers, 5 - 1984/1985/1986 4. District Officers, 10 - Kenya 85 5. Health Educators, 1984/1985 6. Island Officers, 2 1985.1986
U.S. Short Courses	5	None	1. OPER SPEC - Pemba) 2. " " - Unguja) South 3. Isl. Officer -Pemba, 1985) Carolina 4. Isl. Officer - Uguja, 1985) Course 5. Mbarouk Said
Third Country Certificate 3 months course in Epidomiology	6	None	MOH Technicians India, Malaysia and Pakistan (1984/85/86/87)
Third Country Study Tours and Workshops 4 weeks	9	None	1. Director - 1985 2. 1ISL. Officer - 1986-7 (Pemba) 3. " " - 1986-87 (Unguja) 4. Regional Officers - (5) 1984/85/86
International Conferences	9	None	Director, Deputy Director and Senior Malariologist 1 per year

ZANZIBAR MALARIA CONTROL PROGRAMME

TRAINING SCHEDULE





** As appropriate training opportunities develop.

Annex F

ZANZIBAR MALARIA CONTROL PROGRAM LOP
TRAINING OVERVIEW

Category of Staff	Duration of Course	No. of Courses	Type or Place	No. of Participants
1 9 8 2				
Director	4 Months	1	* Rome	1
Chie, Parento	3 Months	1	* Study tour	1
Director	2 Weeks	1	U.S.A.	1
Unguja Island Officer	4 Weeks	1	* Study tour, Lagos	1
Malaria Technicians	4 Weeks	1	* " " "	2
Miscroscopists	1 Week	2	Unguja & Pemba	5
1 9 8 3				
Director (new) and Chief Parento	2 Weeks	1	Conference, Arusha	2
Malaria Supervisors	4 Weeks	1	* Study tour. Lagos	1
Malaria Agents	1 Day	5	Unguja & Pemba	12
Office Staff	1 Day	2	Unguja & Pemba	6
Larviciders	5 Days	2	Unguja & Pemba	34
Photographer	10 Days	1	Unguja	4
Entomology Technician	3 Weeks	2	Unguja & Pemba	15
Store Keeper	4 Days	1	Unguja	7
Driver retraining	1 Day	2	Unguja & Pemba	1[illegible]
Microscopists, refresher	1 Day	2	Unguja & Pemba	11
1 9 8 4				
H.E. Studio Staff	2 Months	1	Unguja	3
Reproduction Assts.	2 Days	1	Unguja	2
Office Staff	1 Day	1	Unguja	4
ULV Applicators	3 Days	1	Unguja	15
Spraying Staff	4 Days	2	Unguja & Pemba	160

Category of staff	Duration of Course	No. of Courses	Type or Place	No. of participants
Field survey staff (Geographical Reconnaisance)	1 Week	2	Unguja & Pemba	40
Store Keeper	1 Month	1	Unguja	2
Microscopists, referser	1 Day	2	Unguja & Pemba	19
Malaria Supervisors	4 Weeks	2	** Study tour Lagos; Sudan	8
Director	3 Months	1	Study tour, Rome	1
Chief Health Educator	5 Weeks	1	Study tour, USA	1
General Services Office	5 Weeks	1	study tour, USA	2
Entomology Technician	1 Day	1	Unguja & Pemba	[illegible]
1 9 8 5				
Director	2 Weeks	1	Scientific meeting	1
Field Spray Personnel	8 Days	4	Unguja & Pemba	[illegible]
Larviciders	1 Day	2	Unguja & Pemba	15
Chief. Parento	1 Year	1	Long term Study	[illegible]
Malaria Supervisors	3 Weeks	3	Study tour	[illegible]
Driver re-training***	1 Day	2	Unguja & Pemba	[illegible]
ULV re-training	1 Day	1	Unguja	[illegible]
Administrative officer	4 Weeks	1	Study tour	[illegible]
Assistant Parento	4 Weeks	1	Study tour	[illegible]
Assistant Parento	4 Weeks	1	Study tour	[illegible]
Store Keeper	4 Weeks	1	Study tour	
Health Educators	4 Weeks	2	Study tour	[illegible]
Health Ed. Studio staff	2 Days	1	Unguja	[illegible]
Malaria Agents	1 Day	4	Unguja & Pemba	[illegible]
Office Staff	1 Week	1	Unguja	
Primary Health Care Staff	Varies			
Microscopists	1 Day	2	Unguja & Pemba	[illegible]
Med. Assts: Hosp. Assistants RHA's	1 Day	10	Unguja & Pemba	[illegible]
Auto Mechanic	2 Days	2	Unguja & Pemba	[illegible]
1 9 8 6				
Director	1 Year	1	Long term study	
Field Spray Personnel	8 Days	4	Unguja & Pemba	[illegible]
Larviciders	1 Day	1	Unguja & Pemba	[illegible]
ULV Applicators	1 Day	1	Unguja	[illegible]
Malaria Supervisors	4 Weeks	2	Study tour	[illegible]
Driver re-training	1 Day	2	Unguja & Pemba	18

