

A N N U A L R E P O R T

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ZANZIBAR MALARIA CONTROL PROGRAM

USAID PROJECT NUMBER : 621 - 0163

REPORTED BY:

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Contract Number : 621-0163-01

A. BACKGROUND

1. The two islands where activities of the Zanzibar Malaria Control Program are underway, are situated off the northeastern coast of the Tanzanian Mainland, approximately between latitudes 5 degrees and 6 degrees south and longitudes 39 and 40 degrees east. The southern island, referred to as either Zanzibar or Unguja, has a land area of approximately 1,658 kilometers. It is 87 kilometers long and 39 kilometers across. The northern island, Pemba, has a land area of approximately 984 square kilometers, is 64 kilometers long and 23 kilometers across. The combined population of both islands is approximately 550,000.
2. The Zanzibar Malaria Control Program (ZMCP), has been jointly funded by the United States Agency for International Development (USAID) and the Government of Zanzibar. USAID signed the initial Project Loan Agreement with the Revolutionary Government of Zanzibar (GOZ) in September 1971. Subsequently, under an Amended Project Loan Agreement, signed in June 1985, USAID has agreed to provide a loan of US\$ 7.4 million for malaria control activities, while the GOZ commitment is US\$ 4.6 million. The end of the USAID Project assistance (EOP) is September 1987.

B. RESULTS ACHIEVED

1. MASS BLOOD SURVEYS

- a. On both islands, mass blood surveys (MBS) results have continued to show marked reductions in malaria positivity rates. Results of the 1985 MBS are shown in TABLE I and TABLE II.
- b. On Unguja, An overall reduction, expressed in points of percentage, has ranged from 21 in the South to 46 in the North.
- c. The incidence on Pemba has been reduced from 49.4 in 1984 to 32.8 in 1985.
- d. Thus, there has been a continuing overall reduction in malaria prevalence and infection rates on both islands.

C. PASSIVE CASE DETECTION RESULTS

1. Classifications of positive malaria blood films collected from residents of different administrative branches of Zanzibar Town, have shown variation in rates, because of environmental factors. Included among these are - the location, extent, and duration of suitable breeding sources. Passive case detection (PCD) results provide a good indication of the extent of malaria transmission in specific areas of Zanzibar Town. This information assists ZMCP in the planning, implementation, and evaluation of control interventions.
2. Diagnosis of malaria cases through passive case detection (PCD), is carried out at three locations in Zanzibar Town - Laboratory of V.I. Lenin Hospital, the ZMCP Laboratory, and the ZMCP Island Office Laboratory. All determinations are made after the examination of blood films. PCD results for 1985 are shown in Table III.

TABLE I

MASS BLOOD SURVEYS, UNGUJA - 1985

AGE GROUP	REGION DISTR.	WEST/ URBAN		TOT.	NORTH		TOT	SOUTH		TOTAL	GRAND TOTAL
		TOWN/ WEST	WEST		"A"	"B"		CENTR/ STH	STH		
0-1	EXAM.	145	69	214	128	110	238	117	110	227	679
	POSIT.	67	26	93	42	43	85	37	10	47	225
	%	46.2	37.6	43.5	32.8	39	35.7	31.6	9	20.7	33.3
1-4	EXAM.	590	191	781	334	324	658	319	304	623	2062
	POSIT.	319	105	424	118	174	292	118	74	192	908
	%	54	55	54	35	53.7	44	37	24	31	44.03
4-9	EXAM	636	274	910	324	323	647	378	391	769	2326
	POSIT.	290	131	421	104	143	247	136	70	206	874
	%	45.6	47.8	46.2	32	44.3	38	36	18	26.7	37.57
9-14	EXAM	349	249	598	205	183	388	258	259	517	1503
	POSIT.	146	93	239	81	69	150	77	38	115	504
	%	41.8	37	40	39.5	37.7	38.6	29.8	14.7	26	33.53
ADULTS	EXAM	776	662	1438	808	845	1653	848	601	1449	4540
	POSIT.	188	143	331	131	170	301	103	42	145	777
	%	24	21.6	23	16	20	18	12	6.98	10	17
TOTAL	EXAM	2496	1445	3941	1799	1785	3584	1920	1665	3580	11110
	POSIT.	1010	498	1508	476	599	1075	471	234	705	3288
	%	40.5	34.4	38	26.4	33.5	30	24.5	14	19.6	29.59

