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TRIP REPORT

**Rapid Situation Analysis
of Expanded Program on Immunization (EPI) and
Preparation for National Immunization Days (NIDs)
in the United Republic of Tanzania
(Mainland only)**

*BASICS is an USAID-funded project administered by
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USAID

Rapid Situation Analysis of Expanded Program on Immunization (EPI) and Preparation for National Immunization Days (NIDs) in the United Republic of Tanzania (Mainland only)

June 24 - July 5, 1996

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TABLE OF CONTENTS

ACRONYMS v

EXECUTIVE SUMMARY 1

OBJECTIVE OF VISIT 2

EXPECTED OUTCOME 2

BACKGROUND 2

METHODS OF RAPID SITUATION ANALYSIS 3

LIMITATION OF REPORT AND PRIORITIZATION OF ACTIVITIES 3

FINDINGS, ANALYSIS, AND ACTION REQUIRED 3

TECHNICAL SUPPORT PROVIDED FOR THE MISSION OF THE GOVERNMENT OF JAPAN AND JICA, AND FOLLOW-UP ACTIONS 31

APPENDICES

Appendix A	Population Data for 1996
Appendix B	EPI Performance Report for 1995 (number of doses administered)
Appendix C	EPI Performance Report for 1995 (immunization coverage)
Appendix D	Vaccines Delivered
Appendix E	EPI Tally Sheet (regular activities)
Appendix F	Vaccine Stock Monitoring Form at Central Store
Appendix G	Estimated Routine Vaccine Needs and Costs for the Period 1995-2000
Appendix H	Vaccine Supply, Needs, and Shortfalls, 1995-2000
Appendix I	Vaccine Distribution Network
Appendix J	Vaccine Stock Records
Appendix K	Icepack Freezer, Electrolux, TFW 791
Appendix L	Icelined Refrigerator/Freezer, Electrolux, TCW 1151
Appendix M	Vaccine Packaging, Samatech
Appendix N	Freezer, Vestfrost, Model SB 300
Appendix O	Icelined Refrigerator, Vestfrost, MK 302
Appendix P	Long Range Vaccine Cold Box, Electrolux, RCW 25
Appendix Q	Refrigerator/Freezer, Sibir, Model V 240 K/E
Appendix R	Refrigerator/Icepack freezer, Electrolux, RCW 42 E/K
Appendix S	Photovoltaic Solar Refrigerator and Icepack freezer, NAPS, Model CFS 49 IS

Appendix T	Photovoltaic Solar Refrigerator and Icepack Freezer, BP, Model VR 50
Appendix U	Vaccine Carrier, Polyform Chemical, The Philippines, Model EPI/PF/1.5
Appendix V	Updated List of EPI Vehicles, July 2, 1996
Appendix W	Current EPI Updated Vehicles Status, July 4, 1996
Appendix X	Disease Control Work Plan 1996-2000
Appendix Y	EPI Disease Surveillance Forms
Appendix Z	EPI Disease Surveillance Performance
Appendix AA	Tentative Budget for EPI Disease Surveillance
Appendix BB	Polio Specimen Collection Kit and Specimen Carrier
Appendix CC	Rough Sketch of Difficult Area in Reverse Cold Chain for AFP Surveillance
Appendix DD	National Immunization Days, Tanzania 1996, Revised Budget (22-06-96)
Appendix EE	Tanzania - Funding for 1996 NIDS
Appendix FF	Vaccine Distribution for NIDs, July 1996
Appendix GG	NID Vaccine Carrier, CIP Industries - South Africa
Appendix HH	Icepack for the NID Vaccine Carrier (0.3 liter)
Appendix II	Stability of Measles and Polio Vaccines at Different Temperatures (Galazka, 1989)
Appendix JJ	Distribution of NID Cold Chain Equipment to the Districts, 1996
Appendix KK	Cold Chain Inventory, 1996
Appendix LL	Source of Energy at Health Facility by District, 1996
Appendix MM	Request for Support to NIDs, 1997 and 1998 (Revised)
Appendix NN	Photovoltaic Solar Refrigerator and Icepack Freezer, Model RFV-4, Sun Frost
Appendix OO	Photovoltaic Solar Refrigerator and Icepack Freezer, Model SSE.60, Norcoast
Appendix PP	Icepack Freezer, Electrolux, Model FCW 20 E/K
Appendix QQ	TINY TTM Temperature Data Logger, Type-F
Appendix RR	Persons Contacted
Appendix SS	Record of Activities
Appendix TT	Map of Tanzania

ACRONYMS

AFRO	Africa Regional Office of WHO
AFP	Acute Flaccid Paralysis
BASICS	Basic Support for Institutionalizing Child Survival
BCG	Bacillus Calmette-Guerin (anti-tuberculosis vaccine)
CDC	Center for Disease Control and Prevention
CFC	Chlorofluorocarbon
CTU	Central Transport Unit
DANIDA	Danish International Development Assistance
DES	Dar es Salaam
DHMT	District Health Management Team
DPT	Diphtheria, Pertussis, Tetanus vaccine
E/G	Electricity / Gas
E/K	Electricity / Kerosene
EPI	Expanded Program on Immunization
GOJ	Government of Japan
GOT	Government of Tanzania
HMIS	Health Management Information System
JICA	Japanese International Cooperation Agency
MCH	Maternal and Child Health
MCHA	Maternal Child Health Aide
MOFA	Ministry of Foreign Affairs
MOH	Ministry of Health
NID	National Immunization Day
NNT-	Neonatal Tetanus
OPV	Oral Polio Vaccine
RHMT	Regional Health Management Team
RI	Rotary International
SNID	Sub-national Immunization Days
TT	Tetanus Toxoid
UNICEF	United Nations Children's Fund
UNIPAC	United Nations Procurement Center
USAID	United States Agency for International Development
VVM	Vaccine Vial Monitor
WHO	World Health Organization

EXECUTIVE SUMMARY

A BASICS consultant visited Tanzania for two weeks (June 24-July 5, 1996) to participate as a technical advisor in a joint U.S./Japanese health planning mission to Tanzania. The author's role was to conduct a rapid situation analysis regarding both the regular activities of Tanzania's Expanded Program on Immunization (EPI) as well as of preparatory work for the first National Immunization Days (NID) for polio eradications. NIDs are scheduled to take place on August 10-11 and September 14-15, 1996, in the United Republic of Tanzania. Due to time constraints, data collection, observation, and discussion could be conducted by the author only at the central level.

In general, program management of most components of the routine EPI was found to be very impressive, particularly in the areas of cold chain, transport, and management information system (MIS). Also, strong commitment and momentum for the NID preparatory work was evident.

However, the short lead time for NIDs has led to some financial and technical problems which are gradually being resolved in collaboration with all relevant parties. NIDs will need to be incorporated into the upcoming health sector reform plan in Tanzania in the context of overall EPI operations. Also, the issue of NIDs will soon be critical in all EPI-related areas, such as logistics, supply, and transport as the Government of Tanzania (GOT) continues to decentralize health services to the district level. Furthermore, it is recommended that more detailed costing and resource requirements be estimated for future NIDs, and that a longer lead time for fund-raising be planned. Above all, it will be critical to secure sufficient levels of funds for the operational cost in the immediate NIDs in 1996. Similarly, the issue of identifying such large levels of funding for NIDs in subsequent years still remain. In addition to polio vaccines required for use during NIDs, it should be noted that the need for sufficient funds for polio vaccines for routine EPI activities for the first six months in 1997 is a most urgent matter. Technically, quality control at peripheral level (ice-making and icepack freezing capacity) was identified as an important area to be examined through the first NID evaluation. The EPI surveillance system, including acute flaccid paralysis (AFP), measles, and neonatal tetanus(NNT) is to be launched with the development of a plan of activities including subsequent training workshops. Surveillance was identified as one of the areas to be given a much higher priority in EPI in Tanzania.

As per prior agreements based on negotiations conducted through the Common Agenda, technical suggestions were made regarding the support of the Government of Japan (GOJ) and the Japanese International Cooperation Agency (JICA) for the NID in Tanzania. The revised list of required vaccine and cold chain equipment requirements will be made based on the outcome of the mid-term NID evaluation to be conducted by the GOT. The most critical factor in this support will the very short lead time available for international procurement of these goods prior to the NIDs in 1997. Also, district level micro-planning is highly recommended to identify actual local EPI needs with sufficient preparation time before the final supply plan is made for the GOJ/JICA's support in subsequent years.

OBJECTIVE OF VISIT

The objective of the consultant's visit was to conduct a rapid situation analysis of routine services offered by Tanzania's Expanded Program on Immunization as well as its preparations for upcoming National Immunization Days for polio eradication, and identify actions required.

It should be noted that this trip report covers only the issues related to the mainland of the United Republic of Tanzania. The issues related to the Revolutionary Government of Zanzibar are not included.

EXPECTED OUTCOME

It is expected that the report of this situation analysis will be used as a reference for:

(1) Improving the operation of both the routine EPI and the NIDs by sharing the information compiled in the report with the GOT and relevant international and national agencies;

(2) A forthcoming evaluation of USAID's health/population/nutrition programs, scheduled for late 1996; this will include child survival programs, the assistance for which is expected to be expanded by USAID in Tanzania; and,

(3) The definition of support from the Government of Japan and JICA for Tanzania's NIDs in 1997 and 1998.

BACKGROUND

With its high coverage and well-established cold chain, transport, and MIS, Tanzania's EPI has been considered an example of a strong immunization program in Africa. Tanzania achieved more than 80 percent immunization coverage in 1988 far ahead of many other African countries, and has succeeded in maintaining those levels at 75.7 percent to 87.7 percent for all the antigens except OPV-0.

As part of its commitment to polio eradication, the GOT, along with other southern African countries, decided to conduct its first NIDs in August and September, 1996. As of this writing, it is in the end stages of NID preparation. Originally, Tanzania planned to conduct sub-national immunization days (SNIDs) in 1996, prior to launching full-scale NIDs in 1997. However, after a meeting in Nairobi in April 1996, the SNID for 1996 was redesigned as a nationwide NID operation.

METHODS OF RAPID SITUATION ANALYSIS

As the period allocated for this rapid situation analysis was limited to two weeks, the primary means of data collection was the consultant's direct discussion with key officials of GOT and relevant donors. Also, reports and documents related to EPI and the polio NIDs were collected and reviewed, with support of the EPI Unit and other donors. Although a quick field trip was initially planned, it was canceled due to lack of time.

LIMITATION OF REPORT AND PRIORITIZATION OF ACTIVITIES

During the two weeks of this consultancy, the EPI Unit and other relevant agencies of the Ministry of Health (MOH) and donors were fully occupied with NID preparations. In order not to create any extra burden to the government officials, data collection and discussion had to be made only when these officials were not engaged with NID preparatory work. However, with the cooperation of the EPI staff members, most of the essential data were eventually made available in a short time for the consultant. Also, at least one session of technical discussion was held with each key Technical Officer of the EPI Unit. As per the terms of reference of the consultant, more time was spent for the top priority issue (i.e., cold chain and vaccines) than for other components of EPI and NIDs.

The consultant concentrated on conducting discussions with the EPI Unit staff members during the first week (June 24 - June 30), and with the donors during the second week (July 1 - 5) because:

(1) – Major EPI officials planned to depart for regional NID training workshops in the latter part of the second week of the visit; and,

(2) The Japanese Mission made a request for the consultant to make a brief presentation about his observations on NIDs and EPI on June 30, prior to their departure.

FINDINGS, ANALYSIS, AND ACTION REQUIRED

The rapid situation analysis was designed to address issues pertaining to routine EPI activities and National Immunization Days. The findings on both of these subjects are presented in this report in that order.

EPI (Routine EPI Activities)

Overall Environment

The consultant's most important observation was that there has been a strong movement to health sector reform within the Ministry of Health in Tanzania. In addition, many donors, including the

World Bank, DANIDA, and others, are trying to support the "Health Sector Reform Action Plan" (explained below). However, NIDs for polio eradication have not been included in this plan.

In the Health Sector Reform Action Plan, decentralization through strengthening district financial and management capacity is planned by the MOH. A contractual relationship between the districts and the central level of the MOH is also planned. The Medical Store Department (MSD) will take over all responsibilities for monitoring, transport, storage, and distribution of EPI vaccines and cold chain and other equipment up to the district level. For example, the ownership of all EPI vehicles (about 160) was handed over to the districts or to the MOH's relevant units as of July 1, 1996. A more substantial change is expected to come after January 1, 1997.

Similar health sector reforms have been implemented in many African countries. The trend and effect of health sector reform should be given special attention not only in Tanzania but in other African countries in view of its administrative, technical, and financial implications for child survival-related programs, including EPI and NIDs.

Four types of reference materials related to the health sector reform are essential:

(1) Proposal for health sector reform, 1994 (policy guideline for the health sector reform in Tanzania);

(2) Health Sector Reform Action Plan, 1996-1999 (action plan of the health sector reform in Tanzania);

(3) The Broad Sector Approach to Lending: Sector Investment Programs (The World Bank; a copy was made available); and,

(4) Sector Programme Support Document: DANIDA, Health Sector Programme Support (HSPS) Phase I, July 1996 - June 1999, Tanzania (Mainland) (DANIDA; a copy was made available).

At the central level, the Primary Health Secretariat was created within MOH to coordinate health sector reform related activities.

Political Commitment

It is apparent that there has been a strong political commitment to and support from the GOT for EPI. The MOH is said currently to have the strongest team in its recent history.

Social Mobilization

Using the existing "ten cell leaders" system, that is, a leader takes care of ten households in his respective village, the GOT has implemented effective social mobilization and enumeration of eligible populations. There has been good understanding by communities of the importance of immunization.

Organization Structure

The EPI Program Office (referred to as "the EPI Unit" in this report) is the central body for management of EPI operations at the national level. The EPI Unit is in the Maternal Child Health Unit of the Department of Preventive Services in the MOH. Under the EPI Program Manager. there are: one National Surveillance Focal Point (monitoring and evaluation); one National Cold Chain Officer; one Training and Social Mobilization Officer; one Operation Officer; one Administrative Officer; and, one Transport Officer.

At the regional level, there is the regional health management team (RHMT) which is a core body for regional health management. The RHMT consists of: a Regional Medical Officer; a Regional Health Officer; a Regional Health Secretary; and, a Regional Nursing Officer.

Under the Regional Medical Officer, which is the highest level of EPI program management at the regional level, there is one Regional Cold Chain Officer with one assistant, and one Regional MCH Coordinator, also with one assistant.

At the district level, the organization structure is almost the same as at the regional level. The district health management team (DHMT) which is a core body of district health management. The DHMT consists of: a District Medical Officer; a District Health Officer; a District Health Secretary; and, a District Nursing Officer. Under the District Medical Officer, who is the highest level program manager for EPI at the district level, there is one District Cold Chain Officer with one assistant, and one District MCH Coordinator, also with one assistant.

Below district hospitals and health centers, the most peripheral government health delivery points (i.e., dispensaries) are staffed with Rural Medical Aides, Medical Assistants, and Maternal Child Health Aides (MCHAs), who conduct most immunization sessions in the field, and Health Assistants. The delivery of health services in facilities (hospitals, health centers and dispensaries) are assisted by trained volunteer village health workers from the communities.

Donors' Technical Support

DANIDA has provided the EPI Unit with continuous technical support. It includes an experienced DANIDA Senior Technical Adviser (Swedish) stationed at the EPI Unit. Also, training in various technical areas, such as management and monitoring, including computer skills, have been provided by DANIDA for EPI Unit staff members. DANIDA has provided technical and financial support to EPI since 1980.

UNICEF also has a National EPI Officer (the former Chief of the Epidemiology Unit of MOH) who has provided technical and managerial support for the EPI Unit. UNICEF has assisted the EPI Unit in vaccine procurement through UNIPAC.

Target Population (see Appendix A)

In Tanzania, the target population for all antigens other than tetanus toxoid (TT) are children under the age of one year, while those for TT are women 15-44 years old. The EPI Unit calculated the target population for 1996 with use of region specific population growth rates, the common crude birth rate (0.046), and the national infant mortality rate (0.115). That is, the EPI Unit is using the "survivors" instead of "newborns." It is a common practice in calculating the immunization coverage and vaccine requirement in some countries, while others are using "newborns" instead. The target population for TT immunization are the women of child bearing age (15-44 yrs) and is calculated as 20% of total population.

It was not clear how the TT requirement has been calculated for the target population. The consultant observed that the GOT is facing a problem in estimating the requirement for tetanus toxoid because of difficulties in estimating the size of incoming and outgoing cohorts of the target population. This problem is common in many countries.

Immunization Policy and Coverage (see Appendices B and C)

In order to provide the complete primary vaccination series to "latecomers," all pediatric antigens have been given to "one year plus" population as long as they were immunized at least once before reaching the end of their first year. Also, the birth dose of OPV (OPV-0) is administered according to WHO guidelines. A policy of giving five doses of TT throughout childbearing years has been implemented. The consultant observed that estimating actual TT coverage is difficult, due to the complexity of estimating the age distribution of those immunized in previous years, as well as the size of incoming and outgoing cohorts of the target population. This problem of estimating coverage with TT among children of childbearing age is a corollary to the problem of estimating vaccine requirements for TT.

Although there has been a slight coverage decline after 1990, Tanzania has still maintained high EPI coverage. For 1995, the reported coverage for each antigen in children aged under one year was:

BCG	DPT1	DPT2	DPT3	
87.3	87.7	85.2	80.0	
OPV0	OPV1	OPV2	OPV3	Measles
45.8	87.7	84.7	78.7	75.7

Percent TT coverage was calculated by the EPI Unit for each dose as: TT1= 19.2 percent, TT2=14.9 percent, TT3=9.0 percent, TT4=4.1 percent, and TT5=2.0 percent. However, the calculation was done simply by using the total target population as the denominator (all women 15-44 years old) without considering the accumulation of the population immunized in previous

years and incoming and outgoing cohorts in the target age group. Therefore, the TT reported coverage in Tanzania for 1995 underestimates the actual TT immunization status and the true levels of protection against neonatal tetanus.

The level of OPV-3 coverage by region is shown below:

Level of coverage	Region	Total
< 70%	Pwani	1
70%-79%	Dodoma, Morogoro, Dar es Salaam, Lindi, Mtwara, Mbeya, Tabora, Shinyanga, Mwanza, Mara	10
80% +	Arusha, Kilimanjaro, Tanga, Ruvuwa, Iringa, Singida, Rukuwa, Kigoma, Kagera	9

It is necessary to identify the area for remedial actions not by region but, more specifically, by district. Using the existing computers of the health management information system (HMIS) at the EPI Unit, the coverage by district is available and can be printed out. However, the number of printouts may be too numerous (about 20 sheets) and it may be time consuming to manually select low coverage areas (district) in 20 printouts or more. It is recommended that the software be modified to automatically print out only low coverage areas by antigen.

The reported coverage for 1996 was updated only through March 1996. Therefore, it is not shown in this report. The data on the EPI coverage survey was not made available during the consultant's visit.

Finance

The GOT pays all salaries and allowances for EPI-related health workers. Cold chain equipment and vehicles have been provided by DANIDA. Vaccine costs have been covered by four donors: BCG and DPT by DANIDA; TT and measles by UNICEF; and, OPV by Rotary International (RI) and JICA. In 1996 RI shifted its funds, which were initially allocated for OPV to be used in routine EPI services, to operational costs for NIDs. Only JICA is currently providing funds for OPV for routine service delivery. However, current funding levels are probably sufficient to provide OPV for routine services nationwide for up to six months. DANIDA has also provided financial support for training and HMIS. DANIDA expressed their commitment to EPI for the next three to five years with almost same amount of financial and technical contribution. The expenditures by source of funds for 1995 is shown below.

Expenditures by donor*('000 US$), 1995							
Donor	GOT**	DANIDA	UNICEF@	JICA	RI	WHO#	Total
Expenditures	538	4061	817	772	212	13	6413
%	8.4	63.3	12.7	12.0	3.3	0.2	100.0

Source: EPI Implementation Report, 1995, EPI Unit, GOT
Key: * Estimated on the basis of written and verbal reports.
** Government contribution in health facility development and health manpower development in regions and districts not included.
@ Activities in collaboration with CDD not included.
# Expenditures on training materials and meetings outside the country not quantified.