Category of Staff	Duration of Course	No. of Courses	Type or Place	No. of Participants
		1 9 8 6		
Assistant Parento (a)	1 Year	1	Long term study	1
Assistnt Parento (b)	(Begins fall semester)		Long term study	1
Malaria Agents	1 Day	6	Unguja & Pemba	100
Microscopists	1 Day	2	Unguja & Pemba	19
Primary Health Care Staff	Varies	#	Long & Short-term Study	15
Mechanic, Auto	1 Day	2	Unguja & Pemba	5
			# = unknown	
		1 9 8 7		
Assistant Parento (b).....			Finishing in May	
Field spray personnel	4 Days	2	Unguja & Pemba	260
Microscopists	1 Day	2	Unguja & Pemba	19
Various Staff; PHC staff	1 Day	several	Unguja & Pemba	40

Primary Health Care, 1 day; several orientation courses. Training will be mostly on Unguja, Pemba, possibly Mainland, preparing for partial integration into and incresed collaboration with Primary Health Care Delivery System.

* Provided by W.H.O.
** Lagos tour provided by W.H.O. FOR 2 of the 8 participants
*** Includes motor scooter and motorcycle operators

NOTE: Unguja and Pemba training is mainly in-service or Orientation

Annex 6

3 September 1984

HEALTH EDUCATION PLAN OF OPERATION ON ZANZIBAR MALARIA CONTROL PROGRAM 1984-87

1. Malaria control in Zanzibar is a special program, partly because Malaria poses as a very serious public health problem. The main objective of the Malaria Control Program is to reduce the prevalance of the disease to a level which will no longer constitutes a major public health problem. To this effect, control methods and techniques are adapted to control the disease.

2. For effective implementation of the program, the Zanzibar community must be fully involved. As in any Health program, Health Education plays a very important role in achieving community participation. Therefore, community participation will be the main objective in this program. Such participants will enable individuals and communities to better understand the operation of the Malaria Control program.

3. Effective education strategies to strengthen Education activities are therefore underline in Health Education program for the Malaria Control Program in Zanzibar. These are the use of mass media, namely:-

- Radio and T.V. programs.
- Production and display of posters.
- Pamphlets and articles in newspapers.
- Training sessions in forms of seminars, workshops, and short courses.
- Meetings and public gatherings.
- Special campaigns and exhibitions.

The radio and T.V. program will be augmented in a long run with the public participation including drama groups, "ngojera" and local means of communications and medical professionals to play their role in Malaria control program. In schools and institutions, visits, lectures, and constant contact with teachers will be made and the School administration at high level will be consulted for the curriculum.

Meetings and public gatherings will be fully utilized to have direct and personal contact of the people, leaders, and politicians.

Village Health Committees, and other community organizational structures will be utilized as a source of community participation in planning with the people as well as problem diagnosis and solving. Health education will be very much envolved in these committees at national, regional, and local level.

Special campaigns will be made before and during the months of July and December when Malaria reaches its peak as a result of seasonal rains increasing mosquito densities. Also opportunities will be explored to feature in the national and local exhibitions in which we are normally invited.

4. Evaluation of the Health Education program in Malaria Control activities is necessary to help maintain the program effeciency. Supervisory field visits, surveys, reports, public views, contributions and observations will help tremendously to control and where necessary adapt the Health Education activities to achieve the project objectives.