TABLE II

MASS BLOOD SURVEYS, PEMBA - 1985

AGE GROUPS	REGION DISTR	WETE	NORTH MICHEWENI	TOT.	SOUTH CHAKE	MKOANI	TOTAL	GRAND TOTAL
0-1	EXAM	88	70	158	87	112	199	357
	POSIT. %	25 28.4	23 32.9	48 30.4	29 33.2	43 38.4	72 36.2	120 33.6
1-4	EXAM	223	136	359	146	194	340	699
	POSIT. %	82 36.8	55 40	137 38	64 43.8	113 58.2	177 52	314 44.9
4-9	EXAM	234	718	452	215	333	551	1003
	POSIT. %	75 33.7	90 41.3	169 37.4	49 22.5	302 42.3	390 34.5	359 35.8
9-14	EXAM	226	331	557	284	285	389	946
	POSIT. %	68 30.1	119 36	187 33.6	76 41.3	71 34.6	147 37.8	334 35.3
ADULTS	EXAM	312	462	774	302	403	705	1479
	POSIT. %	66 21.2	124 26.8	190 24.5	64 21.2	101 25	165 23.4	355 24
TOTAL	EXAM	1083	1217	2300	937	1247	2184	4484
	POSIT. %	320 29.5	411 33.8	731 31.8	282 30.1	459 36.8	741 33.9	1472 32.8

D. Zanzibar Town

1. In Zanzibar town, residual spraying has not been employed, for several reasons, including the difficulties of convincing householders to remove furniture and furnishings from each room so that full insecticidal coverage could be accomplished; the generally better quality of walls in the houses to which application of the wettable powder utilized by ZMCP could cause damage to walls which have been painted with water-based paints. These reasons and others could result in disproportionately high rates of refusal, thus making the attempt at residual coverage, controversial, expensive, and non-effectual.
2. Interventions practiced in the town, have included larvaciding with Abate granules, oil with a surfactant, and limited ULV applications of pyrethrum + piperonyl butoxide with truck, trolley, and innovative tricycle mounted Micro-Gen sprayers, and pulse-jet aerosol generators (Swingfog/Dynafofog). These interventions have made positive, quantifiable differences in the incidence of malaria transmission in the urban area. TABLE III shows the population of various administrative sections (branches) of Zanzibar Town and the percentage of positive cases found through passive case detection (PCD) activities.

TABLE III.

DISTRIBUTION OF MALARIA CASES IN ZANZIBAR TOWN - 1985
(FROM PASSIVE CASE DETECTION DATA)

<u>BRANCHES</u>	<u>POPULATION</u>	<u>% POSITIVE</u>
SHANGANI + MKUNAZINI	10,345	2.4
MALINDI + KIPONDA	6,695	2.1
KIKWAJUNI JUU + CHINI	5,381	2.3
MWEMBETANGA + 1	4,251	1.3
KISIMAMAJONGOO + 1	10,105	1.4
MIEMBENI	3,209	2.5
MWEMBE LADU	3,075	1.5
MLANDEGE MCHANGANI	5,021	2.8
GULIONI	3,427	1.3
MAKADERA	5,451	0.7
KILIMANI	2,210	5.6
KWAHANI	7,407	1.2
JANGOMBE + 1	16,392	0.7
SOGEA + 1	10,639	0.6
MKUNGUNI	9,141	1.08
SHAURI MOYO	11,219	0.9
KWAMPTIPURA + 1	2,379	6.5
MWEMBE MAKUMBI + 1	5,090	1.4
TOTAL POPULATION	121,437	

E. Indicator Villages

1. Entomological studies and observations in Indicator Villages, comprise another aspect of epidemiological intelligence. Observations are made on the mosquito vector density and behavior, the susceptibility level of vectors to the residual insecticide, the presence and residual effectiveness of the insecticide on sprayable surfaces, and the collection of man - vector contact information through utilization of the night-biting technique.
2. Results of entomological evaluations of ULV pyrethrum + piperonyl butoxide spraying in Zanzibar Town. are shown in Table IV.
3. Additionally, speciation studies are helpful in determining which members of the An.gambiae sibling species are present. This is essential information because of species behavioral differences. Electrophoresis identifications have indicated the presence of An.gambiae sensu strictu and An. arabiensis from collections on Unguja.