Additional funds urgently need to be sought for the routine polio vaccine supply which will be required after the end of December 1996. About US$ 0.7 million will be required for another six month consumption, including freight cost. Apart from NID funds of the JICA/GOJ, JICA has committed regular funds of about US$ 500,000.00 for OPV for each year up to 1999. On July 4, the consultant contacted Rotary International about this. RI seemed to be positive and mentioned that they would prefer to be approached by UNICEF/WHO in Tanzania regarding the OPV issue for routine EPI services. On the other hand, UNICEF is now in the process of developing a new master plan of operation. Therefore, information on UNICEF's financial support beyond 1996 could not be assessed during the consultant's stay. In addition, there was a lack of technical and operational information regarding UNICEF's involvement in EPI and polio eradication because the UNICEF EPI Project Officer was on leave during the second week of this visit. The consultant also contacted the GOJ/JICA Mission in Tanzania on this matter. As of this writing, though, no conclusion had been drawn regarding OPV requirements for routine EPI services. DANIDA may be another possible source of funds for OPV for routine services.

The first shipment of OPV for 1996, which was provided by JICA/GOJ, will reach Dar es Salaam in the first week of August for routine EPI activities and is expected to be sufficient for three months. The second batch is expected to arrive around October, 1996. This should provide a sufficient quantity of OPV for an additional three months, (through the end of January, 1997). If there are significant quantities of the unused OPV remaining after the second round of NIDs in September, they may help sustain the OPV supply for a few more months. However, the amount of OPV remaining after NIDs cannot be predicted. In the worst case, the entire supply of OPV may be completely depleted by the end of January 1997. This would imply that additional funds for the subsequent six months of OPV consumption (February to July 1997), valued at about U$0.7 million, will have to be pledged by a donor and the order will have to be placed <u>by the end of September</u> at the latest(counting back four months from the end of January 1997) because the air freight lead time to Tanzania would be four months or so. <u>This is absolutely the first priority in the action to be taken for polio eradication in Tanzania.</u>

The regular JICA/GOT funds for OPV for 1997 can be used only after February 1997 or so due to JICA's fiscal policy. This means that OPV funded by the GOJ can be made available out of the regular JICA/GOJ's funds only four months after the budget approval at Tokyo, after July or August 1997. This would lead to a need of identifying another donor or source of funds which can be used to procure OPV to be consumed between January and June or February and July each year. A new donor or a new source of funds, either from the donors or from the GOT itself, needs to be urgently identified to address this situation.

Vaccine

The EPI Unit has collected data on a monthly basis on:

(1) Number of doses of vaccines administered, to calculate the immunization coverage;

(2) Number of doses of vaccines dispatched from central vaccine store to regional vaccine store; and,

(3) Number of doses of vaccines dispatched from district vaccine store to health facilities.

A summary for 1995 is shown in Appendix D.

Although the consultant could not obtain information on whether they are recording the number of doses of vaccines dispatched from each regional vaccine store to district vaccine stores, the consultant assumes that such records are also kept.

The number of doses of vaccine dispatched form the central vaccine store to the regional vaccine store is used as a proxy of "vaccine consumption," in lieu of collecting data on vaccines actually consumed in each EPI session in the field. Practically, each regional vaccine store is allowed to have a maximum of one and a half months worth of vaccine stock; in principle, every month the central vaccine store is to supply vaccines to each regional vaccine store. In this case, the second indicator noted above is of practical use. Also, there is often a delay of two to four months in obtaining the real vaccine consumption data; this is true in many countries besides Tanzania. Furthermore, it takes a few weeks to enter those data into a computer database. The consultant found that no wastage rates had been calculated at the national level using the data available.

Using the data provided, the consultant calculated the national vaccine wastage rate for each antigen:

Vaccine wastage rate (1995)				
BCG	DPT	OPV	Measles	TT
69	39.4	36.8	70.0	64.3

Source: Appendices B and D

While some may think that such wastage rates are high, this consultant believes that the rates in Tanzania are in a reasonable range.

Tanzania is following WHO's new "opened vial policy" in the following way:

(1) At immunization sessions at fixed health facilities

BCG and measles:	Once it is reconstituted, discard it at end of the session and never use it for next day's session.
TT, DPT, and polio:	If a vial is opened but all doses are not used, it can be used for next day's session if all the other conditions are met.

(2) At immunization session at non-fixed sites (outreach or mobile team) or NID operations

All antigens:	Once it is opened, discard it at end of the session. Never use it for the next day's session.

Therefore, the wastage rates of BCG and measles could be naturally higher than DPT and OPV.

Also, a possible application of vaccine vial monitors (VVMs) for other antigens in addition to OPV is expected to reduce the wastage rates in the near future. The use of 10 doses of TT could be another possibility for reducing wastage. However, before changing the dosage of TT, a careful field assessment is needed on the average number of clients per session.

To better track wastage rates, it is necessary to add an additional column in the existing immunization tally sheet (see Appendix D) to record the number of vials provided from a health facility, consumed during an immunization session, and returned to the health facility. For NIDs, a special tally sheet was developed including those factors. The vaccine wastage rates might significantly vary among districts as well as regions due to highly diverse rates of access to health facilities, and to the two types of cold chain equipment that are used (kerosene-run and electricity-run).

Although the introduction of wastage rates is an area of interest in view of minimizing the cost of vaccines, all vaccines must be available in each EPI session without any shortage. In one Asian country, for example, the wastage reduction was given an excessive emphasis and WHO's recommended vaccine requirement calculation was blindly used. It has consequently lead to a drastic reduction of vaccine supply for the entire country. Consequently, a serious shortage of vaccines occurred at peripheral levels of EPI operation. For EPI sessions at fixed health facilities, the WHO formula can be used. However, for outreach sessions, the vaccine requirement has to be calculated based on the actual number of outreach sessions and the actual demand, which is based on previous vaccine consumption in the catchment area.

The central vaccine store also monitors the current stock value and consumption (which is equivalent to the amount dispatched) and current stock values with a monitoring form (see Appendix F). However, the inclusion of "total stock: actual stocked and ordered" in the current stock value calculation (that is, "will last in months" in the form) might inadvertently lead to an over-estimation of the current stock value. It might be better to use only the current stock and actual consumption to calculate the current stock value.

Vaccine requirements have been forecasted up to the year 2000 by the EPI Unit. However, the consultant observed that two slightly different figures are used (Appendices F and G). The consultant did not have sufficient time to verify which one is officially used. One of them is shown below:

('000 vials)	**Antigen**				
	(10) BCG	(10) DPT	(10) OPV	(10) Measles	(20) TT
Year	(Routine)				
1996	410	470	560	360	450
1997	420	490	580	370	400
1998	435	490	600	380	400
1999	450	500	650	390	400
2000	460	500	650	400	400

Key:
(10) 10 doses per vial
(20) 20 doses per vial

Source: See Appendix F

Based on this vaccine requirement, the cost was estimated as:

('000 US dollars)						
	BCG	DPT	OPV	Measles	TT	Total
Year	(Routine)					
1996	700	400	560	576	360	2,596
1997	720	420	580	592	320	2,632

('000 US dollars)						
1998	740	420	600	610	320	2,690
1999	760	430	650	630	320	2,790
2000	780	430	650	650	320	2,830

Source: See Appendix F

Adding 30 percent freight and handling cost (air freight charges and other costs through UNIPAC procurement), the estimated budget required for vaccines for each year will be as follows:

Year	Vaccine 30%	Grand Total
		('000 US Dollars)
1996	2,596 + 779	$3,375
1997	2,632 + 790	3,422
1998	2,690 + 807	3,497
1999	2,790 + 837	3,627
2000	2,830 + 849	3,679

From 1997 to 2000, about US$3.4 to 3.7 million will be required for vaccines for routine EPI service delivery in Tanzania. According to GOT documents, the requirement for TT is forecasted as 450,000 vials for 1996 but drops to 400,000 for 1997-2000. Calculation of the requirement for TT is one of the most difficult, because the target population is women of childbearing age (ages 15-44 years). The true TT requirement can be calculated only with data based on the population pyramid, including data on the population of women for each year in the 15-44 year cohort. Particularly needed is information on the size of the incoming cohort (180 to 191 months of age) and the outgoing cohort (528-539 months old); the absolute accumulated figure of the immunized target population in each one-year group; and, coverage targets. However, in practical terms, this information is not easily available. Assuming a constant level of TT coverage, after TT vaccination has been conducted for some years, the actual target population (of women's whose births are unprotected) will start to decrease due to the accumulation of immunized women in the range of 15-44 years of age.

However, this phenomenon is unlikely to occur soon even in Tanzania. Revising the immunization strategy to reflect this accumulation requires that each woman have a carefully documented history of vaccination over her childbearing years. Therefore, the estimated quantity of TT needed (400,000 vials) and its cost over the next four years, needs to be verified in terms of

methods and assumptions used (unit cost increase, proportion of target population, and coverage targets), as well as any unstated but intended changes in vaccination strategies.

As indicated in the tables above, GOT documents indicate that the DPT requirement stays constant at a level of 420,000 vials for 1997-2000, following an estimated need for 400,000 vials in 1996. This could be a calculation error or may imply some change in vaccination strategy which has not been otherwise stated. Both the quantity and the cost estimate for DPT need to be verified.

In addition to the above funding requirements for routine EPI services, US$1.5-1.7 million will be annually required for OPV for NIDs (see section on findings, analysis, and actions required). This implies high vaccine costs for Tanzania from 1996 through 1998 or 1999 when polio virus transmission is expected to be interrupted in Tanzania and after which no further National Immunization Days will be required. However, some local campaigns may still be needed as part of polio eradication "mopping up" activities. The table below assumes that NIDs will be needed until 1999; however, it does not estimate vaccine requirements for "mopping up."

Total cost estimates for vaccines			
(US dollars in million)			
	Regular	NID*	Total
1996	3.48	1.50	4.98
1997	3.43	1.60	5.03
1998	3.50	1.70	5.20
1999	3.62	1.80**	5.42
2000	3.67	0	3.67

Key: * The quantity required may vary if the actual OPV wastage rate in practice is different from the estimated 25 percent. Cost estimate includes shipping.

** NID in 1999 may not be necessary if interruption of polio transmission can be achieved in three years.

In Tanzania it will be critical to secure the funding required for vaccines (about US$5-5.5 million per year) for both routine EPI and NID activities. Also, this raises related issues for consideration beyond the needs of Tanzania alone:

(1) Availability of the funds for various African countries, either from donors or from the governments themselves, to support procurement of vaccines for both routine service delivery and NIDs; and,

(2) Global availability of OPV vaccines (manufactures' production capacity).

These concerns underscore the importance of region-wide and global activities that have already been initiated, namely:

(1) Preparation of detailed, standardized estimates of vaccine needs and corresponding funding requirements;

(2) Discussion of funding needs in inter-agency (donor) meetings and development of agreements among donors regarding provision of vaccines in each country, prior to launching of NIDs; and,

(3) Assessment of the global capacity of vaccine manufacturers to produce the required volumes of OPV.

Cold Chain

DANIDA has provided most of Tanzania's cold chain equipment as well as vehicles for more than 15 years. In general, the cold chain system has been well established in Tanzania. All the required spare parts have been kept at the central level in excellent condition with systematic management. Repair and maintenance have been made by MOH staff members, including the National Cold Chain Officer and Regional Cold Chain Officers. They are capable of repairing solar refrigerators. The National Cold Chain Officer was found very competent.

Only CFC-free cold chain equipment has been procured during the past two years. The existing 20 regional vaccine stores may be abolished and reorganized as seven zonal vaccine stores in near future, in accordance with the Health Sector Reform Plan. However, it is not clear how soon this will take place.

In Tanzania a national vaccine distribution network has been established (see Appendix H). Nine regional vaccine stores have directly or indirectly been receiving the vaccines by air, subject to frequent flight cancellations. Kagera regional vaccine store has received the vaccines from Mwanza regional vaccine store by boat over Lake Victoria. Also, some districts and health facilities along the coast of Lake Tanganika in the Kigoma Region have been supplied with vaccines by small boats from the Kigoma regional vaccine store. Vaccine transport by boat has also often been subject to cancellation due to bad weather. Vaccine transport to the other ten regions is done by road.

The types of cold chain equipment used at each level are shown below:

(1) Central Level

The central vaccine store is located in the EPI Unit compound, Mabibo, Upango Area. It is close to the airport (20 minutes driving distance). However, it is a 30 minute driving distance to the mid-town of Dar es Salaam. The traffic is often heavy between Mabibo and Dar es Salaam township. The transport unit, mechanical vehicle workshop, and supply stores are located in the same compound.

Cold chain equipment at the central level includes the following:

Quantity	Type	Manufacture/Code
3 units	Walk-in-Cooler (WIC)	Huure Oy, Finland
2 units	Walk-in-Freezers (WIF)	Huure Oy, Finland
3 units	Icepack freezer	Electrolux TFW791 (Appendix J)
1 unit	Icelined refrigerator/freezer for icepack freezing/storage	Electrolux TCW1151 (Appendix K)
1 unit	Icelined freezer for AFP polio specimen	Electrolux TCW1151 (Appendix K)

All are functional except the automatic temperature recording system for all WICs and WIFs.

There is a two stage generator electricity back-up system. There is also a parking facility and one forklift for loading equipment. One special staff member, along with some assistants, is responsible for vaccine stock inventory control. According to the National Cold Chain Officer, the maximum vaccine storage capacity is five months. However, the consultant found seven to ten months stock of vaccines in annual reports of the EPI Unit. Also, OPV and TT stock values were depleted to a level of almost one and a half months in February and April in 1995. Record-keeping was found to be well maintained.

Vaccine is transported from the central vaccine store to regional vaccine stores in Samatech cold boxes (PIS E4/33; see Appendix L).

(2) Regional Level

At each of the 20 regional stores, the following equipment is found:

Quantity	Type	Manufacture/code
3-5 units	Icelined freezer and refrigerator	Electrolux TCW1151 (Appendix K)
	or	Vestfrost SB 300, MK302, or MK302-367 (Appendix M and N)
		Only VESTFROST icelined freezers/refrigerators are being procured because of their lower costs than TCW1151
1 unit	Icepack freezer (Fast icepack freezer)	Electrolux TFW791 (Appendix J)
1 unit	Backup generator (4.5 Kva) petrol type	HONDA EB4500

All equipment is run by electricity. Four regional vaccine stores receive electricity through the local power supply systems (heavy duty generators) as those four regional vaccine stores are not connected with main electricity lines.

The maximum vaccine stock value is set as one and a half months. Monthly vaccine replenishment is made with a half month buffer.

One regional EPI vehicle (Toyota HI-LUX double cabin pick up, diesel) is used for the transportation of vaccine and other supplies. One Toyota Land Cruiser is being added by DANIDA for supervisory activities to each regional vaccine store. The vaccine transport between regional store and district store has been made with use of cold box RCW25 (see Appendix P).

One Regional Cold Chain Officer has been appointed for each regional store.

(3) District Level

There are 117 district vaccine stores. However, the number of stores is changing due to the establishment of new district vaccine stores and the merging of some existing ones.

At the district store level, the following equipment is found:

Quantity	Type	Manufacture/code
1 unit	Standing type refrigerator with a freezing compartment	SIBIR (Appendix Q) or RAK 1302 All are E/K or E/G convertible.

About 50 percent (58) of districts operate the refrigerators with kerosene and the rest (59) with electricity. No stand-by generator has been provided to the electricity-run district vaccine stores for a back-up.

A maximum stock value maintained at this level is one and a half months. Monthly vaccine replenishment factors in a half-month stock buffer. Vaccine is transported between district stores and health facilities using an RCW25 cold box (see Appendix P). There is one vehicle at the district store level, a TOYOTA HI-LUX double cabin pickup truck using diesel fuel.

One District Cold Chain Officer has been appointed for each store.

(4) Health Facility Level

About 3,500 health facilities, which include hospitals, health centers, and dispensaries, operate immunization sessions at their fixed sites plus one to two outreach immunization sessions for each fixed site. An exact total number of outreach sessions was not available. The frequency of immunization sessions varies from place to place. Most of immunization sessions have been conducted by Maternal and Child Health Aides.

Cold chain equipment found at the health facility level is as follows:

Quantity	Type	Manufacture/code
1 unit	Small refrigerator	Electrolux RCW 42 (Appendix R) E/K or E/G. (Only 90 units gas-running) or Electrolux RAK 36 or RAK 360 or RAK 362 (E/K) or Solar refrigerator (for very remote areas): Norwegian NAPS (Appendix S) or British BP (Appendix T)

The RCW42 is a RCW25 cold box- type refrigerator with a small vaccine storage and ice making/storage capacity. The RAK 36-series resembles a small domestic refrigerator with a smaller inner freezing compartment. Ice making and ice storage capacity of both the RCW42 and the RAK 36-series is limited.

As the RAK-36 series refrigerators are older models, they are being replaced with the RCW 42. The vaccine storage and ice making capacity of these three types of refrigerators (including solar type) are sufficient for routine EPI activities.

According to the National Cold Chain Officer, the type of energy source for cold chain system at the health facility level are as follows:

Energy Source	Number of health facilities
Electricity	400
Kerosene	2,555
Gas	94
Solar	173 (17 more to be added)
Total	3,222 (+17) = 3,239 with at least one type of cold chain refrigeration or freezing system

As of July 3, 1996 , data from the EPI Unit indicates that 3,415 of 4,159 health facilities in Tanzania offer immunization services. One hundred and seventy-six health facilities are able to conduct EPI sessions without any cold chain refrigeration or freezing equipment, probably due to their closeness to major cold chain facilities. A total of 744 health facilities do not offer EPI services yet due to their remoteness.

No stand-by generator has been provided to each health facility powered with electricity. It is not considered feasible to provide a generator to each facility, given issues of fuel availability, maintenance, and repair.

The maximum vaccine stock maintained at the health facility level is one and a half months. Monthly vaccine replenishment is based on a buffer stock of half a month.

There is no vehicle and no Cold Chain Officer at the health facility level.

Problems of kerosene shortage have been reported in annual reports of the EPI Unit. The GOT has provided kerosene in the past and there have been some delays and funding shortages. DANIDA is now proposing to provide financial support for the kerosene supply.

At some remote health facilities, solar refrigerators are being used and BP (British-made) and NAPS (Norwegian-made) models have been tested. A total number of 180 solar refrigerators will be installed in Tanzania, including those currently at the port for the customs clearance. No problems with sunlight requirements throughout the year were reported at the testing sites.

(5) Immunization Session (fixed center/outreach/mobile team)

Cold chain equipment used during the immunization session includes the following:

Quantity	Type	Manufacturer/code
1 unit per team	Vaccine carrier	Polyform Chemical Corporation The Philippines (Appendix U)

This item is widely used in many countries. The vaccine storage capacity is 1.4 liters. The icepack requirement is for four pieces of 0.4 liter icepacks. The cold life is 50 hours at 32 centigrade and 37 hours at 43 centigrade. The cost is US$15.20, excluding freight.

Transport

The transport section of the EPI Unit has been managed by a National Transport Officer. A total of 160 vehicles have been used for EPI activities. Most of them have been procured by DANIDA, and some by JICA. Vehicle maintenance has been excellent. For example., only three of 20

vehicles at the central level are under repair and all the other are in good condition. At the district level, ten vehicles (less than 10 percent) out of 136 are in need of repair.

A summary of the condition of the vehicles is shown below:

(1) Central Level (Appendix V)

Type	Total quantity	Quantity nonfunctional**
Suzuki Samurai (Small 4 wheel drive)	10	0
Maruti (ditto)	2	0
Toyota Land Cruiser	7	2
Isuzu Pickup	1	1
Toyota Hiace Bus	1	0
Toyota Dyna Bus	1	0
Scana Truck	1	0
Honda Motorbike	1	0

Key:** To be repaired

(2) Regional level (Appendix W)

Type	Total Quantity	Quantity nonfunctional
Toyota Hi-Lux Double Cabin	20	0

One Toyota Land Cruiser will be provided to each region for supervisory activities.

(3) District Level (Appendix X)

Type	Total Quantity	Quantity nonfunctional
Toyota Hi-Lux Double Cabin	133	10
Maruti Pickup	3	0

The EPI Unit owned its own fuel pump and reserve tank at central level. However, those were handed over to the GOT as of July 1, 1996. All the vehicle spare parts, which were found to kept in a spare part store with an excellent store management, will be sold out. All mechanical work and spare parts purchasing will be done by the districts themselves. All the central vehicles will be transferred to the Medical Store Department (MSD), Central Transport Unit (CTU), which is being established, or to the PHC Secretariat, which is a key unit implementing health reform. Or, they will be reallocated to the EPI Unit. The exact number of new vehicle allocations has not been made available. At the health facility level, bicycles have been provided for the local transportation of vaccines and staff.

Monitoring/Planning

EPI's management information system has been well organized. All the information on immunization coverage, vaccine consumption, and logistics have been computerized. About 10 computers have been installed at the EPI Unit and used for HMIS, using Computerized EPI Information System (CEIS) and a Danish software called NAVISION. It was impressive that most of key officers of the EPI Unit are familiar with commands of computer software and well trained for data processing. There have been some delays in reporting from some areas. At present, for example, the information on immunization coverage and vaccine consumption has been updated through March 1996. On the other hand, although the logistics information was supposed to be updated twice a year, this has not happened.

NAVISION is a good logistics management software. However, data updating has not been done, as mentioned above. If an annual review meeting could be conducted at each district, and micro-planning of logistics, supply, vaccine, field operations, and surveillance could be organized during that meeting, it would be useful to update all the managerial information on the spot and develop district EPI operations plans, which would be designed to be feasible, given local conditions. Also, it would improve the district managers' planning skills and the comprehension of EPI operation strategies.

Surveillance

A summary of the disease control plan for 1996 - 2000 is attached in Appendix X.

Although there has been a general disease surveillance system in MOH, it has not been very functional. Therefore, an EPI surveillance system has been established separately. Eight types of reporting and field investigation forms have been developed and are used at regional, district, and health facility (see Appendix Y).

Surveillance training for national, regional, and district personnel has been completed. Currently, training for clinical officers at the health facility level is being conducted. Lack of specimen kits and insufficient funds for operational costs have lead to difficulty in timely case reporting. USAID recently provided US$ 87,000.00 for overall improvement of the EPI surveillance system. A draft (tentative) action plan for the EPI disease surveillance with the USAID-provided funds is being developed. Emphasis was put on community sensitization for case finding (community surveillance), supply of specimen kits, and operational costs, such as transport of specimens.

The actual data on cases of neonatal tetanus, measles, and acute flaccid paralysis and polio have been compiled in the annual report of the EPI Unit (see Appendix Z). However, the incidence rates of reported of AFP cases have been much lower than expected in the past (0.06 and 0.21 per 100,000 population under 15 years of age in 1994 and 1995, respectively, as opposed to the expected rate of 1.00 per 100,000.) Major constraints, objectives, and strategies described in the work plan (Appendix X) include the following:

Constraints

(1) Incomplete HMIS system, particularly between the regional and central levels;
(2) Lack of community data (lack of community awareness);
(3) Lack of involvement of private sectors in case reporting;
(4) Lack of skills required for data interpretation (lack of basic epidemiological training for health personnel); and,
(5) Lack of involvement of health personnel at the peripheral level.

Objectives

(1) Achieve 90 percent completeness and timeliness of reporting from district to central level;
(2) Increased awareness of the community members for AFP, measles, and neonatal tetanus;
(3) Health personnel enabled to interpret the surveillance data; and,
(4) Involvement of health personnel at the peripheral level in AFP case reporting.

Strategies

(1) Sensitize the communities about surveillance for AFP, measles, and NNT;
(2) Sensitize private sectors for their involvement for EPI disease surveillance;
(3) Train health personnel for data collection for EPI surveillance;
(4) Train health personnel in data processing and analysis for surveillance; and,
(5) Appoint an alternative at health facilities where no MCHA is available.

A tentative budget was made for activities pertaining to improvement of EPI disease surveillance (see Appendix AA). Key elements include the following:

Epidemiological surveillance :	US$957.00 for equipment, etc. (Appendix BB)
Social mobilization:	US$4,429.00 per district

This budget requires a total of about US$520,000.00 for 117 districts. The budget needs to be adjusted and the activities need to be planned for a time frame of two to three years. An additional cost is for international transportation of specimens, estimated to cost $50-60 per specimen box. Since April 1996, all AFP specimens have been sent to Nairobi, Kenya, instead of Lusaka, Zambia, where a WHO regional virology laboratory exists for confirmation of polio cases. The reason for the switch to using the laboratory in Nairobi is that the flight to Nairobi is available every day while that to Lusaka is much less frequent. There is no significant difference in transport cost between the routes from Dar es Salaam to Nairobi or to Lusaka.

The National Surveillance Focal Point of the EPI Unit identified the areas which may have problems in the reverse cold chain in the future (the shaded areas in Appendix BB). It is recommended that during micro-planning or surveillance training, the areas in each district where it will be difficult for prompt case reporting be identified. After this exercise, a possible mechanism for the reverse cold chain should be planned for each area. An area-specific approach along the lines of "disaster preparedness" is necessary to ensure that the reverse cold chain system will be functional.

National Immunization Days

Overall Time Schedule

After the first and second rounds of NIDs in Tanzania were initially planned for June and July, they were shifted to August 10-11 for the first round and September 14-15 for the second round. At present, there is no plan of further postponement of NIDs in 1996. All arrangements are being made for the two rounds to take place in August and September. The decision to conduct NIDs throughout the entire country was made in April 1996. It resulted in a short lead time for NID preparation. In addition to the short lead time, a shortfall in funding for NIDs has lead to a delay in NID training. However, EPI National Coordinators are due to begin regional NID training after July 5, as the budget has been approved and funds made available.

MOH's Commitment

The consultant was very impressed by the intensive work and competence of EPI Unit officials. In general, NID preparation is being conducted according to a WHO's polio eradication guidelines. Despite the fact that there have been various constraints in NID preparation, the organizers at the national level have demonstrated a strong commitment and developed momentum for the NIDs.

Shortfall in Funding

In the second meeting for planning of National Immunization Days in Nairobi in April 1996, the total NID cost for Tanzania was initially estimated as US$4,807,007.00. Later, the total cost for NIDs in 1996 was re-estimated at US$5,820,192.00 (Appendix DD). However, there is a shortfall of about US$2.0 million. A significant part of the shortfall is for operational costs such as social mobilization and personnel. The budget, funds pledged, and shortfall are shown below, by item.

NID Budget and Funds Pledged for 1996			
Item	Funds Required	Amount Pledged	Funding Shortfall
Vaccine	$1,355,595	$1,394,498	Almost nil
Vaccine carriers	$ 78,219	all	Nil
Social mobilization/sensitization	$1,711,670	$ 253,357 (RI) 60,000 (UNICEF)	$1,398,313
Transport	$ 959,490	$ 220,000 (RI)	$ 739,490 (DANIDA will cover this.)
Planning/Training	$ 361,198	$ 471,677 (RI, USAID, WHO)	[$110,479] (Excess)
AFP surveillance	$ 87,000	$ 87,000 (USAID)	Nil
Supervision/coordination	$ 171,154	Nil	$ 171,154
Personnel	$1,896,111	$ 748,898 (RI) 50,000 (UNICEF)	$ 287,213
Administration/ miscellaneous	$ 9,755	Nil	$ 9,755
Total	$5,820,192	$3,363,649	$2,495,446

Source: The budget estimates were obtained from WHO, Tanzania (Appendix-30). The shortfall was calculated by the consultant.

In addition to the above budget, USAID has provided US$13,000.00 and US$104,400.00 for NID evaluation and cold chain, respectively.

The shortfalls for transport, social mobilization/sensitization, and personnel (allowance for health workers) are considered to be critical. The shortfall for transport (US$739,490.00) will be fully covered by DANIDA through its direct transport arrangement up to district vaccine stores. According to WHO, the cost for social mobilization and sensitization have been partially covered by other donors which will directly provide the physical or financial support at district level without channeling through the central level. The districts to be supported are those in which certain donors operate projects. This arrangement is expected to cover some shortfalls in the area of social mobilization/sensitization. Donor support for districts is summarized below.

Full Support (vehicle allocation with fuel supply; payment of salaries and allowances)

Donor	**Number of districts to be supported**
CIDA	4
Norwegian Embassy	5?
Dutch Embassy	14
Irish aid	2
TANNESSA	2
SIMAVI	3
UNDP	5?
Total	35 (about 35% of all districts)

Partial Support

Donor	**Number of districts to be supported**
UNICEF	25
Total	25 (about 25 percent of all districts)

While they will permit use of their project vehicles for NIDs in 25 districts, UNICEF will not provide fuel for transport.

As of July 5, it was difficult to precisely assess the exact shortfall for social mobilization and sensitization because the funding status is changing so rapidly. Also, the quantification of other donors' input at district level is difficult. The shortfall in social mobilization/sensitization is

considered to be the main bottleneck in implementing NIDs in Tanzania in 1996. WHO has said that the allowance for various community NID committee members will be reduced from 3,000 Tanzanian Shillings to a much lower rate. This may drastically reduce the cash requirement for NID.

The budget shortfall for personnel is another big obstacle. WHO said that through a re-assessment of the actual required number of immunization sessions for NIDs, the number of sessions might be reduced from the 17,000 currently planned. Also, the daily allowance for field teams may be reduced from 3,000 Tanzanian Shillings, which may also reduce the shortfall. As funds for social mobilization/sensitization and personnel will be required for NIDs each year through 1998 or 1998, special attention needs to be paid to secure sufficient funds for NIDs in subsequent years.

Vaccine

The total required number of doses of OPV for two rounds of NIDs in Tanzania in 1996 was estimated at 15,387,362 doses. Funds for OPV procurement, in the amount of $1394,498.00, were provided by CDC. AFRO requested that UNICEF procure OPV through UNIPAC using CDC funds. On July 3, UNICEF informed the consultant that the amount of OPV to be provided will be 30 percent short, relative to the quantity initially requested. This was due to the 30 percent air freight cost (US$321,804.00) for procurement through UNIPAC, which was deducted from the original CDC funds. However, on July 4 WHO stated that this OPV shortage problem was due to a UNICEF's calculation error which was eventually solved. However, on July 5, the EPI Program Manager stated that funds for the shortage of OPV (119,228 vials) are still being sought, and AFRO is being contacted.

The consultant confirmed that seven million doses have already arrived at the national vaccine store. Six million doses are arriving or have already arrived (UNICEF said the target arrival date of OPV was June 24) and said that six million should have arrived by July 5. However, there was no record of six million doses arriving at the EPI national store as of July 2. The consultant could not check this the next day because the store officer was on leave on July 3. It might be in the pipeline between the airport and the national EPI store. Some 119,228 vials of OPV in short supply are expected to be procured soon according to the statement of WHO and the EPI Unit. The first batch of seven million doses will be sufficient for the first round of NIDs in August. The rest will have to be made available before the second round of NIDs in September.

Also, as stated in the section for routine EPI activities, the vaccine supply for NIDs in subsequent years is a critical consideration.

Field Operation Strategy(service delivery)

Tanzania's NIDs will be operated using three types of service delivery strategies: 1) fixed/outreach services; 2) house-house visits; and, 3) mobile teams. A district-level NID plan

was made by each district team. All data have been compiled at the central level. All field implementation plans have been made according to WHO's NID field guidelines. The consultant observed that the data have been well collected and compiled. A field team will organize each immunization session for two days per round of NID.

Each team consists of the following members:

(1) Fixed/outreach sessions and house-to-house sessions: three members

- One health worker for OPV administration; and,
- Two supporters for recording and organizing the queue of clients.

(2) Mobile team: two members:

- One health worker for OPV administration; and,
- One supporter for recording.

The total number of teams nationwide will be 17,000. This implies that there will be on an average about five non-fixed immunization sessions (teams) per health facility.

The teams are expected to use new vaccine carriers (South African made; see below), each of which uses approximately 8kgs of ice (0.3kg/piece x 2 pieces). At 5 teams x 0.3 kg/icepack x 2 pieces, each health facility will need to make three kilograms of ice per day of NID, or six kilograms of ice for the two consecutive days of the NID (Appendix GG). The existing RCW42 will not be able to store so much ice or freeze enough ice packs even if they start to freeze ice far in advance of the actual NID. Note that vaccines for routine services and NIDs also have to be stored in the same refrigerator. The RCW42 will freeze about 2 kgs of ice in 24 hours. Where existing Filipino type vaccine carriers (only about 5000 units) are used in the NIDs, the icepack requirement may be on average 8 kgs per health facility per day, unless fewer icepacks are used for the Filipino vaccine carrier. If that is done, then the cold life of the Filipino type vaccine carrier will be much shorter that its original cold life. This may be an acceptable compromise if the vaccine remains at the peripheral level for a very short period of time before being used.

Cold Chain

A total of 12,437 units of the South African-made vaccine carriers have arrived at port. They are to be distributed along with vaccines and other supplies to districts by the trucks of Medical Store Department with DANIDA's support. The ice requirements were found to be much less than formerly thought. As mentioned above, this vaccine carries requires only two icepacks (0.3 liters each x 2 icepacks = a total of 0.6 liters of ice; see Appendices GG and HH). However, we could not see the actual sample before July 5. WHO said that it comes with plastic bags to contain water to be frozen in lieu of icepacks. As this type of carrier is a brand new product, developed especially for NIDs, information on its actual cold life is not yet available, even in an additional

WHO Product Information Sheet. The EPI national cold chain officer stated that it would be only about 18 hours. This is much shorter than the other, more durable vaccine carriers.

As mentioned above, a major cold chain problem regarding NIDs is the lack of ice making capacity at peripheral health facilities (hospital, health centers, and dispensaries) which are equipped with RCW42 (E/K or E/G) or RAK36 series (E/K) of small refrigerators, which have limited ice-making and ice storage capacity. The shortage of icepacks or ice at peripheral levels could conceivably lead to a problem in OPV vaccine efficacy (see Appendix II). The MOH is instructing each health facility to identify available freezers/refrigerators (like domestic refrigerators or fishery cold stores) to freeze ice. This supposes that icemaking capacity actually exists in rural areas; however, it has not been assessed in the field whether such capacity does indeed exist. On an average, each health facility should be able to produce and store 0.6 x 5 x 2 days = 6 kgs of ice (for South African made vaccine carrier), or 1.6 x 5 x 2 days = 16 kgs (for Filipino type vaccine carrier), as stated above. The exact ice requirement, as well as freezing and storage capacity, should be assessed for each health facility during the NID evaluation.

The ice making problem could be common among African countries which are to implement NIDs in 1996. It is highly recommended to conduct detailed and rapid micro-planning on this issue prior to conducting NIDs. These local data could also be used subsequently as the basis for allocating cold chain equipment and supplies. Such planning will also be useful in helping to assure the quality of vaccines and by extension, vaccine efficacy. However, it seems that it will be difficult to conduct this type of detailed micro-planning throughout Tanzania before the first NID, due to the short lead time.

A general distribution plan for major equipment and other supplies was prepared (see Appendix JJ) based on a detailed cold chain inventory (see Appendix KK), which still needs to be updated, and a list of energy source at health facilities by district (see Appendix LL). More detailed information on energy source at each health facility and its specific location is required, and could be collected and assessed if district micro-planning exercises were to be conducted in each district.

Transportation

For NIDs, vaccines will be transported directly from the central vaccine store to district vaccine stores. The dispatching time is getting closer. For vaccine transportation from district vaccine stores to health facilities, cold boxes and ice will be used. This might add another burden of ice making to district cold stores. Currently, each district vaccine store has only one or two units of SIBIR or RAK3025 refrigerators, which also limited ice making and ice storage capacity. The refrigerators at about 50 percent of district vaccine stores are fueled with kerosene. No information was available on the icepack requirements for the vaccine distribution from district vaccine stores to health facilities.

Vaccine Vial Monitor

VVM testing was planned in Tanzania prior to scheduling of the 1996 NIDs. VVMs will be attached to each vial of OPV supplied for the NIDs. A VVM checklist for vaccine wastage has been also developed as a part of the NID tally sheet. Also, the field guidelines for NID vaccination teams contain instructions on VVMs. However, the consultant found some discrepancies and confusion in understanding the meaning of terms in the form among national NID coordinators/trainers. The consultant suggested that the EPI Unit collects the information shown below during the first round of NIDs:

(1) What type of vaccine carrier was used;
(2) What type of ice was used (ice pack or ice in plastic bag); and,
(3) How much ice was made available.

The above three points need be analyzed along with VVM results. The outcome of this analysis should be used to assess what level of peripheral cold chain system enhancement is required in conjunction with cold chain needs for NIDs. If the color of VVMs at the point of vaccine administration indicates that little heat exposure has occurred, even in the absence of an intensive cold chain at the peripheral level, then it would suggest that there might be less need to procure a huge amount of peripheral cold chain equipment just for NIDs. As such, the evaluation of VVMs is one of the most critical issues in NIDs, in view of the huge implications for subsequent NIDs in terms of cold chain/supply, cost-effectiveness, and the quality of OPV to be administered.

Surveillance

As a part of NIDs, and in order to stimulate awareness and case reporting of polio, it is planned that a brief presentation will be made to clients during each immunization session, depicting what a case of paralytic polio looks like. This is intended to help achieve reporting levels from which a crude rate of AFP incidence in the community can be derived. It is also considered to be the first step in community surveillance sensitization. All field teams will be trained to make this type of presentation. The AFP picture sample is also included in the NID guidelines for field teams.

Social Mobilization and Sensitization

Following the AFRO meeting for the Eastern Block on April 9-10, 1996, planning was undertaken for Tanzania's first NIDs. Subsequently, a national training session was conducted for the EPI Unit staff members. An international WHO consultant was appointed by AFRO for Tanzania's NIDs (to work through the end of October, 1996) for an overall support for NIDs. At the end of April, all key officials of all MOH divisions were briefed on NIDs in two sessions. Three types of national NID committees were established: a technical committee, a coordination committee, and a social mobilization committee.

The technical and social mobilization committees have conducted briefing sessions for MOH officers in seven zones and 20 regions (seven zonal participants, including zonal hospital directors or superintendents; 40 regional participants, including regional medical and health officers). Following the briefing, each district was visited by a regional team with support of seven national coordinators. The regional teams briefed District Medical Officers on NIDs and guided them in district planning for NIDs. All districts were requested to send their district plans to the Chief Medical Officer at Dar es Salaam by the end of May.

On May 29 an official inter-agency briefing was conducted by the MOH for all relevant international donor agencies. By May 30 most of districts had sent their district NID plans, based on the use of standardized forms. On May 30, a PHC steering committee was established for intra-government sensitization. This committee consists of the Prime Minister's Office, and the Ministries of Local Government, Health, Communication, Transport, and Education.

Subsequent to this, on May 31, a leaders' meeting was conducted for local NGOs and religious groups to request their support for NIDs. All religious groups were found to be very positive of NIDs. From the end of May to June 27, there was intensive media involvement, including four major newspaper companies, three radio broadcasting corporations, and three television stations. On June 27, a media meeting was conducted for NIDs. Two days later, the Chief Medical Officer and the Director of Preventive Services of the MOH presented the NID plan to the Parliament prior to its budget session and requested their full support for the NIDs. Regional and district social mobilization activities are to be conducted in July immediately after NID technical training sessions in all regions and districts are completed.

IEC materials production have been planned as shown below:

Poster:	20,000 sheets
Flyer:	60,000 pieces
T-shirt:	55,000 units

Other manuals and forms are being produced as well.

According to the officer in charge of social mobilization in the EPI Unit, the following is still needed for the NID:

(1) Cape for children with NID messages;
(2) Billboards with NID messages;
(3) Banners with NID messages; and,
(4) Kanga (Tanzanian ladies' clothes) with NID message.

It is highly recommended for relevant donors to support a regional meeting of the governments on the evaluation of NIDs in managerial issues and the NID process at each stage. This will help to

improve the performance and quality of NIDs through a systematic and standardized method and frequent information sharing among African countries.

TECHNICAL SUPPORT PROVIDED FOR THE MISSION OF THE GOVERNMENT OF JAPAN AND JICA AND FOLLOW-UP ACTIONS REQUIRED

The Support of the GOJ/JICA for EPI/NIDs in Tanzania

Based on the information provided by the GOJ/JICA, on July 1, the MOH presented the GOJ/JICA mission with the first version of the list of required cold chain equipment and OPV. Before the presentation, the consultant first examined the feasibility of the first version, the draft of which had been provided on June 25, within the framework of the overall EPI system in Tanzania.