F. HEALTH EDUCATION/ INFORMATION

1. The malaria control activities have been well publicized, both nationally and internationally, in 1985. Program staff members have been interviewed and quoted in various media. In addition to programs on Zanzibar Television and Radio Tanzania, written articles describing ZMCP activities are known to have appeared in The Daily News (Tanzania); Detroit Free-Press (USA); International Herald Tribune (Europe); The Christian Science Monitor (USA), and Opinion Magazine (Tanzania). Interviews have been given to The Voice of America (VOA) and reporters from the U.S. Information Agency, Washington, D.C. and EarthScan, respectively.
2. Posters have been widely distributed to health clinics and institutions with various "messages of malaria". Charts showing the recommended dosages of anti-malarials, have distributed to all health institutions. T-shirts and khangas (traditional wraps worn by women), with prominent anti-malaria themes, have been designed and distribution is still underway. The khangas and T-shirts are being distributed in order to increase the awareness of the population and to encourage continued positive cooperation and collaboration with ZMCP in achieving its purpose. The designs are shown in ANNEX 2.

TABLE IV

ENTOMOLOGICAL EVALUATION OF ULV SPACE SPRAYING
IN ZANZIBAR TOWN

DATE	LOCALITY SPRAYED	CAGED MOSQUITOS EXPOSED	KNOCK DOWN AFTER 1 HR.	CONTROL AREA	CAGED MOSQUITOS EXPOSED	KNOCK DOWN AFTER 1 HR.	SPECIES EXPOSED
0th SEPTEMBER '85	SHANGANI	45	31 (68.88%)	MICHENZANI	30	0 (0%)	A. GAMBIAE
2th SEPTEMBER '85	KIBOKONI	150	150 (100%)	MITAALA	150	0 (0%)	A. GAMBIAE + Culex
4th SEPTEMBER '85	MALINDI	75	70 (93.33%)	KAJIFICHENI	60	0 (0%)	A. GAMBIAE + CULEX.

3. There has been the usual expected rise in refusals for DDT residual spraying. This situation has also occurred in other programs throughout the world when DDT was utilized. ZMCP has intensified its health education activities during the focal spraying campaign. Useful contacts have been made with civic, political, and community leaders, explanations given, and their assistance solicited to help alleviate the refusal situation. Additional information has been provided through radio and television presentations. The Zanzibar Television Service regularly shows spot announcements urging the population to be aware of the need for fighting malaria and urging their full cooperation.

G. SHORT TERM CONSULTANTS

1. Short term consultants have assisted ZMCP during the year under report, as shown below:

<u>NAME</u>	<u>DATES</u>	<u>EXPERTISE</u>
Mr. Serge Roche (WHO)	16 July - 27 Sept.	Field Operations
Dr. V. Ariatnam (WHO)	12 July - 27 Sept.	Entomology
Mr. Merrill Wood (Contr)	4 March - 29 April	Field Operations
Mr. S. Tarkojosopuro (Contr)	4 March - 20 June	Entomology

2. The assistance and inputs provided by the Consultants have been very helpful and appreciated. The Consultants provided on the spot assistance and teaching, as well as produced useful reports and recommendations.

H. PLAN OF OPERATION FOR THE ZANZIBAR MALARIA CONTROL PROGRAMME

1. This Plan has been prepared to assist in projecting and planning ZMCP activities. Said PLAN was submitted to USAID/Tanzania and and commented on favorably.