The GOT/MOH staff were obliged to create this list with less than one week's notice and while they were extremely busy with NID preparations. Therefore, they did not have sufficient time to assess in detail, review their database, or conduct local assessments or micro-planning exercises. The request did, however, basically reflect the actual need. However, there was no prioritization of items, or identification of sites and specific quantities needed. The NID service delivery strategy should certainly be a critical element in the selection of some of the equipment requested. The appropriate strategies to use in 1997 (and beyond) should be chosen based on an evaluation of the experience with the 1996 NIDs. At least four to five months would be required to conduct the detailed micro-planning that would provide optimal information.

In a preparatory meeting on June 30 (Sunday) before their official meeting with the GOT/MOH scheduled for July 1, the GOJ/JICA Mission agreed to the consultant's suggestion that more efficient resource allocation and a more detailed assessment of actual OPV requirements could be obtained through evaluation immediately following a first round of NIDs in August 1996. This proposal was made on the condition that the GOT submit its final list by the end of October 1996.

Following the meeting between representatives from the GOT, GOJ and USAID, the second version of the list was made available to the consultant on July 4 (see Appendix MM). The list contains the following:

OPV vaccines for NID in 1997 and 1998:

790,921 vials (20 doses) for 1997; value of US$1,455,013.00
813,067 vials (20 doses) for 1998; value of US$1,485,473.00

The consultant recommended that the MOH evaluates actual NID wastage rates during the planned NID evaluation and calculate OPV requirements based on that information. The GOJ and GOT agreed on this point.

Cold Chain Equipment:

For 1997 (prices below do not include shipping costs)

(1) Norwegian solar refrigerators(NAPS)
Quantity: 100 units
Unit cost: US$5,500.00
Total cost: US$561,200.00

The following issues need to be considered:

a) Another type of solar refrigerators at lower price needs to be considered, e.g., the Sun FROST(PIS E3/54, Appendix NN; PIS E3/65 Appendix OO);
b) Maintenance and repair feasibility needs to be assessed; and,
c) Actual catchment population to be covered by each solar refrigerator should be assessed in terms of cost-effectiveness.

(2) Kerosene-run icepack freezers for peripheral ice making
Electrolux model FCW 20 EK-PIS E3/73 (Appendix PP)
Quantity: 1,000 units*
Unit cost: US$776.78
Total cost: US$776,780.00

A total of 2000 units have been requested. This request was divided over two years (1997 and 1998) in order to accommodate the annual funding limits of key donors. Other important factors to consider are:

a) No field testing of this freezer has been done in Tanzania.
b) PIS (E3/73; Appendix KK) says that it can freeze 8.4 kgs of ice in 96 hours. (It may take a long time. Although freezing can start many days before the NID to address the icepack freezing problem, the storage capacity for frozen goods is not specified for this freezer.)
c) Training for handling and maintenance before and during NIDs is required at 1,000 sites.
d) These items are only useful for NID operation (4 days per year). For the routine EPI activities, it is not necessary or cost-effective. With use of another service delivery strategy, there may be much less requirement for ice-making at the health facility level.

An alternative strategy would be to use multiple cold boxes: one with vaccine and frozen icepacks, and the other one used only to store icepacks. The number of cold boxes needed would vary depending on the size of the catchment population. Those cold boxes would be transported to health facilities by vehicles one to two days prior to the NIDs, and then vaccines and icepacks will be repacked in vaccine carriers. Furthermore, a subsequent supply of icepacks or ice in one

more cold box during the NID would make a safety net for the replenishment of icepacks for the second day and the retrieval of unopened OPV to health facilities.

The consultant tested this system in Nigeria and it worked well even in the routine EPI program. The RCW25 cold box, for example, can keep ice frozen for one and a half day to two days in a hot season if it is filled with only fully frozen icepacks. The RCW25 is expensive and heavy. However, if other smaller low cost cold boxes could be tested for this operation and were workable, it could be more cost-effective than ordering icepack freezers for every peripheral health facility.

If this system is feasible, the consultant strongly recommends providing more ice making and storage capacity at district vaccine stores. These cold boxes are also useful for the routine EPI activities for emergency vaccine storage and transport. Also, it is technically much easier and more cost-effective to maintain these cold chain equipment at district vaccine stores.

It should be noted that in order to apply the cold box system for NID, the transportation of cold boxes in each district will have to be ensured. Even if the cold box system is applied, there will still be inaccessible areas which the cold box system would not be able to cover. In this case, the ice making device (kerosene-run, Electrolux FCW 20EK: see Appendix PP) might have to be considered.

The following items are notes for action:

a) It is recommended that about four units of the FCW 20EK icepack freezer be tested in Tanzania--if possible, even during the NID. The consultant approached UNICEF/Tanzania about this, but was told that there was no possibility for UNICEF to support this.

b) Alternative service delivery strategies which are more feasible and cost-effective should be considered; and ,

c) An assessment should be made on local conditions during the NIDs in terms of the remoteness of immunization sites, icepack availability for teams, and the results of using VVMs.

(3) Petrol- type stand-by generators for electricity-run district vaccine store (2 kva)

Quantity:	65 units
Unit cost:	US$1,500.00
Total cost:	US$97,500.00

Assessment: Justifiable and feasible.

(4) Chest freezer (CFC free) Vestfrost Model SB 302 PIS E3/27 for ice making and storage at electricity-run district vaccine store.

Quantity: 65 units
Unit cost: US$410.00
Total cost: US$26,650.00

Assessment: Justifiable and feasible.

(5) Refrigerators for health facilities

RCW 42 E/K
For replacement of old RAK 36 series refrigerators.

Quantity: 100 units
Unit cost: US$1,145.00
Total cost: US$114,500.00

Assessment: Justifiable and feasible.

The quantity required and the location specification should be assessed through updating the cold chain inventory and NID evaluation.

(6) Plastics bags for ice (for replacement for South African made vaccine carriers)

Quantity: 500 kgs
Total cost: US$2,000.00

Assessment: Justifiable and feasible.

(7) Vaccine carrier (South African)

These would replenish any lost or damaged. South African vaccine carriers are not very durable. Also, some of them may be lost or damaged.

Quantity: 5,000 units
Unit cost: US$6.10
Total cost: US$30,500.00

Assessment: Justifiable and feasible.

(8) Tiny TTM temperature logger (for temperature monitoring; see Appendix QQ)
The East Asiatic Company Ltd., Denmark

Quantity: 260 units
Unit cost: US$126.00
Total cost: US$22,100.00

This is a small device for recording the temperature fluctuation in cold chain equipment. The record printouts can be made with use of computer software (TTM Software). These are reusable.

Assessment: Justifiable and feasible.

For 1998

(1) Kerosene-run icepack freezers for peripheral ice making. Electrolux model FCW 20 EK-PIS E3/73

Quantity: 1,000 units
Unit cost: US$776.78
Total cost: US$776,780.00

(2) Plastics bags for ice (for replacement for South African made vaccine carriers).

Quantity: 600 kgs
Total cost: US$2,160.00

(3) Vaccine carrier (South African)

Quantity: 1,000 units
Unit cost: US$6.10
Total cost: US$30,500.00

Assessment: The consultant questions why only 1000 are requested. The reason is unclear.

The total costs for OPV and cold chain equipment are:

Total cost for 1997: US$3,086,903.00
Total cost for 1998: US$2,615,193.00

In addition to the above, the GOT added to the list OPV vaccine in 10-dose vials for use in routine EPI services.

For 1997

632,737 vials
Total cost: US$774,470.00

For 1998

650,454 vials
Total cost: US$796,156.00

General Comments

The consultant supports the following:

(1) Stand-by generators at district stores;

(2) Chest freezer at district stores;

(3) Plastic bags;

(4) Vaccine carriers; and,

(5) Tiny TTM.

However, the requirement and feasibility of procuring solar refrigerators and kerosene icepack freezers need to be carefully assessed with the use of local information and consideration of various field strategies even if the time is very short before the deadline (end of October) for GOT's submission of the final list to the GOJ.

The consultant also recommends shifting some NID funds for regular polio vaccines, as 50 percent of the OPV requirement has to be met by another source with conditions that a special arrangement could be made for 1998. It should be noted that the proposed funds for 1997 cannot be used for OPV required after January 1997 due to time constraints. As mentioned earlier, separate JICA funds cover only 50 percent of routine OPV requirements up to 1999. Also, international freight costs need to be included. A more specific prioritazation of items to be supplied is needed from the GOT/MOH.

As per GOJ/JICA policy, the domestic transportation of vaccines and cold chain equipment will not be covered by GOJ/JICA. The problem regarding domestic transportation costs and arrangement need to be solved between GOT and GOJ in advance. This issue is critical but still pending.

As the repair and maintenance of the equipment to be provided by GOJ/JICA will be a problem in the long run, spare parts should be included in the list of requested equipment. Although DANIDA committed to EPI cold chain and transport and will provide sufficient funds for next three to five years or so, the maintenance and repair of Japanese-provided cold chain equipment is unlikely to be covered by DANIDA. It will be necessary to coordinate this supply with DANIDA's plan for EPI.

The consultant's main concern is the lead time for GOJ/JICA procurement for NIDs in 1997. Vaccines and other supplies, including cold chain equipment, should reach Dar es Salaam two months in advance or even before the first round of NIDs, considering three factors:

(1) Some areas in Tanzania are very remote. It can take one month or more to make all the local transport arrangements all the way to the health facilities for which the GOT intends to provide the vaccines and cold chain equipment from the GOJ/JICA. Some equipment will have to be delivered to many remote health facilities, as indicated in the list of the GOT.

(2) The installation of some devices (e.g., solar refrigerator, if they are to be procured) and necessary training of related manpower are time-consuming.

(3) Due to on-going health sector reform and subsequent shifting of vehicle entitlement (ownership) to non-EPI Units (e.g., districts themselves, PHC Secretariat, Medical Stores Department, and, Central Transport Unit), a transport arrangement for the supply and distribution for NIDs may take much longer.

The consultant understood that the GOJ/JICA's proposed funds for NIDs in Tanzania are part of the budget for the current Japanese fiscal year beginning in April 1996. Therefore, a general funding approval must have been already made at the Japanese Ministry of Foreign Affairs. However, some critical steps still remain:

(1) The GOJ has to receive the final supply list by the end of October 1996. As Japanese international aid follows a single-year financial cycle, the budget for each fiscal year has to be used up by the end of the fiscal year (end of March).

(2) Even if the official request is made by the GOT in time (end of October 1996), the GOT request will have to be once again cleared and approved in February by the GOJ.

(3) After the approval, it may take one to two months for administrative procedures at MOFA/JICA before an order is placed. The order could be placed by end-March 1997.

(4) The procurement of cold chain equipment may take six to nine months by sea freight, costing about 15 percent of consignment gross cash values. If it takes only six months, then the consignment will reach Dar es Salaam at the end of September 1997. If it takes

nine months, then the arrival time will be late December 1997. However, including one to two months of domestic distribution time, the consignment should reach Dar es Salaam by the end of June, if NIDs could be scheduled for August and September in 1997. The consultant feels that the procurement of the cold chain equipment may not reach Dar es Salaam to meet the deadline for NID supplies.

The vaccines to be air freighted could reach Tanzania in a short period, perhaps three to four months. All lead time issues should be cross-checked with UNICEF/Tanzania. Therefore, the vaccines could reach Tanzania at the end of June or July 1997, which gives a very short amount of time for the domestic distribution of vaccines.

The follow-up actions mentioned below are recommended:

(1) The lead time for the international procurement, specific to Tanzania, needs to be checked.

(2) The GOT will need to ensure that the final equipment/supply list reaches the GOJ by the end of October 1996.

(3) The GOJ will be able to place an order through the GOT and UNICEF/Tanzania immediately after February 1997, after the final approval of MOFA.

(4) A special request needs to be made to meet the deadline of OPV supply by air freight by the end of May or June 1997 with special efforts of UNICEF/Tokyo and UNIPAC/Copenhagen, and close interaction and coordination between the GOT, JICA/Tanzania, the GOJ/JICA/Tokyo, and UNICEF. Someone in JICA/GOT who will follow up this issue should be identified. On an emergency basis, UNIPAC may be able to arrange a special sea freight of the cold chain equipment to meet the deadline as well.

An alternative is chartering a plane for cold chain equipment, based on a careful cost calculation. Chartering a plane can sometimes be made at a much lower rate than using an ordinary air cargo, as much as 30 percent of the consignment gross cash values. Chartering a plane could be cheaper (approximately 20 percent) if all the arrangements could be properly made. However, the eventual cost of this approach is not predictable. UNIPAC will be able to provide the information on this.

If no special procurement arrangement can be made on an urgent basis, it would be better to inform the GOT on the practical/realistic expected arrival time of supplies to be procured with the GOJ/JICA funds in 1997. It may be unavoidable that some of the supplies arrive after the 1997 NIDs. Although such equipment and supplies may still be utilized for 1998 NIDs, the quality of 1997 NIDs may not be as high as expected or desired at the peripheral levels. In the case of certain crucial items such as vaccine carriers, any delay will be critical. If South Africa-made vaccine carriers are to be used again in 1997, as they can be procured via a regional procurement channel, the lead time could be much

shorter than for the other items. Therefore, a shortage of vaccine carriers is unlikely to occur. Furthermore, the GOJ/JICA-supported supplies for 1998 NIDs will be subject to the same problems. That is, they could be used only in 1999.

(5) If the procurement and delivery of cold chain equipment and supplies is the predominant factor, then consideration may need to be given to delaying the 1997 NIDs somewhat, perhaps after August and September but still during a cool, low-transmission season. Such an arrangement could provide some time for the international procurement to meet the NID deadlines.

(6) For the first round of 1996 NIDs, in-country distribution of vaccines and cold chain equipment from the central level to health facilities and the installation and necessary training will be done in the course of the month preceding the NIDs. All the agreements and administrative arrangements for the internal transport and distribution need to be made by the GOT and relevant donors. This should be done at latest three to four months before the first day of NIDs in 1997.

If some of the above conditions cannot be met, the cold chain equipment to be provided could not be used for NIDs in 1997 as stated previously. Furthermore, even the OPV supply might be at risk of delay. In addition, in case OPV for the routine EPI services are to be procured with part of the funds originally allocated to NIDs, the problems regarding the procurement lead time still remain the same as for OPV to be used in NIDs.

On July 5 the consultant debriefed Dr. K. Msambichaka, EPI Manager, on various issues, including concerns over lead times for procurement. She said that the GOT had originally planned to conduct NIDs in July and August 1996, but later it was shifted to August and September. She stated that if the supplies for the 1997 NIDs need a longer lead time, it may be possible to conduct the NIDs in August and September in 1997 as had to be done in 1996, or even conduct them as late as possible during the cool season. However, the consultant assumes that it will be difficult to conduct the first round in October and the second round in November when the weather probably begins to get hotter in Tanzania. The above issues need to be urgently discussed among the GOT, the GOJ/JICA/Tokyo, JICA/Tanzania, UNICEF/Tanzania and UNICEF/Tokyo.

The important points are:

(1) How, specifically, the GOT will conduct the evaluation of the first round of NIDs, including obtaining the information required for deriving vaccine and cold chain needs for subsequent NIDs, based on service delivery strategies; and ,

(2) What types of supply and administrative arrangements could be made by all parties to meet the deadlines for preparations for the first round of NIDs in 1997.

APPENDICES

APPENDIX A

Ministry of Health, Dar Es Salaam, Tanzania

Population Data for 1996

Region/District	Population	Growth	CBR	IMR	Newborns	Survivors	Preg. Women	Women of Ch-bear Age
DODOMA								
KONDOA	411,705	0.024	0.046	0.115	18,938	16,760	16,468	82,341
MPWAPWA	401,347	0.024	0.046	0.115	18,462	16,339	16,439	82,196
DODOMA EAST	246,419	0.024	0.046	0.115	11,335	10,031	9,857	49,284
DODOMA MUNICIPAL	356,153	0.024	0.046	0.115	16,383	14,499	14,246	71,231
DODOMA WEST	427,329	0.024	0.046	0.115	19,657	17,396	17,093	85,466
KONGWA	200,293	0.024	0.046	0.115	9,213	8,154	8,012	40.059
Total Region	2,043,246				93,988	83,179	82,115	410,577
ARUSHA								
MONDULI	154,711	0.038	0.046	0.115	7,117	6,299	6,188	30,942
ARUMERU	432,078	0.038	0.046	0.115	19,876	17,590	17,283	86,416
ARUSHA MUNICIPAL	182,972	0.038	0.046	0.115	8,417	7,449	7,319	36,594
KITETO	171,637	0.038	0.046	0.115	7,895	6,987	6,865	34,327
HANANG	127,707	0.038	0.046	0.115	5,875	5,199	5,108	25,541
MBULU	361,345	0.038	0.046	0.115	16,622	14,710	14,454	72,269
NGORONGORO	92,682	0.038	0.046	0.115	4,263	3,773	3,707	18,536
BABATI	275,995	0.038	0.046	0.115	12,696	11,236	11,040	55,199
SIMANJIRO	76,130	0.038	0.046	0.115	3,502	3,099	3,045	15,226
Total Region	1,875,257				86,263	76,342	75,009	375,050
KILIMANJARO								
ROMBO	237,190	0.021	0.046	0.115	10,911	9,656	9,488	47,438
HAI	236,337	0.021	0.046	0.115	10,872	9,622	9,453	47,267
MOSHI EAST	200,812	0.021	0.046	0.115	9,237	8,175	8,032	40,162
MWANGA	116,033	0.021	0.046	0.115	5,338	4,724	4,641	23,207
SAME	200,812	0.021	0.046	0.115	9,237	8,175	8,032	40,162
MOSHI WEST	304,960	0.021	0.046	0.115	14,028	12,415	12,198	60,992
Total Region	1,296,144				59,623	52,767	51,844	259,228
TANGA								
LUSHOTO	421,875	0.021	0.046	0.115	19,406	17,174	16,875	84,375
KOROGWE	257,208	0.021	0.046	0.115	11,832	10,471	10,288	51,442
MUHEZA	273,249	0.021	0.046	0.115	12,569	11,124	10,930	54,650
TANGA URBAN	221,008	0.021	0.046	0.115	10,166	8,997	8,840	44,202
PANGANI	44,716	0.021	0.046	0.115	2,057	1,820	1,789	8,943
HANDENI	297,411	0.021	0.046	0.115	13,681	12,108	11,896	59,482
Total Region	1,515,467				69,711	61,694	60,618	303,094
MOROGORO								
KILOSA	426,383	0.026	0.046	0.115	19,614	17,358	17,055	85,277
MOROGORO RURAL	530,220	0.026	0.046	0.115	24,390	21,585	21,209	106,044
KILOMBERO	229,707	0.026	0.046	0.115	10,567	9,352	9,188	45,940
MOROGORO NORTH	144,603	0.026	0.046	0.115	6,652	5,887	5,784	28,921
MAHENGE	170,546	0.026	0.046	0.115	7,845	6,943	6,822	34,109
Total Region	1,501,459				69,068	61,125	60,058	300,291
PWANI								
BAGAMOYO	205,376	0.021	0.046	0.115	9,447	8,361	8,215	41,075
KISARAWE	231,109	0.021	0.046	0.115	10,631	9,408	9,244	46,222
RUFIJI	179,867	0.021	0.046	0.115	8,274	7,322	7,195	35,973
MAFIA	39,033	0.021	0.046	0.115	1,796	1,589	1,561	7,807
KIBAHA	98,034	0.021	0.046	0.115	4,510	3,991	3,921	19,607

Ministry of Health, Dar Es Salaam, Tanzania

Population Data for 1996

Region/District	Population	Growth	CBR	IMR	Newborns	Survivors	Preg. Women	Women of Ch-bear Age
Total Region	753,419				34,658	30,671	30,135	150,684
DAR-ES-SALAAM								
KINONDONI	904,178	0.048	0.046	0.115	41,592	36,809	36,167	180,836
ILALA	485,577	0.048	0.046	0.012	22,337	22,080	19,423	97,115
TEMEKE .	590,408	0.048	0.046	0.115	27,159	24,036	23,616	118,082
Total Region	1,980,163				91,088	82,925	79,206	396.033
LINDI								
KILWA	183,037	0.020	0.046	0.115	8,420	7,452	7,321	36,607
LINDI URBAN (EAST)	163,345	0.020	0.046	0.115	7,514	6,650	6,534	32,669
NACHINGWEA	141,594	0.020	0.046	0.115	6,513	5,764	5,664	28,318
LIWALE	62,641	0.020	0.046	0.115	2,881	2,550	2,506	12,528
LINDI RURAL(WEST)	242,070	0.020	0.046	0.115	11,135	9,854	9,683	48,414
Total Region	792,687				36,463	32,270	31,708	158,536
MTWARA								
MTWARA URBAN&RURAL	380,137	0.014	0.046	0.115	17,486	15,475	15,205	76,027
NEWALA	344,232	0.014	0.046	0.115	15,835	14,014	13,769	68,810
MASASI	374,889	0.014	0.046	0.115	17,245	15,262	14,996	74,978
Total Region	1,099,258				50,566	44,751	43,970	219,815
RUVUMA								
TUNDURU	205,801	0.034	0.046	0.115	9,467	8,378	8,232	41,160
SONGEA SOUTH	216,111	0.034	0.046	0.115	9,941	8,798	8,644	43,222
MBINGA	328,640	0.034	0.046	0.115	15,117	13,379	13,146	65,728
SONGEA NORTH	946,984	0.034	0.046	0.115	43,561	38,551	37,879	189,397
Total Region	1,697,536				78,086	69,106	67,901	339,507
IRINGA								
IRINGA NORTH	305,912	0.027	0.046	0.115	14,072	12,454	12,326	61,182
MUFINDI	283,776	0.027	0.046	0.115	13,054	11,553	11,351	56,755
NJOMBE	391,037	0.027	0.046	0.115	17,988	15,919	15,641	78,207
LUDEWA	123,370	0.027	0.046	0.115	5,675	5,022	4,935	24,674
IRINGA SOUTH	249,087	0.027	0.046	0.115	11,458	10,140	9,963	49,817
MAKETE	142,913	0.027	0.046	0.115	6,574	5,818	5,717	28,583
Total Region	1,496,095				68,821	60,906	59,933	299,218
MBEYA								
CHUNYA	200,293	0.031	0.046	0.115	9,213	8,154	8,012	40,059
MBEYA URBAN&RURAL	590,671	0.031	0.046	0.115	27,171	24,046	23,627	118,134
KYELA	165,106	0.031	0.046	0.115	7,595	6,722	6,604	33,021
RUNGWE	331,085	0.031	0.046	0.115	15,230	13,479	13,243	66,217
ILEJE	107,643	0.031	0.046	0.115	4,952	4,383	4,306	21,529
MBOZI	402,016	0.031	0.046	0.115	18,493	16,366	16,081	80,403
MBARALI	182,468	0.031	0.046	0.115	8,394	7,429	7,299	36,494
Total Region	1,979,282				91,048	80,579	79,172	395,857
SINGIDA								
IRAMBA WEST	190,364	0.025	0.046	0.115	8,757	7,750	7,615	38,073
SINGIDA URBAN&RURAL	446,032	0.025	0.046	0.115	20,517	18,158	17,841	89,206
MANYONI	165,063	0.025	0.046	0.115	7,593	6,720	6,603	33,013
IRAMBA EAST	16,329	0.025	0.046	0.115	751	665	653	3,266

Ministry of Health, Dar Es Salaam, Tanzania

Population Data for 1996

Region/District	Population	Growth	CBR	IMR	Newborns	Survivors	Preg. Women	Women of Ch-bear Age
Total Region	817,788				37,618	33,293	32,712	163,558
TABORA								
NZEGA	356,327	0.024	0.046	0.115	16,391	14,506	14,253	71,265
IGUNGA	244,810	0.024	0.046	0.115	11,261	9,966	9,792	48,962
TABORA SOUTH	269,280	0.024	0.046	0.115	12,387	10,962	10,771	53,856
URAMBO	225,932	0.024	0.460	0.115	103,929	91,977	9,037	45,186
TABORA NORTH	112,711	0.024	0.046	0.115	5,185	4,589	4,508	22,542
Total Region	1,209,060				149,153	132,000	48,361	241,811
RUKWA								
MPANDA	359,203	0.043	0.046	0.115	16,523	14,623	14,368	71,841
SUMBAWANGA EAST	201,099	0.043	0.046	0.115	9,251	8,187	8,044	40,220
SUMBAWANGA WEST	247,005	0.043	0.046	0.115	11,362	10,055	9,880	49,401
NKANSI	154,297	0.043	0.046	0.115	7,098	6,282	6,172	30,859
Total Region	961,604				44,234	39,147	38,464	192,321
KIGOMA								
KIBONDO	219,838	0.028	0.046	0.115	10,113	8,950	8,794	43,968
KASULU	399,758	0.028	0.046	0.115	18,389	16,274	15,990	79,952
KIGOMA URBAN&RURAL	446,553	0.028	0.046	0.115	20,541	18,179	17,862	89,311
Total Region	1,066,149				49,043	43,403	42,646	213,231
SHINYANGA								
BARIADI	475,982	0.029	0.046	0.115	21,895	19,377	19,039	95,196
MASWA	274,000	0.029	0.046	0.115	12,604	11,155	10,960	54,800
SHINYANGA WEST	344,767	0.029	0.046	0.115	15,859	14,035	13,791	68,953
KAHAMA WEST	402,100	0.029	0.046	0.115	18,497	16,370	13,795	68,973
SHINYANGA EAST	285,400	0.029	0.046	0.115	13,128	11,618	11,416	57,030
MEATU	198,466	0.029	0.046	0.115	9,129	8,079	7,939	39,693
KAHAMA EAST	318,244	0.029	0.046	0.115	14,639	12,956	12,730	63,649
Total Region	2,298,959				105,751	93,590	89,670	448,294
KAGERA								
KARAGWE	362,094	0.027	0.046	0.115	16,656	14,741	14,484	72,419
BUKOBA	483,840	0.027	0.046	0.115	22,257	19,697	19,354	96,768
MULEBA	339,643	0.027	0.046	0.115	15,624	13,827	13,586	67,929
BIHARAMULO	259,297	0.027	0.046	0.115	11,928	10,556	10,372	51,859
NGARA	196,348	0.027	0.046	0.115	9,032	7,993	7,854	39,270
Total Region	1,641,222				75,497	66,814	65,650	328,245
MWANZA								
UKEREWE	212,303	0.026	0.046	0.115	9,766	8,643	8,492	42,461
MAGU	381,790	0.026	0.046	0.115	17,562	15,542	15,272	76,358
MWANZA URBAN	273,848	0.026	0.046	0.115	12,597	11,148	10,954	54,770
NGUDU/KWIMBA	525,726	0.026	0.046	0.115	24,183	21,402	21,029	105,145
SENGEREMA	373,444	0.026	0.046	0.115	17,178	15,203	14,938	74,689
GEITA	254,898	0.026	0.046	0.115	11,725	10,377	10,196	50,980
MISSUNGWI	245,110	0.026	0.046	0.115	11,275	9,978	9,804	49,022
NYANGHALE (GEITA B)	286,366	0.026	0.046	0.115	13,173	11,658	11,455	57,273
Total Region	2,553,485				117,459	103,951	102,140	510,698
MARA								
TARIME EAST	206,237	0.029	0.046	0.115	9,487	8,396	8,249	41,247

Ministry of Health, Dar Es Salaam, Tanzania

Population Data for 1996

Region/District	Population	Growth	CBR	IMR	Newborns	Survivors	Preg. Women	Women of Ch-bear Age
SERENGETI	130,691	0.029	0.046	0.115	6,012	5,321	5,228	26,138
MUSOMA SOUTH	215,089	0.029	0.046	0.115	9,894	8,756	8,604	43,018
MUSOMA EAST	215,091	0.029	0.046	0.115	9,894	8,756	8,604	43,018
BUNDA	231,735	0.029	0.046	0.115	10,660	9,434	9,262	46,347
TARIME/WEST	219,755	0.029	0.046	0.115	10,109	8,946	8,790	43,951
Tanzania	29,796,878				1,464,194	1,298,122	1,190,050	5,949,767

.. data not available

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APPENDIX B

Ministry of Health, Dar Es Salaam, Tanzania
EPI-PERFORMANCE REPORT : Number of Doses - TANZANIA

YEAR: 1995

Region No. And Name	BCG		DPT 1		DPT 2		DPT 3		POLIO 0	POLIO 1		POLIO 2		POLIO 3		MEASLES		TETANUS TOXOID				
	(1 YEAR	1+ YEARS	(1 YEAR	1+ YEARS	(1 YEAR	1+ YEARS	(1 YEAR	1+ YEARS		(1 YEAR	1+ YEARS	(1 YEAR	1+ YEARS	(1 YEAR	1+ YEARS	(1 YEAR	1+ YEARS	1	2	3	4	5
001 DODOMA	51091	386	55707	132	53709	86	50526	134	26949	55775	110	52951	70	50446	138	45630	781	54003	41760	26125	17577	9453
002 ARUSHA	64403	2200	65416	1215	66006	1117	60912	1145	30918	65467	1168	65703	1089	60728	1089	56805	3213	49952	40669	21578	10872	4266
003 KILIMANJARO	44928	55	45223	32	44721	17	42840	34	38748	45180	17	44873	9	42587	49	41712	162	33187	28575	16752	7952	3938
004 TANGA	58866	3306	59052	1734	55477	1692	53147	1836	24573	57292	1732	55459	1775	51423	1977	53579	6949	66470	56520	31290	13052	5318
005 MOROGORO	53738	1081	49529	979	48238	675	45511	770	30027	51782	625	49251	645	45377	856	44869	2621	51583	37137	23043	10210	5093
006 PWANI	22936	589	23555	111	22499	159	20679	230	16657	22471	125	21937	171	20255	332	18694	1669	21620	18613	13705	3629	1626
007 DAR-ES-SALAAM	52303	227	53965	46	61508	48	57954	46	50327	60736	51	61495	42	58559	125	58068	765	65761	53112	31477	15489	12153
008 LINDI	29949	308	28315	319	28282	386	26076	546	17459	28586	339	27937	378	25645	501	24850	2295	27527	23485	15620	10146	6061
009 MTWARA	33322	416	33723	95	33207	115	31532	255	25535	33469	76	32283	89	32239	251	32979	1170	47021	35703	24003	11188	3939
010 RUVUMA	28711	272	32981	154	32028	192	30878	261	25184	32800	108	32015	153	30937	165	30214	781	36375	31279	19747	9331	3981
011 IRINGA	55026	103	53492	24	54608	36	52525	59	33397	52777	22	53917	20	52135	41	49182	429	39837	35019	20520	14615	10865
012 MBEYA	63751	785	61870	493	61227	474	58469	685	31798	62208	422	59905	435	55390	760	53935	3153	61002	49138	41060	13500	7505
013 SINGIDA	39583	816	38588	304	35576	272	32441	320	12708	37860	275	35512	232	32226	378	28346	1368	36311	27433	14272	6960	2966
014 TABORA	41859	710	43498	858	41381	976	39179	1358	25373	43200	815	40769	875	37491	1359	37288	3622	52380	39844	22451	10102	5047
015 RUKWA	39497	586	38861	710	38026	607	34912	676	11808	39289	547	38164	573	34594	741	35410	4787	47342	38923	24042	8856	5610
016 KIGOMA	39296	704	42238	481	40402	501	37276	734	22525	42261	588	38324	650	35140	912	35965	1628	32595	27574	26760	16854	3860
017 SHINYANGA	86630	10719	88067	12300	80078	10001	70438	10363	29652	87079	11677	79633	9842	70175	10690	65682	26965	148559	97577	49112	15794	5894
018 KAGERA	61569	900	63346	584	63045	801	59086	1094	21324	63105	574	62588	806	57767	1123	53205	3330	67610	48019	23564	12141	4666
019 MWANZA	99182	6932	83107	6193	85105	6835	78245	8126	38984	91071	6436	86244	7160	78957	8915	73165	17486	108494	78390	38583	15096	6232
020 MARA	46128	1056	44693	1105	43574	1125	45937	1411	17677	45148	981	43814	1015	41053	1314	39145	5420	53873	41754	23990	12450	5071
TOTAL	1012774	32151	1017926	27879	988737	26115	938564	30143	531623	1017556	26688	982774	26029	913124	31637	878723	88601	1101503	856524	517734	235874	113604

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APPENDIX C

EPI-PERFORMANCE REPORT : % Coverage - TANZANIA

Ministry of Health, Dar Es Salaam, Tanzania
YEAR: 1995

Region No. And Name	BCG (1 YEAR	BCG 1+ YEARS	DPT 1 (1 YEAR	DPT 1 1+ YEARS	DPT 2 (1 YEAR	DPT 2 1+ YEARS	DPT 3 (1 YEAR	DPT 3 1+ YEARS	POLIO 0	POLIO 1 (1 YEAR	POLIO 1 1+ YEARS	POLIO 2 (1 YEAR	POLIO 2 1+ YEARS	POLIO 3 (1 YEAR	POLIO 3 1+ YEARS	MEASLES (1 YEAR	MEASLES 1+ YEARS	TETANUS TOXOID 1	2	3	4	5
001 DODOMA	77.38	0.11	84.37	0.04	81.34	0.02	76.52	0.04	40.81	84.47	0.03	80.19	0.02	76.40	0.04	69.11	0.21	14.86	11.49	7.19	4.84	2.60
002 ARUSHA	87.58	0.61	88.95	0.34	89.75	0.31	82.82	0.32	42.04	89.02	0.32	89.34	0.30	82.57	0.30	77.24	0.89	14.10	11.43	6.12	3.07	1.20
003 KILIMANJARO	86.93	0.02	87.50	0.01	86.53	0.01	82.89	0.01	74.98	87.42	0.01	86.83	***.**	82.40	0.02	80.71	0.06	13.07	11.25	6.60	3.13	1.55
004 TANGA	97.42	1.11	97.73	0.58	91.81	0.57	87.96	0.64	40.67	94.82	0.58	91.73	0.60	85.10	0.67	88.67	2.34	22.39	19.04	10.54	4.40	1.79
005 MOROGORO	90.20	0.37	83.13	0.33	80.97	0.23	75.39	0.26	50.40	85.92	0.21	82.57	0.22	75.17	0.29	75.31	0.90	17.65	12.71	7.89	3.43	1.74
006 PWANI	76.35	0.40	78.74	0.08	74.89	0.11	68.83	0.16	55.45	74.80	0.08	73.02	0.12	67.42	0.22	62.23	1.13	14.65	12.61	9.29	2.46	1.10
007 DAR-ES-SALAAM	68.00	0.06	77.96	0.01	79.96	0.01	75.34	0.01	65.43	78.96	0.01	79.95	0.01	76.13	0.03	75.49	0.20	17.40	14.05	8.32	4.10	3.22
008 LINDI	88.22	0.18	85.17	0.19	83.30	0.23	76.81	0.33	51.43	84.20	0.20	82.29	0.23	75.54	0.30	73.20	1.38	9.33	7.96	5.30	3.44	2.06
009 MTWARA	75.87	0.13	76.78	0.04	75.60	0.05	71.79	0.12	58.14	76.20	0.04	73.50	0.04	73.40	0.12	75.09	0.54	21.79	17.94	11.12	5.18	1.83
010 RUVUMA	76.26	0.15	87.60	0.08	85.07	0.10	82.02	0.14	66.89	87.12	0.06	85.04	0.08	82.17	0.10	80.25	0.42	19.67	16.91	10.68	5.08	2.15
011 IRINGA	90.03	0.04	87.52	0.01	89.35	0.01	85.94	0.02	54.64	86.35	0.01	88.22	0.01	85.30	0.01	80.47	0.15	13.67	13.05	10.48	5.02	3.73
012 MBEYA	80.52	0.20	73.24	0.13	77.43	0.12	73.94	0.18	40.21	78.67	0.11	75.76	0.11	70.05	0.20	68.21	0.81	17.38	14.00	11.70	3.85	2.14
013 SINGIDA	103.30	0.43	100.70	0.16	92.84	0.14	84.66	0.17	33.16	98.80	0.15	92.68	0.12	84.10	0.20	73.98	0.73	19.29	14.57	7.58	3.70	1.58
014 TABORA	84.04	0.29	87.33	0.35	83.08	0.40	79.66	0.55	50.94	86.74	0.33	81.85	0.36	75.27	0.51	74.87	1.48	21.41	16.28	9.18	4.13	2.06
015 RUKWA	92.90	0.28	91.40	0.34	89.44	0.29	82.11	0.32	27.77	92.41	0.26	89.76	0.27	81.37	0.35	83.28	2.29	22.67	18.63	11.51	4.24	2.69
016 KIGOMA	93.07	0.34	100.04	0.23	95.69	0.24	88.29	0.35	53.35	100.09	0.28	90.77	0.31	83.23	0.44	85.18	0.78	15.71	13.29	12.90	8.13	1.86
017 SHINYANGA	94.90	2.39	96.47	2.74	87.72	2.23	77.16	2.31	32.48	95.39	2.60	87.24	2.19	76.87	2.38	71.95	6.01	39.30	25.81	12.99	4.13	1.56
018 KAGERA	94.64	0.28	97.37	0.19	96.91	0.25	90.82	0.34	32.78	97.00	0.18	96.20	0.25	88.79	0.35	81.78	1.04	21.15	15.02	7.37	3.80	1.46
019 MWANZA	97.89	1.39	87.95	1.24	84.00	1.37	77.23	1.63	38.48	89.89	1.29	85.12	1.44	77.93	1.79	72.21	3.51	21.80	15.75	7.75	3.03	1.26
020 MARA	82.16	0.38	79.61	0.40	77.79	0.41	81.82	0.51	31.49	80.42	0.36	78.04	0.37	73.12	0.48	69.72	1.97	19.53	15.14	8.70	4.51	1.84
NATIONAL COVERAGE PERCENTAGE.	87.26	0.56	87.71	0.49	85.20	0.46	80.01	0.53	45.81	87.68	0.47	84.68	0.45	78.68	0.55	75.71	1.55	19.17	14.91	9.01	4.11	1.99

TOTAL POPULATION SURVIVORS:= 1160536

TOTAL WOMEN CH_BEARING AGE:= 5744898

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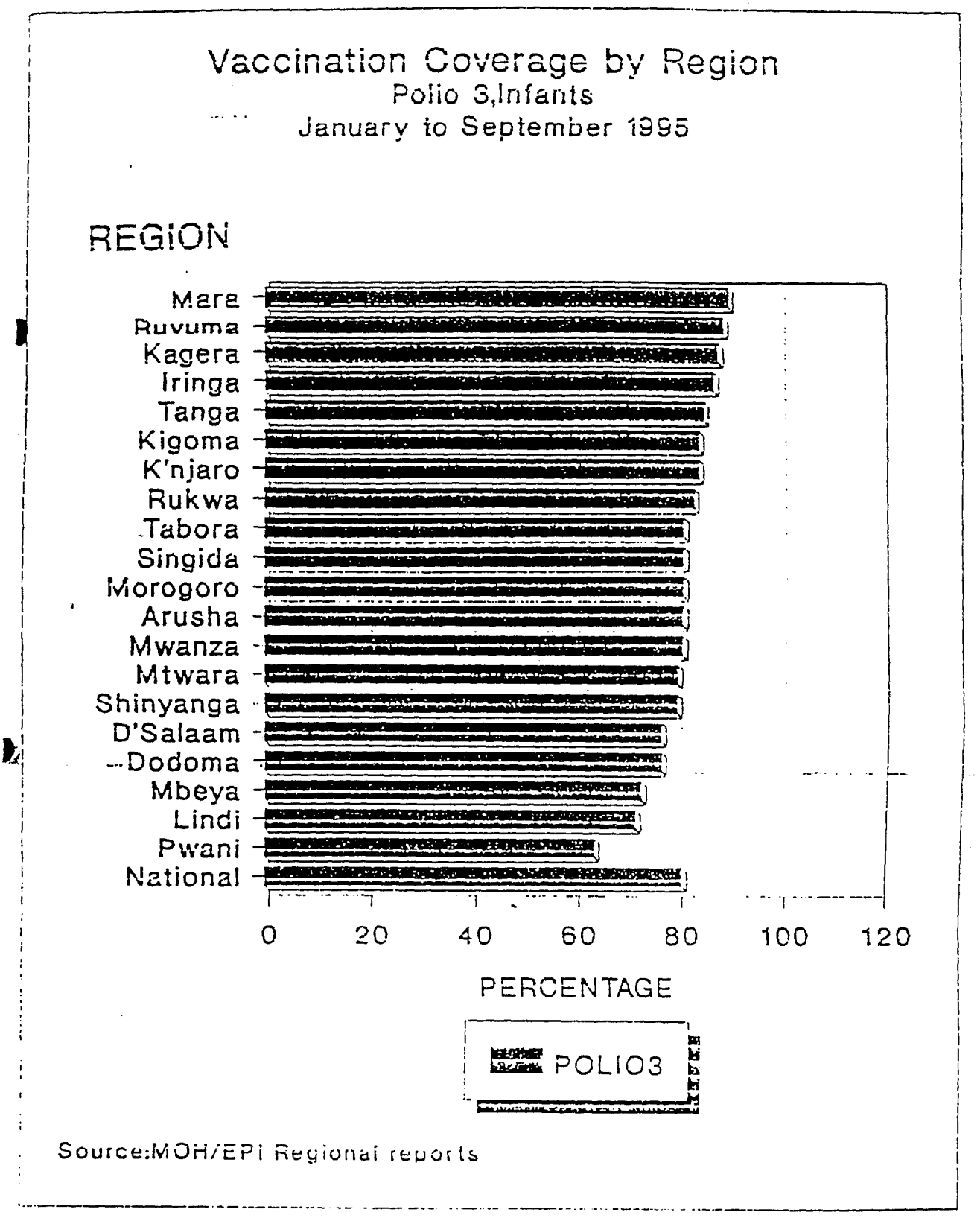