I. TRAINING

1. The training of Program personnel, utilizing funds from the Loan, has not been as active, as had been envisioned. A Training Plan had been submitted to USAID/Tanzania and their assistance sought in locating training sites and dates when specific training could be undertaken by designated staff members. The realization of this essential activity has been slow for several reasons, including the difficulty of locating suitable training sites for relevant ZMCP staff. A summary of training opportunities realized, where outside trainers were involved during 1985 follows -

<u>CATEGORY OF STAFF</u>	<u>NUMBER OF PARTICIPANTS</u>	<u>TRAINING LOCATION</u>	<u>TYPE</u>	<u>DURATION</u>
Training (MOH) Administrator	1	Arusha, Tz.	C	4 wks.
Malaria Superv.	1	Ghana	C	8 wks.
Malaria Superv.	1	*India	ST	8 wks.
Auto Mechanic	2	*Nigeria	ST	6 wks.
Transp. Superv/Mechan.	2	Kenya	OJT	6 wks.
Office	1	Kenya	OJT	2 wks.
Supply Asst.	2	Zanzibar	OJT	2 wks.
Assist. Dir.	1	**Dar, Tz.	C	1 yr.
Director	1	USA	MPH	1.5 yr.
Principal Secretary (MOH)	1	USA	SE/OT	4 wks.

Types: C=Course; ST= Study Tour; OJT= On the Job Training; SE= Seminar;

OT= Observation Tour; MPH= Master of Public Health [Jan. 1985 to June 1986]

Sponsors: *= World Health Organization; **= Govt. of Zanzibar

J. SPRAYING REPORTS

1. The cumulative Unguja spraying information to mid-1985 is shown in ANNEX I and IA. DDT was the insecticide used.

Best Available Copy

2. The cumulative residual spraying activity results for Pemba are charted in Annex No.3. The insecticide used was malathion. Malathion has been utilized on Pemba only because of implied resistance to DDT by An.gambiae .
3. Information on the focal spraying activity carried out on both islands in the latter part of 1985, is shown below:

Pemba (Focal spraying) - November 18 to December , 1985)

Insecticide used/amount:	Malathion/12 metric tons
Location:	Micheweni District
Population protected:	50,937
Total houses sprayed:	13,093
Partially sprayed:	279
Other structures:	6,232
Pump charges used:	12,448
Unsprayed houses:	
Closed:	169
Refusals:	07
Unsprayed other structures:	11

Unguja (Focal spraying) - September 16 to December 19, 1985

Insecticide used/Amount:	DDT/19.1 metric tons
Districts sprayed:	South, Central, North "A" &"B", West
Population protected:	175,818
Total houses sprayed:	42,289
Houses partially sprayed:	4,864
Other structures sprayed:	22,555
Unsprayed houses:	
Closed:	6,123
Refused:	771

K. ENTOMOLOGY

1. SUSCEPTIBILITY TESTS:

PEMBA

- a. Residual spraying with malathion has been implemented on Pemba Island and DDT on Unguja. The decision for spraying malathion on Pemba was based on an indication of resistance behavior in An. gambiae . Results from a series of susceptibility tests on Pemba in 1981 seemingly confirmed the possibility of a problem.

However, an analysis of the susceptibility test information from three locations on Pemba shows that the individual test specimens were, in most cases, less than the recommended 20 to 25 per test, and individual test results were pooled to draw a conclusion. Subsequent tests carried out in August 1985, according to the standard WHO method, show percentage mortalities to DDT 4% as 32, 86, 86.7, 90, 100 and 100 respectively. This indicates that DDT should have a positive effect on the Pemba An.gambiae. DDT has a 6 to 12 month residual life, minimal toxicity to humans and other warm blooded animals and lower cost, as compared with malathion which has only a 2 to 3 month residual life, higher cost, and a much higher mammalian toxicity.

UNGUJA

- b. Studies on the susceptibility to DDT 4% by An.gambiae, using the standard WHO method, have been carried out since 1984. An analysis of these tests is shown below:

Total Tests = 53

<u>PER CENT MORTALITY</u>	<u>NUMBER OF TESTS/LOCATIONS</u>	<u>PERCENT OF TEST RESULTS</u>
ABOVE 40%	T = 43	81.1
ABOVE 50%	T = 32	60.3
ABOVE 60%	T = 20	37.7
ABOVE 70%	T = 7	13.2

- c. This information shows that although there are some resistant anophelines present, more than 60.3% of the susceptibility tests resulted in a mortality of more than 50%. When this information is considered, along with the MBS results, it is apparent that there is a reduction of the infective reservoir (in the vectors), as well as a marked reduction in malaria case incidence. Thus, the degree of resistance to DDT is not serious enough to consider the introduction of an alternative residual insecticide.
- (1) It may also be useful to comment on the susceptibility test process, as results can be affected by the care and attention of the investigator. Guidelines followed for the testing, include:
- Utilizing the maximum care and attention to detail.
 - The identification of specimens to be tested prior to their exposure to the insecticide and positive reconfirmation at the end of the testing period.
 - Ensuring that the test papers are current and active.
 - Avoiding contamination of test chambers through close attention while preparing and handling the test papers.