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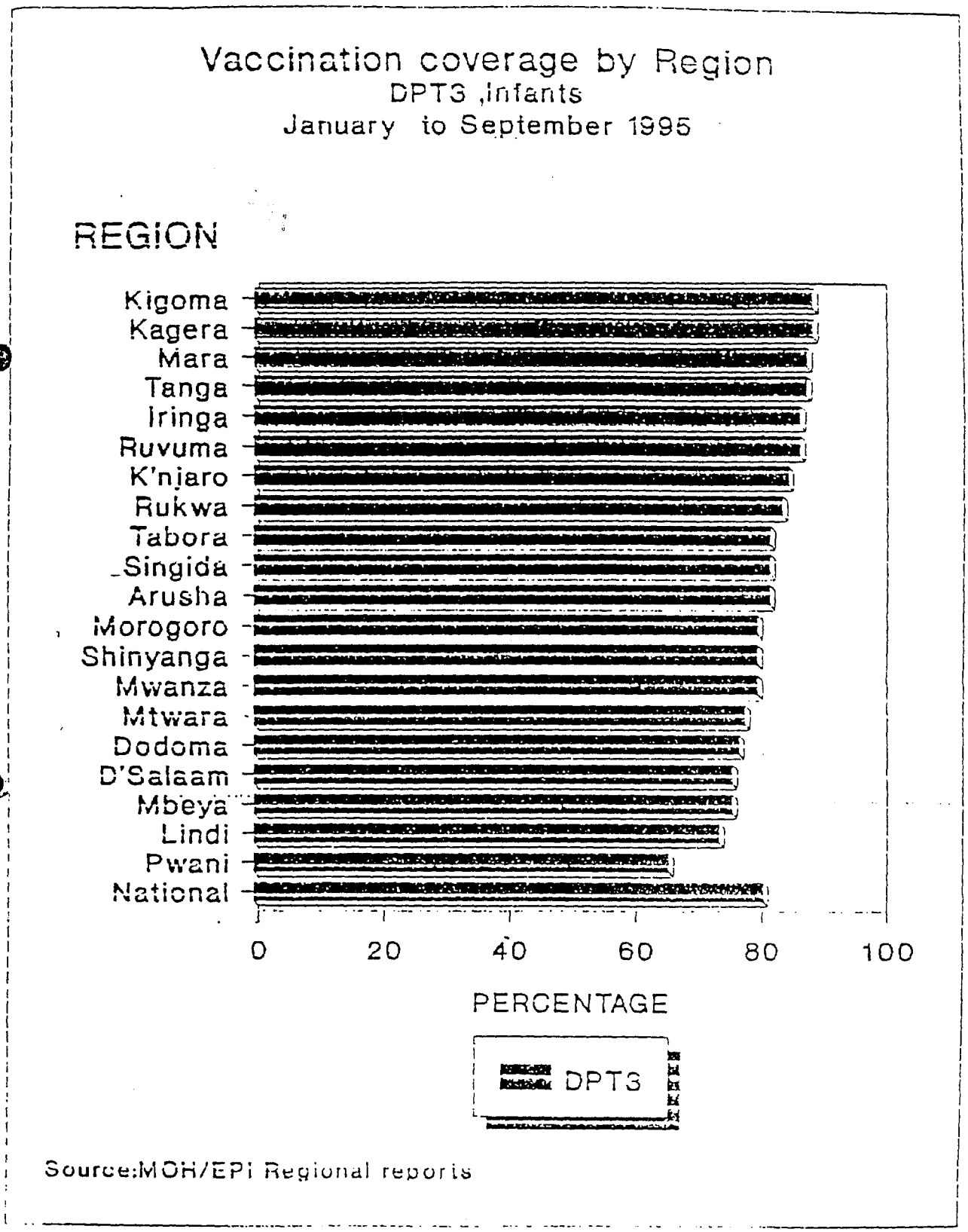
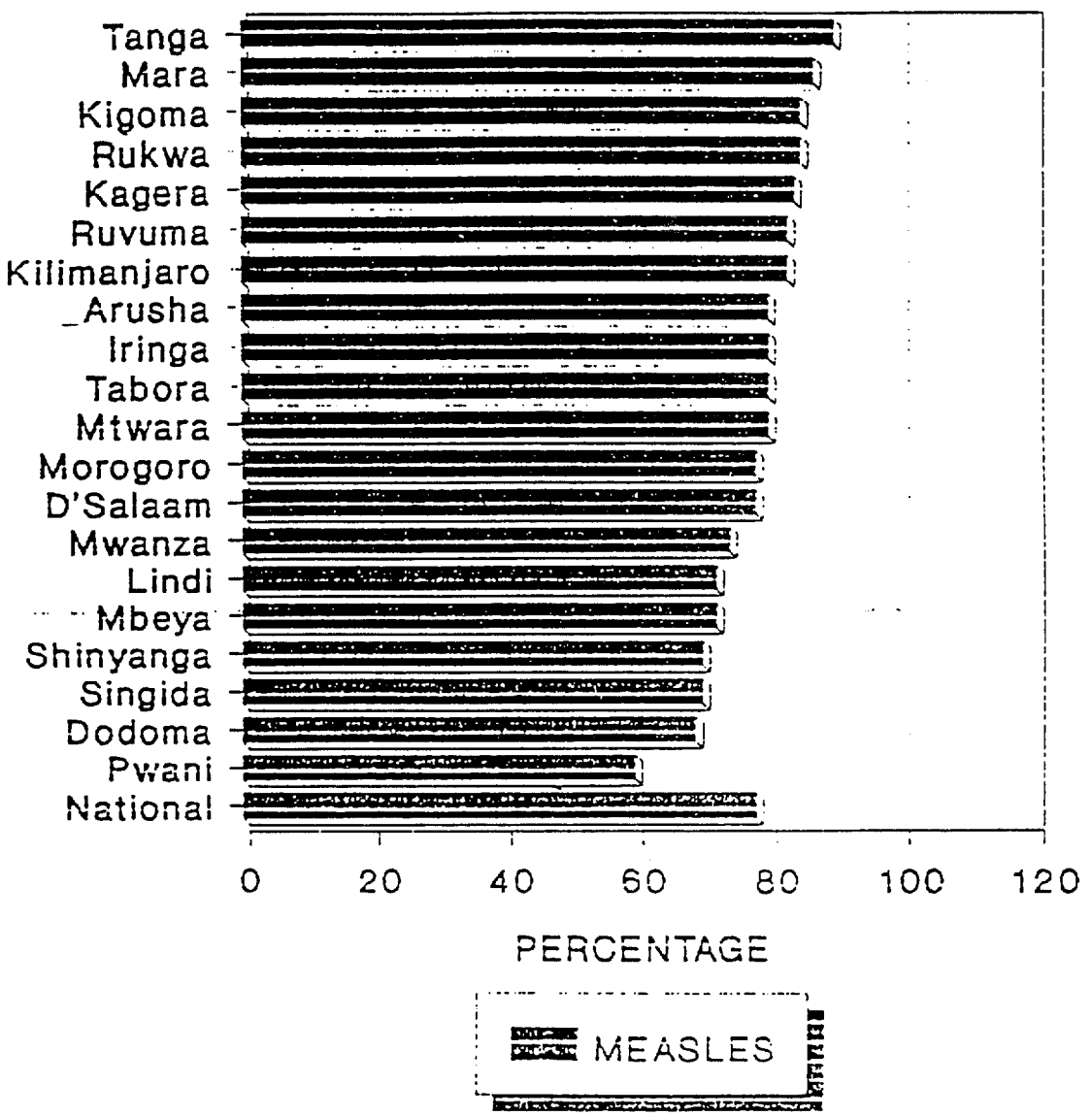
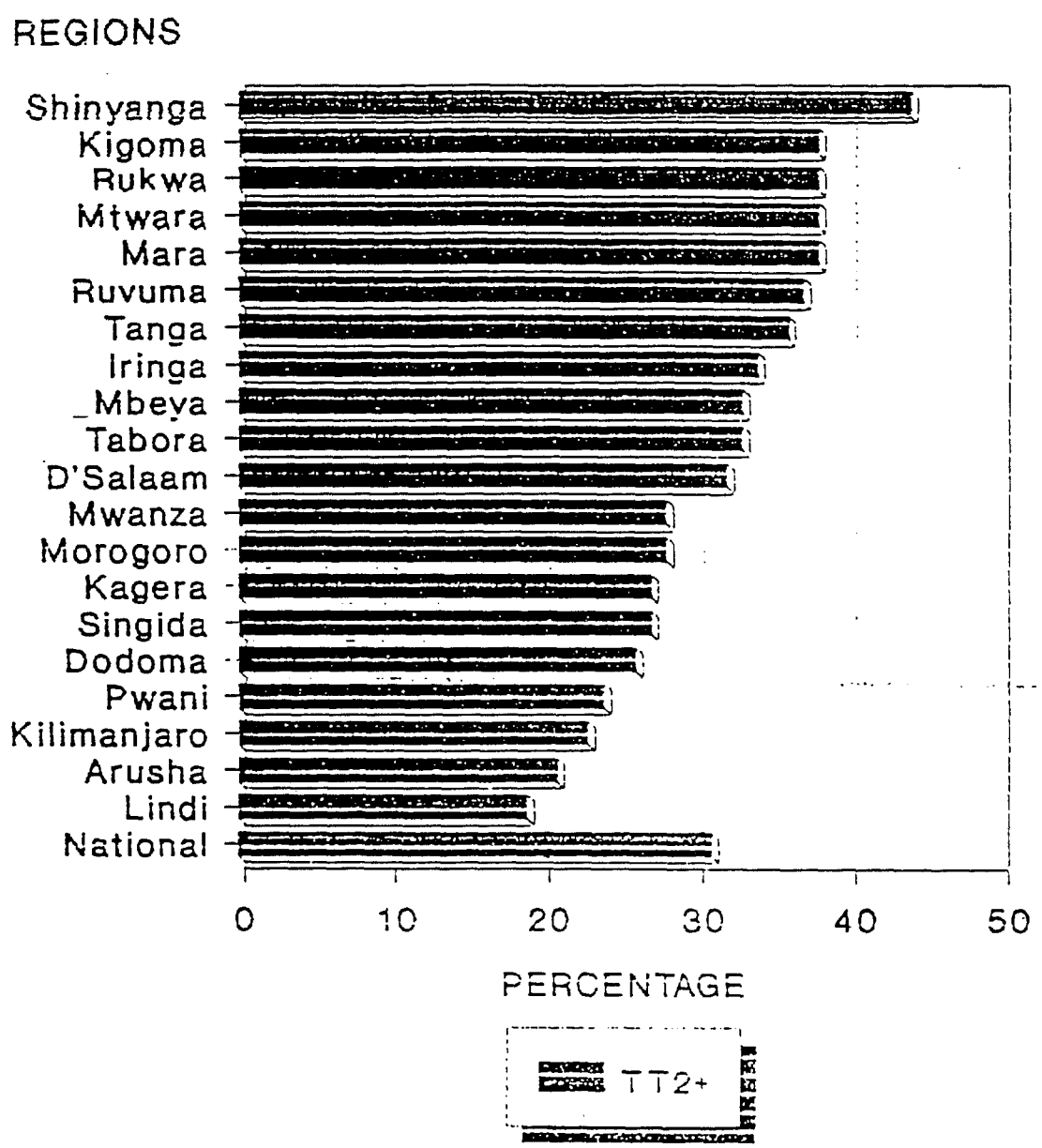




Source: MOH/EPI Regional reports



Source: MOH/EPI Regional reports

APPENDIX D

Ministry of Health, Dar Es Salaam, Tanzania

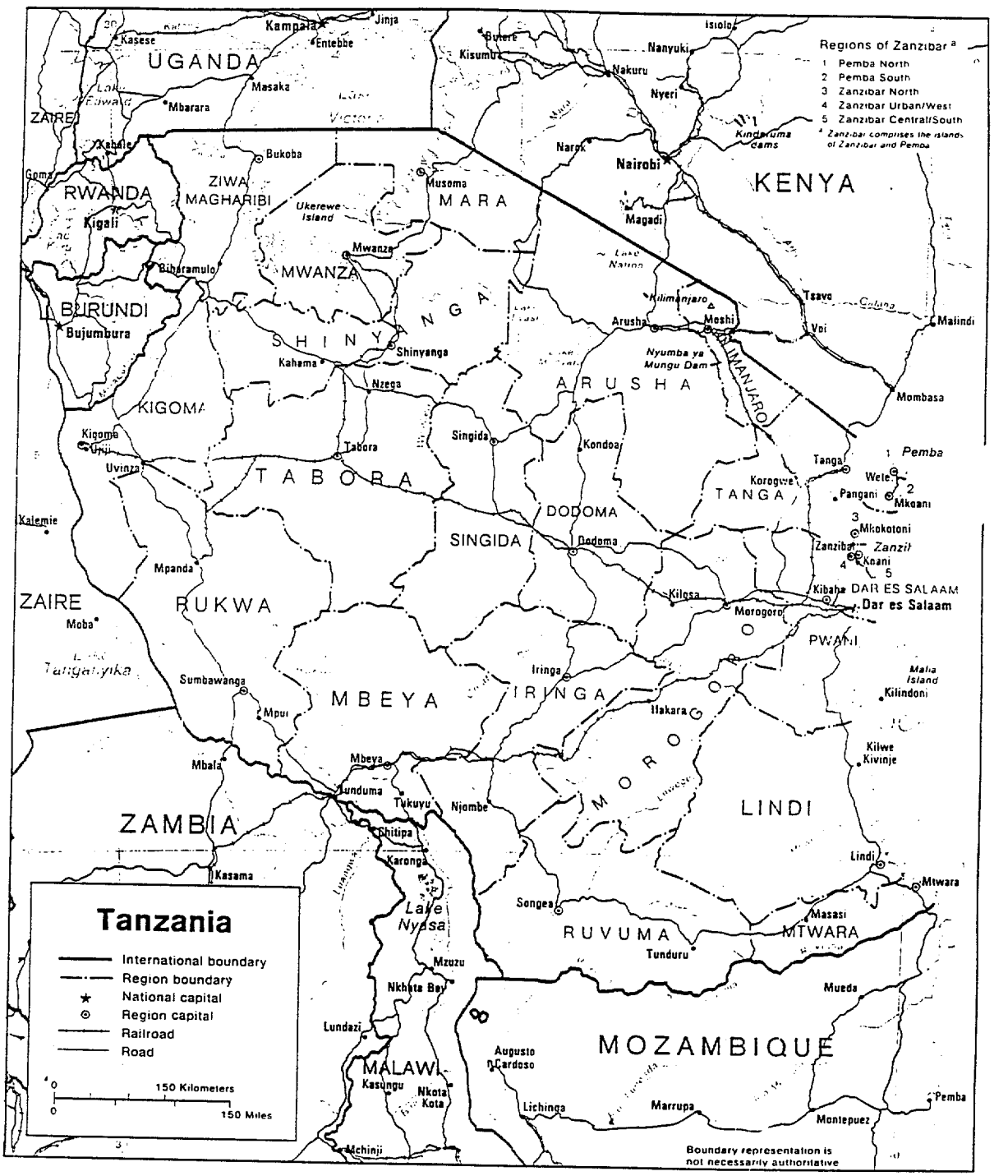
Distribution and Transport:TANZANIA YEAR: 1995

DISTRIBUTION: VACCINES DELIVERED

Region Name	EDP Kits	BCG Vials	DPT Vials	MEAS Vials	OPV Vials	TT Vials	Kerosene	% Kerosene/Est.
DODOMA	953	13810	19771	12337	21722	15883	52781	68.56
ARUSHA	555	19815	30314	19262	34815	23362	56779	54.49
KILIMANJARO	1042	18797	31770	18266	33515	20072	84015	87.32
TANGA	260	17517	26332	16385	28596	20602	58493	73.37
MOROGORO	438	19403	26325	18756	31525	24279	44946	59.34
PWANI	106	12780	13019	9671	14599	10959	33763	67.74
DAR ES-SALAAM	307	13067	23517	13133	27825	22625	23820	53.22
LINDI	643	11445	12920	10746	13676	12435	35536	58.19
MTWARA	184	12780	15702	11602	18216	15700	42895	70.58
RUVUMA	414	13129	18008	11504	21429	14579	51865	79.12
IRINGA	766	15119	22984	13018	27134	16625	59505	64.86
MBEYA	279	19760	27220	18764	29910	22330	43123	44.42
SINGIDA	526	11510	14837	9204	15396	11621	34708	64.41
TABORA	462	16531	23480	16329	26023	19189	37545	52.30
RUKWA	269	12725	21655	12491	23669	13678	35780	74.00
KIGOMA	218	21788	27837	21716	30380	23332	44542	77.34
SHINYANGA	225	24718	38230	22932	41798	28991	66365	82.79
KAGERA	425	16997	31292	15915	32348	18910	63614	78.68
MWANZA	635	34274	46482	31879	54564	39042	65284	68.91
MARA	550	20277	26406	18950	31102	21941	53285	64.17
DVS TO SDP(VIALS)	9257	346242	498101	322860	558242	396155	988644	
ESTIMATED VIALS		414690	498862	403152	526487	450938		
PERCENTAGE		83.49	99.85	80.08	106.03	87.85		
CVS TO REGION (VIALS)		340578	546440	271520	679470	469818		
RVS TO DVS (VIALS)		322793	457633	293508	521078	368996		

Number of Health Units:= 3405
EXPECTED H_UNITS VISITS:= 40860
Est. Kerosene/Month : 1474092
NUMBER OF H UNITS VISITS COVERED:- 33283

APPENDIX E


Tanzania
International boundary
Region boundary
National capital
Region capital
Railroad
Road
150 Kilometers
150 Miles
Regions of Zanzibar a
1 Pemba North
2 Pemba South
3 Zanzibar North
4 Zanzibar Urban/West
5 Zanzibar Central/South
a Zanzibar comprises the islands of Zanzibar and Pemba
Boundary representation is not necessarily authoritative
UGANDA
KENYA
RWANDA
BURUNDI
ZAIRE
ZAMBIA
MALAWI
MOZAMBIQUE
ZIWA MAGHARIBI
MARA
MWANZA
SHINYANGA
KIGOMA
TABORA
ARUSHA
TANGA
DODOMA
SINGIDA
RUKWA
MBEYA
IRINGA
MOROGORO
LINDI
RUVUMA
MTWARA
DAR ES SALAAM
PWANI
Kampala
Jinja
Kasese
Entebbe
Masaka
Mbarara
Kabale
Goma
Bukoba
Musoma
Nairobi
Nakuru
Nanyuki
Isiolo
Kisumu
Butere
Narok
Magadi
Kigali
Biharamulo
Mwanza
Bujumbura
Kahama
Shinyanga
Nzega
Arusha
Moshi
Tsavo
Voi
Malindi
Mombasa
Kigoma
Uvinza
Tabora
Singida
Kondoa
Korogwe
Tanga
Pemba
Wete
Pangani
Mkoani
Mkokotoni
Zanzibar
Zanzibar
Knani
Kibaha
Dar es Salaam
Morogoro
Kilosa
Dodoma
Kalemie
Mpanda
Moba
Sumbawanga
Mpui
Iringa
Ilakara
Malia Island
Kilindoni
Kilwe Kivinje
Mbala
Mbeya
Lunduma
Tukuyu
Njombe
Chitipa
Karonga
Kasama
Lindi
Mtwara
Masasi
Songea
Tunduru
Mueda
Mzuzu
Nkhata Bay
Lundazi
Kasungu
Nkota Kota
Mchinji
Augusto Cardoso
Lichinga
Marrupa
Montepuez
Pemba
Lake Victoria
Lake Tanganyika
Lake Nyasa
Lake Natron
Kindaruma dams
Nyumba ya Mungu Dam
Ukerewe Island
Malia Island
Zanzit
Kilimanjaro
Tanga