- d. Unless all of these factors are constantly controlled, test results may not accurately reflect the status of mosquito susceptibility. It is also necessary to utilize both entomological and parasitological data to arrive at tentative conclusions regarding the impact of the residual insecticidal application on the vector population and the reduction of malaria prevalence.

L. CHLOROQUINE SENSITIVITY STUDIES

1. Previous studies have indicated that a certain amount of chloroquine resistance is present on Unguja. In order to continue to define the extent of the resistance, chloroquine sensitivity studies had been planned. Attempts have been made during the reporting period and following the application of the spray round, to carry out the tests. In the first attempt, of 300 blood films examined, only seven had the requisite parasitemia levels. As these levels were too low for statistical treatment, it was decided to concentrate on Mass Blood Surveys. The lowered parasitemia levels indicate the reduction of reservoirs of infectivity.

M. PROBLEMS AND SOLUTIONS

1. Procurement of essential supplies and equipment has often been complicated by the difficulty of timely forecasting of needs, as well as the lengthy lag times for items ordered from the USA. ZMCP is gaining experience in the capability of determining procurement needs more accurately. A Procurement list, as a part of the overall Procurement Plan, for most items needed until the end of the Project in 1987, has been submitted to USAID. This information will help to minimize emergency requests for purchasing. The USAID Mission is also updating its system, with provision for adequate feedback to ZMCP so that the status of Requests for Procurement and aspects of the procurement process can be kept current.
2. Construction of a garage and warehouse on Unguja and a garage on Pemba, which has been in the planning stage since early 1984, has not been realized, although the planning continues. Reasons for the delays have been identified and the work should be completed by mid-1986.

N. A PARTIAL LIST OF TASKS FOR 1986

1. Locate suitable training sites and send relevant personnel for training.
2. Continue to intensify Health Education/Information activities.
3. Encourage continued diligence by ZMCP staff to carry out necessary tasks in an efficient and timely manner.
4. Begin planning for the end of the USAID Project (EOP). Elements may include:
 - a. Determining how, to what extent, and in what context, malaria control activities can continue with reduced resources.
 - b. The exploration and initiation of overtures to seek malaria control support resources from GOZ, bilateral, and multilateral sources.
 - c. Performance appraisals and redistribution of efficient and deserving staff, preferably within the Ministry of Health.

ANZIBAR
NGUJA

MALARIA CONTROL PROGRAMME
FINAL SPRAYING REPORT 1st ROUND

- 5 April 1984 - 18 December 1984 -

District Date	Number of Branches	Number of Inhabitants	TOTAL HOUSES					OTHER STRUCTURES			INSECTICIDE DDT 75% W/P		No Working Days	STAFF				
			TREATED		NOT TREATED		TOTAL	Treated	Not Treated	TOTAL	TOTAL PUMP CHARGES	Kg		Supervision			Spraymen	Other
			Totally	Partially	Closed	Refused								HQ Level	Regional District Level	Squad Chief		
NORTH 'A' 30-10/1-12-1984	27	59,353	16,570 93.35%	246 4.36%	324 1.83%	11 0.06%	17,751 100%	6,016 99.73%	16 0.27%	6,032 100%	11,717	7,820	35	4	10	12	60	22
NORTH 'B' 5-10/23-10-1984	21	34,709	10,877 91.82%	607 5.13%	350 2.95%	12 0.10%	11,846 100%	6,024 99.54%	28 0.46%	6,052 100%	6,943	4,635	16	4	10	12	60	22
<u>Sub-Total:</u>	48	94,062	27,447 92.74%	1,453 4.91%	674 2.28%	23 0.07%	29,597 100%	12,040 99.64%	44 0.36%	12,084 100%	18,660	12,455	51	4	10	12	60	22
WEST 11-12/18-12-1984	21	32,921	8,888 86.98%	465 4.55%	730 7.15%	135 1.32%	10,218 100%	5,131 97.70%	121 2.30%	5,252 100%	6,030	4,025	11	4	10	12	60	22
WEST URBAN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<u>Sub-Total:</u>	21	32,921	8,888 86.98%	465 4.55%	730 7.15%	135 1.32%	10,218 100%	5,131 97.70%	121 2.30%	5,252 100%	6,030	4,025	11	4	10	12	60	22
CENTRE 11-9/1-10-1984	35	39,958	10,590 93.89%	507 4.33%	188 1.64%	20 0.17%	11,705 100%	7,137 98.52%	107 1.48%	7,244 100%	7,885	5,260	18	4	10	12	60	22
SOUTH 5-4/18-4-1984	18	24,169	5,820 88.95%	586 8.95%	130 1.99%	7 0.11%	6,543 100%	2,038 97.47%	53 2.53%	2,091 100%	4,764 (88. only)	2,540	12	4	10	16	60	20
<u>Sub-Total:</u>	53	64,127	16,810 92.12%	1,093 5.99%	318 1.74%	27 0.15%	18,248 100%	9,175 98.29%	160 1.71%	9,335 100%	12,649	7,800	30	4	10	12/16	60	22/20
<u>TOTAL NGUJA</u>	122	191,140	53,145 91.53%	3,011 5.18%	1,722 2.97%	185 0.32%	58,063 100%	26,346 98.78%	325 1.22%	26,671 100%	37,339	24,280	92	4	10	12/16	60	22/20

ANNEX N^o 1

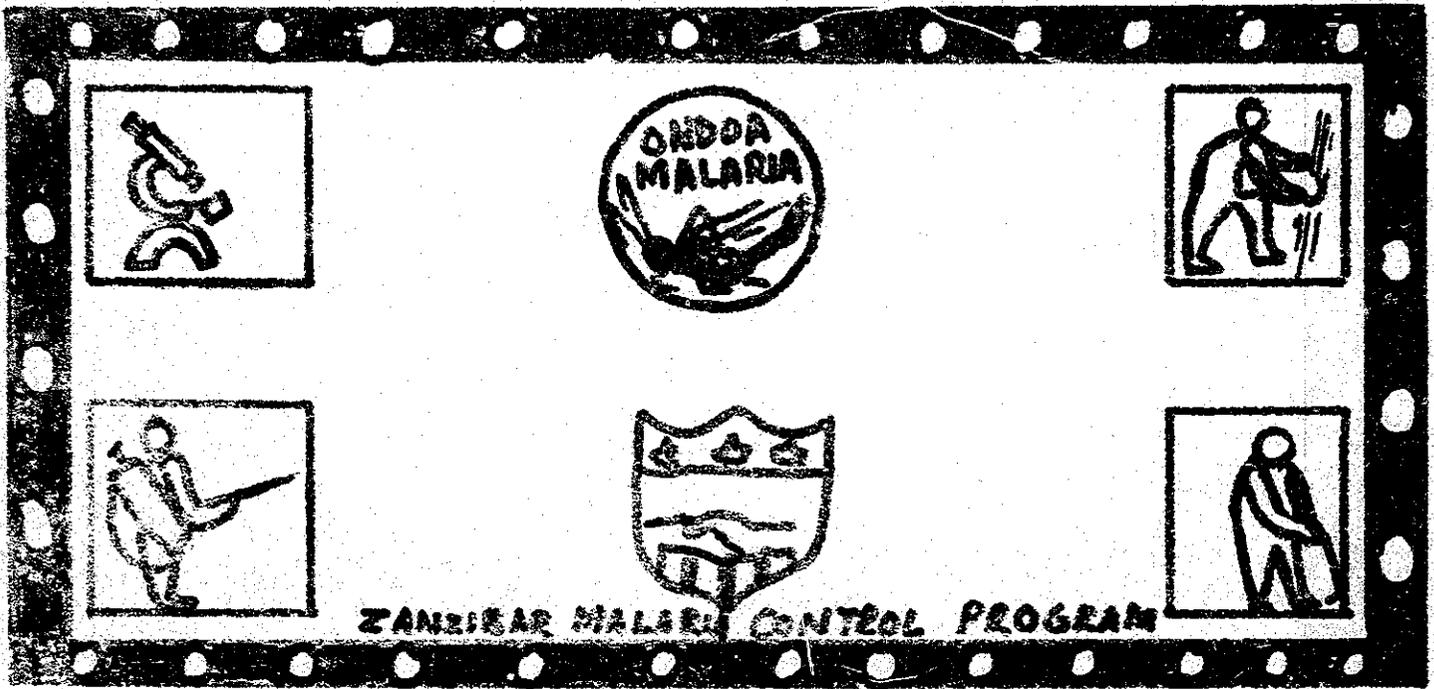
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ANZIBAR
NGUJA