APPENDIX TT

July 5 (Friday)

9:00 - 10:00	Discussion with Dr. Mlangalia on the Health Sector reform at the World Bank
10:00 - 10:30	Discussion with Mr. Mupunda on the Health Sector Reform at the PHC Secretariat, Ministry of Health
11:00 - 14:00	Report sending by e-mail and debriefing for the officer in charge of Health and Population Section, USAID
14:30 - 16:00	Debriefing for the EPI Program manager
17:55	Departure from Dar es Salaam

RECORD OF ACTIVITIES

June 22 (Saturday)

22:00	Arrival at Dar es Salaam

June 23 (Sunday)

	Break

June 24 (Monday)

12:00	Arrival of the Japanese Mission
13:00 - 13:30	Meeting with Dr. Vogel, USAID
13:30 - 14:30	Meeting of USAID and the Japanese Mission
14:30 - 17:30	Meeting of UNFPA and the Japanese Mission
18:00 - 19:30	Meeting of the staff members of JICA projects in Tanzania and the Japanese Mission

June 25 (Tuesday)

8:30 - 12:00	Meeting of the Planning Commission, Ministries of Health, Finance, Education and Culture, Communication, and Women's Affairs and Children, and Bureau of Statistics and the Japanese Mission
14:30 - 16:00	Meeting of WHO and the Japanese Mission
16:30 - 17:30	Meeting of UNICEF and the Japanese Mission

June 26 (Wednesday)

7:30 - 22:00	Data collection and discussion at the EPI Unit

June 27 (Thursday)

7:30 - 19:30	Data collection and discussion at the EPI Unit

June 28 (Friday)

8:30 - 21:00	Data collection and discussion at the EPI Unit

June 29 (Saturday)

8:30 - 19:00	Data collection and discussion at the EPI Unit

June 30 (Sunday)

8:30 - 16:00	Data compilation
19:30 - 00:30	Internal discussion of the Japanese Mission (Including the consultant's 30 minute presentation on preliminary findings on EPI/NID for the Japanese Mission)

July 1 (Monday)

8:30 - 19:00	Data collection and discussion at the EPI Unit

July 2 (Tuesday)

8:30 - 20:00	Data collection and discussion at the EPI Unit

July 3 (Wednesday)

7:30 - 8:30	Discussion with Dr. Hanao, WHO
8:30 - 9:30	Discussion with Dr. Massesa, Chief of Health Section, UNICEF
10:30 - 21:00	Data collection and discussion at the EPI Unit

July 4 (Thursday)

10:00 - 12:00	Discussion on DANIDA supported health programs and health sectors reform with Dr. Heldrup and other Japanese consultants and local JICA office staff members at the Danish Embassy
12:15 - 13:30	Discussion on JICA supported EPI activities with Ms. Tada and Dr. Adachi at JICA
14:00 - 16:00	Data collection and discussion at the EPI Unit
16:30 - 17:30	Discussion with Mr. Ferentino on Rotary's support for EPI and NID

APPENDIX SS

PERSONS CONTACTED

This list includes persons contacted for in-depth discussions only, and excludes those met in general meetings.

(1) Ministry of Health

Dr. Kadhija A. Msambichaka, Program Manager, EPI

Dr. Akim, Disease Surveillance Focal Point, EPI

Mr. Kabelwa Kagaruki, National Cold Chain Officer, EPI

Ms. Mutali, Social Mobilization and Training, EPI

Mr. Msoma, Operation Officer, EPI

Mr. Amleck A. Ngajilo, Senior Transport Officer, EPI

Mr. Maximilliam Mapunda, Acting Head of Primary Health Care Secretariat and Team Leader for Implementation of Health Sector Reform

(2) USAID

Dr. Mark Wentling, Director

Dr. Dana Vogel, Supervisory Officer, Health and Population

Dr. F.M. Mburu, Senior Population Program Specialist

Dr. Jeff Ashley, Health Program Officer

(3) WHO

Dr. Ana Maria Hanao, Consultant, NID/EPI

(4) UNICEF

Dr. Massesa, Chief, Health and Nutrition Section, UNICEF, Tanzania

Dr. Romanus Mkerenga, Project Officer, EPI, UNICEF, Tanzania
(briefly contacted by telephone)

Mr. Jun Kukita, Program Officer, UNICEF, Tokyo

(5) The World Bank

Dr. Emmanuel Malangalia, Senior Program Officer, Social Sector

(6) Rotary Club
Mr. George D. Ferentinos, Consul General, Consulate General for Greece

(7) Danish Embassy

Dr. Jorn Heldrup, Counsellor, Development

(8) DANIDA
11

Mr. Claes Broms, Chief Technical Adviser (EPI)

(8) Ministry of Foreign Affairs, Japan

Mr. Norio Ehara, Administrator, Cooperation Policy,
Assistant Director, Research and Programming Division, Economic Cooperation Bureau

Mr. Yoshihiro Imamura, Administrator, Grand Aid, Economic Cooperation Bureau

(9) JICA, Tokyo

Mr. Toshio Kinoshita, Director, Environmental, Women Development, and other Global Issues Division, Planning Department

Mr. Yojiro Ishii, Deputy Director, Second Medical Cooperation Department, Medical Cooperation Department

Mr. Satoru Watanabe, Third Regional Division, Planning Department

Mr. Ikuo Takizawa, Coordinator, Project Formulation Officer, First Project Formulation Study Division, Project Formulation Study Department

(10) JICA, Tanzania

Ms. Mayumi Tada, Assistant Representative

Dr. Motoi Adachi, Neonatologist, MCH Health Service Project

APPENDIX RR

Remonsys Ltd

for temperature monitoring

Customs Invoice and Packing Note

Goss House, 26 High Street, STREET, Somerset BA16 0EB, UNITED KINGDOM
Tel: +(44) 1458 840088 Fax: +(44) 1458 841188

Invoice To:
The East Asiatic Company Ltd A/S
EAC Tradex
7, Midtermolen
DK-2100 Copenhagen OE
Denmark

Attn: Annie Papageorgiou

Shipping Marks::
EXPANDED PROGRAMME ON IMMUNISATION
C/O Royal Danish Embassy
P.O. BOX 9171
DAR ES SALAAM
TANZANIA

PROJECT FILE NO: 104.tanz.74
PROJECT ORDER NO: LPO-95/055

Your Ref: 352/35024/01 Date of Despatch: 12 December 1995
Our Ref: TL/ Today's date: 12 December 1995

DESCRIPTION		TOTAL VALUE
50	TINY TTM temperature data logger (Type F) Serial Nos: 14437 to 14486 inclusive	£85.00
1	TINY TTM Software (free of charge)	

TOTAL: GBP4250.00

VALUE FOR CUSTOMS PURPOSES ONLY

1 postal packet
International DATAPOST
Gross weight: 1.6kg

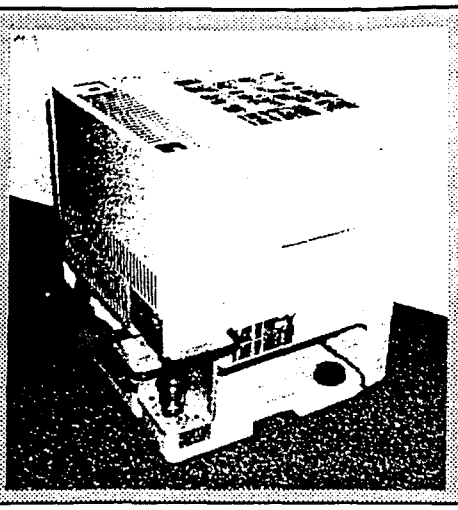
Delivered to:
ATT: Ms Mai Hoejsgaard
Spedition DAL A/S
Jernholmen 6-10, 2650 Hvidovre
DENMARK

Ph: 45-36 34 36 34

Note: Goods certified to be of EC origin.
HS Commodity code 902 519 910 Consignees VAT No: GB 358 0752 40

66

APPENDIX QQ



CODE PIS E3/73

DESCRIPTION

Icepack freezer, absorption type
Model FCW 20 EK, Electric and Kerosene

COMPANY NAME AND ADDRESS

Electrolux (Luxembourg)
4, rue de la frontière
L-9412 Vianden
Luxembourg
Telephone: 84595; Telex: 3468 ELUX VI;
Fax: 848 11 300

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	—		20		litres
Vaccine storage capacity	—		0		litres
External dimensions, H x W x L	—		72x58x63		cms.
Shipping volume/gross weight	—		0.31/		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	++	++	kgs/hrs.
Icepack freezing, without vaccine	—	—	8.4/96	++	kgs/hrs.
Internal temperatures, minimum	—	—	-21.8	++	degrees C.
Internal temperatures, maximum	—	—	+0.8	++	degrees C.
Holdover time during power cut	—	—	—	—	hours
Power consumption: electricity	—	—	2.9	++	Kwh/24 hrs.
Power consumption: kerosene	—	—	0.76	--	lts/24 hrs.
Power consumption: LP gas	—	—	--	—	kgs/24 hrs.

Temperatures recorded during day/night (+43/+15°C) tests: Minimum --; Maximum --°C.

ENERGY REQUIREMENTS

Energy sources: 220V + Kerosene

SPARES NEEDED PER 10 UNITS	Part No.	Quantity	XEU/1
Wick	292.8551.06/4	4	3.21 (US$ 3.82)
Lamp glass	292.8551.02/3	3	13.27 (US$ 15.80)
Flue brush	292.8557.01/2	3	7.71 (US$ 9.18)
Switch	292.9865.00/0	2	3.59 (US$ 4.27)
Heating element, 220V	296.9730.02/3	2	8.52 (US$10.14)

COMMENTS AND ACCESSORIES

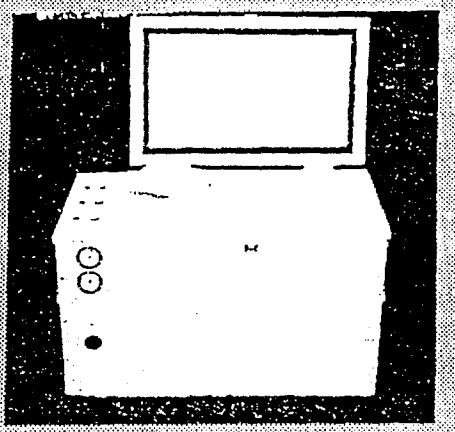
Reports: CRL A.9280 (1989); Meets WHO/UNICEF Standard:E3/FR3.
Freezing plus storage capacity = 14 x 0.6 litre icepacks
FOB Luxembourg.

1993 PRICES (FOT Luxembourg)

Quantity/Price*:		
	1-39	XEU 735.00 (US$ 875.00)
	40-99	XEU 646.00 (US$ 769.05)
	100+	XEU 615.00 (US$ 732.14)

* Cost of export packing for sea freight not included in price (allow approximately XEU 37.50 (US$ 44.64) per appliance.)

APPENDIX PP



CODE PIS E3/65

ITEM
Photovoltaic solar refrigerator and icepack freezer
Model SSE.60

COMPANY NAME AND ADDRESS
Norcoast Refrigeration Company
50 Grigor Street
Caloundra 4551
Australia
Telephone: 74 911 849
Fax: 74 917 627

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	26.0		10.9		litres
Vaccine storage capacity	25.8		0		litres
External dimensions, H x W x L	510x590x970		++		cms.
Shipping volume/gross weight	0.44/60.9		—		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	15/24	13/24	kgs/hrs.
Icepack freezing, without vaccine	—	—	++	++	kgs/hrs.
Internal temperatures, minimum	+0.5	+0.5	++	++	degrees C.
Internal temperatures, maximum	+7.9	+0.8	++	++	degrees C.
Holdover time during power cut	4	3.5	—	—	hours
Electricity consumption:					
With icepack freezing (2.5 kg)	--	--	0.64	1.07	Kwh/24 hrs.
Without icepack freezing	0.25	0.39	0.3	0.45	Kwh/24 hrs.

Temperatures recorded during day/night (+43/+15°C) tests: Minimum -0.9; Maximum +7.9°C.

ENERGY REQUIREMENTS
Energy sources: 12VDC

SPARES NEEDED PER 10 UNITS

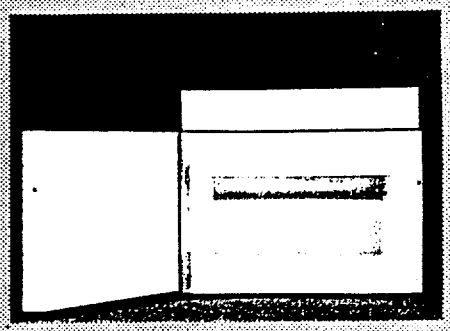
	Part No.	Quantity	$US/1
Battery charge regulator			
Compressor complete, Danfoss		Price on application (POA)	
Compressor controller, Danfoss			
Lid seal			

COMMENTS AND ACCESSORIES
Reports: SISIR I 13604 (1989). Meets WHO/UNICEF Standard: E3/RF.4.
Suitable for freezing icepacks at low ambient temperatures.
Freezer compartment should be used for icepacks only; it is not suitable for storage or freezing of vaccines.
Accessories: Twin chamber, twin compressor system
External freezer and refrigerator temperature indicator
Low battery indicator; defrost switch; battery condition meter .
All connecting cables and installation instructions. FOB Brisbane

1993 PRICES (FOB)

Quantity/Price:	Cabinet only	1-5	US$ 1,500.00
		5+	US$ 1,400.00

APPENDIX OO



CODE PIS E3/54

ITEM
Photovoltaic solar refrigerator & icepack freezer
Model RFV-4

COMPANY NAME AND ADDRESS
Sun Frost
Box 1101
Arcata, California 95521
United States of America
Telephone: 1 (707) 822 9095;
Fax: 1 (707) 822 6213

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	51		34		litres
Vaccine storage capacity	17.5*		0		litres
External dimensions, H x W x L	88x70x80			—	cms.
Shipping volume/gross weight	0.70/95.0		—		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	2.8/22	2.2/24	kgs/hrs.
Icepack freezing, without vaccine	—	—	5.6/24	++	kgs/hrs.
Internal temperatures, minimum	+0.7	+0.1	-10	-12	degrees C.
Internal temperatures, maximum	+6.2	+6.8	- 5	- 8	degrees C.
Holdover time during power cut	5.0	3.5	9	7.5	hours
Electricity consumption					
With icepack freezing	--	--	0.44	0.59	Kwh/24 hrs.
Without icepack freezing	0.3	0.38	—	—	Kwh/24 hrs.
Thermostat setting (stable):	-2	-2			

Temperatures recorded during day/night (+43/+15°C) tests: Minimum 0.0; Maximum; +7.9°C.

ENERGY REQUIREMENTS

Energy sources: 12VDC

SPARES NEEDED PER 10 UNITS	Part No.	Quantity	$US/1
Electronic units	102N3017	2	90.00
Thermostat	T-RFV-4	1	35.00
Door catches	South Co. 10 lb.	10	6.00
Door seals	VRFV-4	10	5.00

COMMENTS AND ACCESSORIES

Reports: Univalle Ref.8 (1986), Univalle Freezing Report (March 1987) and Univalle Ref.13 (1990).
Meets WHO/UNICEF Standard: E3/RF.4.
Appliance is suitable for freezing icepacks at low ambient temperatures.
Freezer compartment should be used for icepacks only; it is not suitable for storage or freezing of vaccines.

1993 PRICES (FOB)

Quantity/Price: 1/US$ 1,450.00
Complete solar system US$ 2,800.00 to 4,000.00**

* The recommended load for operation at 43°C ambient temperature is 15 litres.
** Unicef estimate. Includes spare parts and export packing for sea freight.

APPENDIX NN

REQUEST FOR SUPPORT TO NIDs 1997 & 1998

Y E A R			1997		1998	
TARGET POPULATION	UNDER 1 YEAR		1,216,802		1,250,872	
	UNDER 5 YEAR		6,084,010		6,254,360	
S/No	DESCRIPTION	UNIT COST	QUANTITY	TOTAL	QUANTITY	TOTAL
1.	Oral Polio Vaccine (20 dose vials).	$.1.827:-	790,921	$.1,445,013:-	813,067	$.1,485,473
2.	Photovoltaic Refrigerators for inaccessible health facilities (NAPS-model CFS 491s - PIS E3/70)	$.5,612:-	100	$.561,200:-	-	-
3.	Ice Pack Freezer, absorption type for Health facilities (electrolux-model FCW 20 EK-PIS E3/73	$.776.78:	1,000	$.776,780:-	-	$.776,780
4.	Back-up generators 2.0 KVA with extension reels for district vaccines stores	$.1,500:-	65	$.97,500:-	-	-

5.	Chest Freezers, compression type, for district vaccine storage and icepack freezing (Vestfrost model SB 302 PIS ES/27).	$. 410:-	65	$.26,650:-	-	-
6.	Refrigerators for Health facilities for replacement (Electrolux RCW 42 EK)	$.1,145:-	100	$.114,500:-	-	-
7.	Polythene plastic bags	$. 3.6:-	500 Kgs	$.2,000:-	600 kgs	$.2,160:-
8.	Vaccine carriers for replacement	$.6.1:-	5,000	$.30,500:-	1.000	$.6,160:-
9	Tiny TTM for temeperature monitoring	£.85 ($.126:-)	260	£.22,100 ($.32,760):-	-	-
	GRAND TOTAL			$.3,086,903:-		$.2,615,193

Additional:

1.	Routine OPV (10 DOSE VIALS)	$.1.224	632,737	$.774,470	650,454	$796,156:-

3.06.96
RR/AS

APPENDIX MM

HEALTH FACILITY REFRIGERATORS SOURCE OF POWER, JANUARY 1996

	TYPE OF FRIDGE				
	ELECTR.	KEROSE.	GAS	SOLAR	TOTAL
MARA					
Tarime E	0	21	0	2	23
Serengeti	0	21	0	1	22
Musoma S	0	24	0	0	24
Musoma E	0	10	0	7	17
Bunda	0	25	0	5	30
Tarime W	0	2	0	0	2
TOTAL	0	103	0	15	118
GRAND TOTAL	400	2555	94	173	3222

HEALTH FACILITY REFRIGERATORS SOURCE OF POWER, JANUARY 1996

	TYPE OF FRIDGE				
	ELECTR.	KEROSE.	GAS	SOLAR	TOTAL
RUVUMA					
Tunduru	0	34	0	3	37
Songea S	3	23	0	4	30
Mbinga	1	53	0	4	58
Songea N	1	33	0	2	36
TOTAL	5	143	0	13	161
IRINGA					
Iringa N	4	18	0	1	23
Mufindi	5	34	0	2	41
Njombe	11	40	0	1	52
Ludewa	1	23	0	1	25
Iringa S	0	31	0	3	34
Makete	2	25	0	0	27
TOTAL	23	171	0	8	202
MBEYA					
Chunya	0	29	0	0	29
Mbeya U/R	11	28	0	0	39
Kyela	0	19	0	0	19
Rungwe	1	31	0	0	32
Ileje	1	17	0	0	18
Mbozi	3	32	0	0	35
Mbarali	5	21	0	0	26
TOTAL	21	177	0	0	198
SINGIDA					
Iramba West	0	24	0	0	24
Singida U/R	6	25	0	0	31
Manyoni	1	32	0	0	33
Iramba E	0	15	0	0	15
TOTAL	7	96	0	0	103
TABORA					
Nzega	1	25	0	7	33
Igunga	1	23	0	2	26
Tabora S	7	23	0	7	37
Urambo	0	25	0	3	28
Tabora N	1	17	0	6	24
TOTAL	10	113	0	25	148