MALARIA CONTROL PROGRAMME
FINAL SPRAYING REPORT-2nd ROUND
- 9 February 1985 - 12 April 1985 -

District Date	Number of Branches	Number of Inhabitants	TOTAL HOUSES					OTHER STRUCTURES			INSECTICIDE DDT 75% W/P		No Working/Days	STAFF				
			TREATED		NOT-TREATED		TOTAL	Treated	Not-Treated	TOTAL	TOTAL PUMP CHARGES	Kg		Supervision			Spraymen	Other
			Totally	Partially	Closed	Refused								HQ Level	Regional/District Level	Squad Chief		
NORTH "A" 13-3/29-3-1985	26	39824	12,083 84.82%	1,105 7.76%	922 6.47%	136 0.95%	14,246 100%	4,269 98.18%	79 1.82%	4,348 100%	8,549	5,705	15	4	10	20	110	22
NORTH "B" 28-2/12-3-1985	21	26749	6,803 72.32%	759 8.07%	1,129 12.00%	716 7.61%	9,407 100%	3,049 94.16%	189 5.84%	3,238 100%	5,030	3,355	11	4	10	20	110	22
Sub-Total:	47	66,573	18,886 79.85%	1,864 7.88%	2,051 8.67%	852 3.60%	23,653 100%	7,318 96.47%	268 3.53%	7,586 100%	13,579	9,060	26	4	10	20	110	22
WEST 1-4/12-4-1985	20	28,003	6,080 75.62%	754 9.38%	1,001 12.45%	205 2.55%	8,040 100%	3,198 95.89%	137 4.11%	3,335 100%	4,403	2,940	7	4	10	20	110	22
WEST URBAN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sub-Total:	20	28,003	6,080 75.62%	754 9.38%	1,001 12.45%	205 2.55%	8,040 100%	3,198 95.89%	137 4.11%	3,335 100%	4,403	2,940	7	4	10	20	110	22
CENTRE 16-2/27-2-1985	35	35,878	9,501 85.49%	705 6.34%	798 7.18%	109 0.99%	11,113 100%	4,799 98.54%	71 1.46%	4,870 100%	6,638	4,430	10	4	10	20	110	22
SOUTH 9-2/15-2-1985	18	25,703	5,617 85.40%	715 10.87%	240 3.65%	5 0.08%	6,577 100%	2,596 96.90%	83 3.10%	2,679 100%	4,300	2,870	6	4	10	20	110	22
Sub-Total:	53	61,581	15,118 85.46%	1,420 8.03%	1,038 5.87%	114 0.64%	17,690 100%	7,395 97.96%	154 2.04%	7,549 100%	10,938	7,300	16	4	10	20	110	22
TOTAL NGUJA	120	156,157	40,084 81.17%	4,038 8.18%	4,090 8.28%	1,171 2.37%	49,383 100%	17,911 96.97%	559 3.03%	18,470 100%	28,920	19,300	49	4	10	20	110	22

ANNEX 1A



KHANGA DESIGN



T-SHIRT DESIGN

ZANZIBAR
EMBA

MALARIA CONTROL PROGRAMME

FINAL SPRAYING REPORT - 1st ROUND

- 10 October 1984 - 18 May 1985 -

District	Date	Number of Branches	Number of Inhabitants	TOTAL HOUSES					OTHER STRUCTURES			INSECTICIDE MALATHION 50% WDP		No Working/Days	STAFF				
				TREATED		NOT TREATED		TOTAL	Treated	Not Treated	TOTAL	TOTAL PUMP CHARGES	Kg		Supervision			Spraymen	Other
				Totally	Partially	Closed	Refused								HQ Level	Regional District Level	Squad Chief		
MICHEWENI	10-10/20-11-1984	11	58,110	14,136	142	4	-	14,282	5,436	23	5,459	12,048 ^s	7,493	30	1	6	8	40	11
				98.98 %	0.99 %	0.03 %	-	100 %	99.58 %	0.42 %	100 %								
WETE	14-2/6-3-1985	17	68,764	15,053	145	1010 ^{nm}	13	16,221	5,271	-	5,271	14,010	13,730	21	1	5	20	100	11
				92.80 %	0.89 %	6.22 %	0.08 %	100 %	100 %	-	100 %								
Sub-Total:		28	126,874	29,189	287	1014	13	30,503	10,707	23	10,730	26,058 ^s	21,223	51	1	6/5	8/20	40/100	11
				95.69 %	0.94 %	3.33 %	0.04 %	100 %	99.79 %	0.21 %	100 %								
CHAKE	15-3/6-4-1985	15	85,960	13,773	240	31	6	14,050	5,607	-	5,607	12,612	12,360	17	1	5	20	100	11
				98.03 %	1.71 %	0.22 %	0.04 %	100 %	100 %	-	100 %								
MKOANI	15-4/18-5-1985	19	57,697	14,608	298	244 ^{nm}	-	15,150	6,172	-	6,172	16,064	15,740	26	1	6	20	100	11
				96.42 %	1.97 %	1.61 %	-	100 %	100 %	-	100 %								
Sub-Total:		34	113,657	28,381	538	275	6	29,200	11,779	-	11,779	28,676	28100	43	1	5/6	20	100	11
				97.20 %	1.84 %	0.94 %	0.02 %	100 %	100 %	-	100 %								
TOTAL EMBA		62	240,351	57,570	825	1,289	19	59,703	22,486	23	22,509	54,734 ^s	49,323	94	1	6	8/20	40/100	11
				96.43 %	1.38 %	2.16 %	0.03 %	100 %	99.90 %	0.10 %	100 %								

INSECTICIDE [MICHEWENI 622 gr/Pump.Charge] instead of 1000gr (1Kg)
[Other DISTRICTS: 380 gr/Pump.Charge]

** Including KOJANI Island (Wete) 964 Houses and MAKOONGWE Island (Mkoani) 233 Houses -
*** Number Spraymen paid (Effective Sprayman Working/Days not available).

ANNEX No. 3

ZANZIBAR
NGUJA

MALARIA CONTROL PROGRAMME
ULV OPERATIONS IN ZANZIBAR TOWN
(1984/85)

Items	Description	1984												1985									TOTAL	
		January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September		
Protected with:	ISUZU PickUp / ULV 1 Machin. - (Speed: 5 Km/h)	-	-	-	May	193	324	266	351	-	154	231	48	135	144	142	-	-	-	-	-	-	-	1988 Km
	TROLLEY / ULV 2 Machins - (Walking speed)	-	-	-	1st	96	88	65	99	-	78	96	96	68	90	96	-	-	-	-	-	-	-	872 Km
Formulation used:	PYRETHRUM 25% (in Litres)	-	-	-	before	60	60	60	80	-	80	80	80	62	42.9	40.1	-	-	-	-	-	-	-	645 l.
	KEROSENE (in Litres)	-	-	-	Operations	605	650	715	800	-	790	800	800	540	485	390	-	-	-	-	-	-	-	6,575 l.
Equipment used in Working days	ISUZU PickUp / ULV	-	-	-	Operations	12	9	11	10	-	12	12	12	12	12	12	-	-	-	-	-	-	-	114 w/d
	TROLLEY / ULV	-	-	-	ULV	6	8	8	12	-	12	12	12	8	12	12	-	-	-	-	-	-	-	102 w/d
Number of Operators		-	-	-	No	10	10	10	10	-	10	10	10	9	10	10	-	-	-	-	-	-	99	

Formula used for ULV Equipment: 550 ml of Pyrethrum 25 %
1 Imp. Gallon (4.546 Litres)