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HEALTH FACILITY REFRIGERATORS SOURCE OF POWER, JANUARY 1996

	TYPE OF FRIDGE				
	ELECTR.	KEROSE.	GAS	SOLAR	TOTAL
RUKWA					
Mpanda	0	36	0	6	42
Sumbawanga E	0	20	0	8	28
Sumbawanga W	2	24	0	3	29
Nkansi	0	21	0	2	23
TOTAL	2	101	0	19	122
KIGOMA					
Kibondo	0	33	0	8	41
Kasulu	0	43	0	5	48
Kigoma U/R	3	50	0	5	58
TOTAL	3	126	0	18	147
SHINYANGA					
Bariadi	0	37	0	3	40
Maswa	0	30	0	3	33
Shinyanga W	6	7	0	0	13
Kahama W	6	7	0	0	13
Shinyanga E	11	30	0	2	43
Meatu	0	13	0	1	14
Kahama E	0	20	0	0	20
TOTAL	23	144	0	9	176
KAGERA					
Karagwe	0	34	0	3	37
Bukoba	4	47	0	3	54
Muleba	5	18	0	5	28
Biharamulo	0	26	0	3	29
Ngara	0	27	0	3	30
TOTAL	9	152	0	17	178
MWANZA					
Ukerewe	0	27	0	0	27
Magu	0	41	0	2	43
Mwanza Urban	10	10	0	0	20
Ngudu/Kwimba	0	31	0	0	31
Sengerema	0	36	0	1	37
Geita A	0	2	0	4	6
Nissungwi	2	30	0	2	34
Geita B	0	19	0	3	22
TOTAL	12	196	0	12	220

HEALTH FACILITY REFRIGERATORS SOURCE OF POWER, JANUARY 1996

DISTRICT/REGION	SOURCE OF POWER				
	ELECTR.	KEROSE.	GAS	SOLAR	TOTAL
Kondoa	0	0	46	0	46
Mpwapwa	3	25	0	0	28
Dodoma W	0	31	0	0	31
Dodoma E	2	28	0	0	30
Dodoma Munic	11	24	0	0	35
DODOMA TOTAL	16	108	46	0	170
Monduli	1	26	0	2	29
Arumeru	7	40	0	0	47
Arrusha Munic	11	10	0	0	21
Kiteto	0	10	0	0	10
Hanang	10	9	0	0	19
Mbulu	1	33	0	4	38
Ngorongoro	0	16	0	1	17
Babati	0	19	0	0	19
Simanjiro	0	6	0	1	7
Karatu	?	?	?	?	0
ARUSHA TOTAL	30	169	0	8	207
Rombo	6	18	0	0	24
Hai	8	25	0	0	33
Moshi E	8	17	0	0	25
Mwanga	11	19	0	2	32
Same	4	31	0	0	35
Moshi W	20	8	0	0	28
KILIMANJARO TOTAL	57	118	0	2	177
Lushoto	7	31	0	0	38
Korogwe	6	40	0	0	46
Muheza	1	1	45	0	47
Tanga Munic	13	5	0	0	18
Pangani	4	9	0	0	13
Handeni	3	35	0	0	38
TANGA TOTAL	34	121	45	0	200

HEALTH FACILITY REFRIGERATORS SOURCE OF POWER, JANUARY 1996

	TYPE OF FRIDGE				
	ELECTR.	KEROSE.	GAS	SOLAR	TOTAL
MOROGORO					
Kilosa	11	39	0	1	51
Morogoro S	6	27	0	0	33
Kilombero	7	19	0	0	26
Morogoro N	21	27	0	1	49
Mahenge	0	32	0	0	32
TOTAL	45	144	0	2	191
PWANI					
Bagamoyo	6	21	0	4	31
Kisarawe	1	26	0	2	29
Rufiji	0	36	0	4	40
Mafia	0	9	0	0	9
Kibaha	4	8	0	2	14
TOTAL	11	100	0	12	123
D'Salaam					
Kinondoni	30	14	1	0	45
Ilala	34	8	2	0	44
Temeke	15	17	0	3	35
TOTAL	79	39	3	3	124
LINDI					
Kilwa	5	24	0	0	29
Lindi E	1	22	0	2	25
Nachingwea	4	16	0	0	20
Liwale	0	15	0	2	17
Lindi W	1	19	0	6	26
TOTAL	11	96	0	10	117
MTWARA					
Newala	0	46	0	0	46
Mtwara U/R	1	42	0	0	43
Masasi	1	50	0	0	51
TOTAL	2	138	0	0	140

APPENDIX LL

COLD CHAIN INVENTORY, TANZANIA, 3RD JULY, 1996

DISTRICT/REGION	No of H/Units	HEALTH FACILITY RCW42	RAK362	RAK36/360	OTHER KERO-SENE TYPE	RCW42 DC	OTHER SOLAR TYPE	TOTAL FRIDGE	VACC-INE CARR-IER
Bagamoyo	31	16	10	1	1	5	1	34	35
Kisarawe	28	7	11	5	1	2	0	26	29
Rufiji	44	10	23	0	0	5	0	38	41
Mafia	12	5	2	1	1	2	0	11	5
Kibaha	16	6	5	1	0	2	0	14	15
PWANI	131	44	51	8	3	16	1	123	125
PWANI REGIONAL STORE								0	
Kilosa	51	22	16	9	0	0	0	47	53
Morogoro Rural	38	15	0	16	0	0	0	31	38
Kilombero	27	11	7	7	2	0	0	27	53
Morogoro Rural	41	12	11	6	1	0	0	30	38
Mahenge/Ulanga	27	1	2	23	1	0	0	27	31
Morogoro Urban	20	9	3	0	3	0	0	15	23
MOROGORO	204	70	39	61	7	0	0	177	236
MOROGORO REG. STORE								0	
KINONDONI	41	40	1	2	0	0	0	43	47
ILALA	48	33	9	1	1	2	0	46	45
TEMEKE	36	21	11	0	0	3	0	35	36
DAR ES SALAAM	125	94	21	3	1	5	0	124	128
D'SALAAM REG. STORE									
GRAND TOTAL	3,513	1,082	1,082	951	76	192	6	3,389	3,786

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COLD CHAIN INVENTORY, TANZANIA, 3RD JULY, 1996

HEALTH FACILITY

DISTRICT/REGION	No of H/Units	RCW42	RAK362	RAK36/ 360	OTHER KERO-SENE TYPE	RCW42 DC	OTHER SOLAR TYPE	TOTAL FRIDGE	VACC-INE CARR-IER
Mufindi	41	12	9	14	5	2	0	42	46
Ludewa	32	9	5	19	0	4	0	37	37
Njombe	54	16	10	21	3	2	0	52	63
Makete	27	14	3	9	1	0	0	27	30
Iringa Rural	57	19	20	23	1	2	0	65	78
Iringa Urban	12	4	1	0	0	0	0	5	9
IRINGA	223	74	48	86	10	10	0	228	263
IRINGA REGIONAL STORE								0	
Mbinga	56	16	22	16	0	3	0	57	45
Tunduru	38	5	12	19	0	3	0	39	43
Songea South	29	13	13	2	0	3	0	31	43
Songea North	30	14	5	14	0	3	0	36	40
RUVUMA	153	48	52	51	0	12	0	163	171
RUVUMA REGIONAL STORE								0	
Kilwa	32	16	9	1	0	7	0	33	31
Lindi Rural	48	29	6	13	0	7	0	55	48
Nachingwea	20	5	9	4	0	2	0	20	22
Liwale	17	10	5	0	0	2	0	17	17
Lindi Urban	6	4	2	0	0	0	0	6	6
LINDI	123	64	31	18	0	18	0	131	124
LINDI REGIONAL STORE								0	
Iramba West	25	27	15	5	0	0	0	47	48
Singida Rural	30	17	14	6	0	0	0	37	39
Manyoni	35	19	11	3	0	0	0	33	40
Singida Urban	6	3	2	1	0	0	0	6	8
SINGIDA	96	66	42	15	0	0	0	123	135
SINGIDA REGIONAL STOR								0	
Nzega	37	1	8	22	1	7	0	39	30
Igunga	25	1	19	1	0	4	0	25	29
Tabora South	37	11	13	12	0	6	0	42	36
Urambo	36	2	20	4	0	4	0	30	28
Tabora North	33	4	12	2	0	6	0	24	25
TABORA	207	19	72	41	1	27	0	160	148

84

COLD CHAIN INVENTORY, TANZANIA, 3RD JULY, 1996

HEALTH FACILITY

DISTRICT/REGION	No of H/Units	RCW42	RAK362	RAK36/ 360	OTHER KERO-SENE TYPE	RCW42 DC	OTHER SOLAR TYPE	TOTAL FRIDGE	VACC-INE CARR-IER
Bariadi	40	10	22	4	0	2	1	39	45
Maswa	30	15	7	7	0	1	0	30	34
Shinyanga W	34	5	5	21	0	0	0	31	46
Kahama East.	19	2	6	10	0	0	0	18	19
Kahama west	19	1	6	11	2	0	0	20	22
Shinyanga E	38	8	0	26	0	1	0	35	49
Meatu	23	17	3	0	0	1	0	21	32
SHINYANGA	184	58	49	79	2	5	1	194	247
SHINYANGA REG. STORE								0	
Karagwe	37	0	12	18	0	4	0	34	60
Bukoba R	53	15	23	10	0	4	0	52	60
Muleba	28	6	10	7	0	5	0	28	30
Biharamulo	25	4	4	14	0	3	0	25	34
Ngara	29	6	13	6	5	4	0	34	40
KAGERA	172	31	62	55	5	20	0	173	224
KAGERA REGIONAL STORE								0	
Ukerewe	32	5	4	20	0	1	0	30	39
Magu	43	16	12	12	4	5	0	49	42
Mwanza Munic.	25	11	2	6	0	0	0	19	26
Kwimba/Ngudu	46	9	20	2	0	0	0	31	35
Sengerema	37	12	4	17	0	1	0	34	38
Geita A	25	0	26	15	0	7	0	48	44
Missungwi	35	9	10	11	3	2	0	35	36
Geita B	20	0	0	0	0	3	0	3	0
MWANZA	263	62	78	83	7	19	0	249	260
MWANZA REGIONAL STORE		0	0	0	0	0	0	0	0
Tarime East	17	13	21	8	0	2	2	46	49
Serengeti	21	6	3	4	2	2	0	17	19
Musoma South	25	11	4	10	0	1	0	26	28
Musoma East	38	17	4	3	0	3	0	27	31
Bunda	29	6	13	4	2	4	0	29	31
Tarime West	25 ??					3		3	
MARA	155	53	45	29	4	15	2	148	158
MARA REGIONAL STORE								0	

85

COLD CHAIN INVENTORY, TANZANIA, 3RD JULY, 1996

HEALTH FACILITY

DISTRICT/REGION	No of H/Units	RCW42	RAK362	RAK36/360	OTHER KERO-SENE TYPE	RCW42 DC	OTHER SOLAR TYPE	TOTAL FRIDGE	VACC-INE CARR-IER
Arumeru	44	8	16	14	2	0	0	40	43
Ngorongoro	18	3	8	6	0	1	0	18	18
Mbulu	36	4	7	20	0	3	0	34	35
Hanang	23	7	13	0	0	0	0	20	22
Kiteto	22	2	0	8	0	0	0	10	11
Monduli	37	6	0	22	0	2	0	30	31
Babati	37	0	10	9	0	0	0	19	26
Simanjiro	12	2	4	1	1	3	0	11	12
Arusha Municip	24	12	9	0	3	0	0	24	33
ARUSHA - TOTAL	253	44	67	80	6	9	0	206	231
ARUSHA REGIONAL STORE								0	
Kondoa	52	8	21	21	0	0	0	50	51
Mpwapwa	47	13	13	20	0	0	0	46	45
Dodoma East	32	12	14	2	0	0	0	28	36
Dodoma West	40	4	15	11	0	0	0	30	25
Dodoma Mun.		4	13	15	0	0	0	32	41
DODOMA	171	41	76	69	0	0	0	186	198
DODOMA REGIONAL STORE								0	
Rombo	32	0	0	3	17	0	0	20	29
Hai	45	7	12	17	0	0	0	36	45
Moshi East	37	9	9	8	0	0	0	26	39
Mwanga	41	11	12	7	2	0	0	32	34
Same	45	11	14	5	0	0	0	30	45
Moshi West	34	11	13	4	0	0	0	28	28
KILIMANJARO	232	49	60	44	19	0	0	172	220
K'NJARO REGIONAL STOR								0	
Lushoto	41	16	2	20	0	0	0	38	46
Korogwe	36	17	7	21	0	0	0	45	54
Muheza	46	46	0	0	0	0	0	46	52
Pangani	13	7	6	0	0	0	0	13	16
Handeni	34	17	17	7	0	0	0	41	46
Tanga urban	41	1	20	0	0	0	0	21	27
TANGA	211	104	52	48	0	0	0	204	241
TANGA REGIONAL STORE								0	

86

COLD CHAIN INVENTORY, TANZANIA, 3RD JULY, 1996

DISTRICT/REGION	No of H/Units	HEALTH FACILITY RCW42	RAK362	RAK36/360	OTHER KERO-SENE TYPE	RCW42 DC	OTHER SOLAR TYPE	TOTAL FRIDGE	VACC-INE CARR-IER
Mpanda	38	15	4	23	2	7	0	51	42
Sumbawanga E	28	7	15	5	0	9	0	36	31
Sumbawanga W	37	8	15	5	0	3	1	32	32
Nkansi	26	6	5	8	2	2	0	23	29
RUKWA	129	36	39	41	4	21	1	142	134
RUKWA REGIONAL STORE								0	
Mtwara Rural	40	1	23	13	0	0	0	37	42
Newala	46	4	30	13	0	0	0	47	46
Masasi	49	1	28	10	6	0	0	45	50
MTWARA	135	6	81	36	6	0	0	129	138
MTWARA REGIONAL STORE								0	
Chunya	26	3	6	20	0	0	0	29	34
Mbeya Rural	26	16	6	4	0	0	0	26	31
Kyela	24	4	9	5	0	0	0	18	23
Rungwe	28	11	6	18	0	0	0	35	35
Ileje	21	7	2	14	0	0	0	23	24
Mbozi	36	4	13	14	0	0	0	31	36
Mbarali	25	14	10	2	0	0	0	26	29
Mbeya Urban	29	2	7	4	0	0	0	13	18
MBEYA	215	61	59	81	0	0	0	201	230
MBEYA REGIONAL STORE								0	
Kibondo	46	16	16	6	0	8	0	46	45
Kasulu	31	18	14	12	0	5	0	49	62
Kigoma Rural	46	18	26	4	1	2	1	52	58
Kigoma Urban	8	6	2	1	0	0	0	9	10
KIGOMA	131	58	58	23	1	15	1	156	175
KIGOMA REGIONAL STORE								0	

APPENDIX KK

DISTRIBUTION OF NIDs COLD CHAIN EQUIPMENT TO THE DISTRICT WK4 JUNE-WK4 JULY 1996

3/7/96

REGION	PRESENT SITUATION														PLANNED ADDITIONAL		
	TARGET POPULATION	TOTAL HEALTH FACILITIES	H/FACILTI IMMUNIZIN	INACCESSI H/FACILIT	FRIDGE RCW 42	FRIDGE RAK 362	FRIDGE RAK 36/36	SOLAR FRIDGES	OTHER FRIDGES	TOTAL FRIDGES	VACCINE CARRIER	ICEPACKS	SIBIR/ RAK 1302	FREEZER/ ICE LINER	FREEZER SB 302	FRIDGE MK 302	GENERATOR + 1 REEL	FRIDGE SIBIR
DODOMA	301212	218	199	24	81	65	45	0	2	193	221	1586	7	5	1	1	1	1
ARUSHA	365295	334	198	22	30	38	88	4	7	167	231	1610	17	4	1	2	1	2
KILIMANJARO	256183	231	207	20	35	66	61	0	0	162	204	979	6	5	0	1	0	1
TANGA	306821	231	203	23	104	52	48	0	0	204	241	1478	10	5	1	1	0	1
MOROGORO	289187	271	204	62	70	39	61	0	7	177	236	1539	10	5	1	1	1	1
PWANI	152052	170	123	26	54	45	6	16	0	121	146	1152	10	4	1	1	1	1
DAR ES SALAAM	414405	304	125	7	94	21	3	5	1	124	242	2206	4	5	0	0	0	0
LINDI	157359	132	124	42	66	29	18	17	0	130	226	1777	4	5	1	1	1	1
MTWARA	185591	147	134	15	14	84	34	0	7	139	149	2560	6	4	1	1	0	1
RUVUMA	203764	160	160	16	59	44	56	12	6	177	194	1297	6	4	1	1	1	1
IRINGA	296240	258	223	25	74	48	86	10	10	228	263	1497	13	6	1	1	1	1
MBEYA	385747	215	215	0	61	59	81	0	0	201	234	1640	11	10	1	1	1	1
SINGIDA	163558	150	125	26	65	41	18	0	0	124	146	0	5	5	1	1	1	1
TABORA	256178	159	148	47	17	67	46	27	0	157	150	974	9	6	1	1	1	1
RUKWA	225278	137	129	36	36	44	40	23	2	145	134	766	4	5	1	1	1	1
KIGOMA	199624	183	131	58	50	57	25	15	0	147	242	1688	8	6	1	1	1	1
SHINYANGA	514683	221	202	64	58	49	72	4	2	185	277	1896	16	5	1	1	1	1
KAGERA	480793	217	173	37	34	57	74	19	0	184	224	1237	10	6	1	1	1	1
MWANZA	498199	254	244	52	53	64	106	7	15	245	265	1663	15	10	1	1	1	1
MARA	201701	167	148	33	48	88	11	15	0	162	140	0	5	5	1	1	1	1
TOTAL	5853870	4159	3415	635	1103	1057	979	174	59	3372	4165	27545	176	110	18	20	16	20

APPENDIX JJ

refrigerator performance. If, as seems likely, OPV is not replaced by any new antigens more heat sensitive than measles vaccine, we shall be looking at a cold chain where measles vaccine sets the standard for fridge performance. Let's take a second look at the relative characteristics of the two vaccines, reproduced here from Art Galazka's review.

Stability of Measles and Polio Vaccines at Different Temperatures (Galazka, 1989)

Vaccine	0-8°	22°-25°	35°-37°	Above 37°
FD Measles Vaccine	Stable for 2 years	Satisfactory half life over one month	Satisfactory activity for at least one week	50% loss of activity after 2-3 days' exposure at 41° C. At 54° C, 80% loss after one day's exposure
OPV	Stable for 6 to 12 months	Unstable. Loss of 50% at 20 days. Some vaccines keep satisfactory titer for 1 to 2 weeks.	Very unstable. Titer can become unsatisfactory after 1 to 3 days.	Very unstable. At 41° C, loss of 50% in one day. At 50°, titer can become unsatisfactory after 1 to 3 hours.

Of course, no one is suggesting that we reset our specs to fridges that maintain 22 degrees. But it is simply not on to keep the upper limit at eight degrees. Eight degrees is fine for OPV, but not for the more heat stable vaccines which we shall have in the year 2000 and afterwards. To maintain the upper limit at 8 degrees in a cold chain without OPV would be without technical and economic justification.

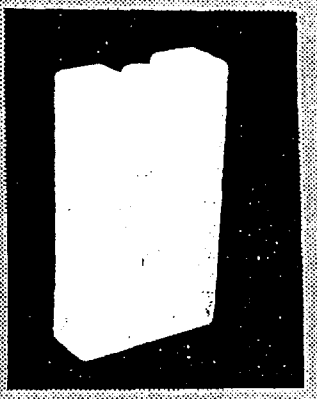
page 4.

"PLANNING FOR THE POST-POLIO COLD CHAIN: WHAT WE CAN DO BEFORE THE YEAR 2000"

SOURCE: TECHNET MEETING
12-16 FEBRUARY 1996
MANILA, PHILIPPINES
EPI/WHO

APPENDIX II

CODE
PIS
E5/12



ITEM
Icepack
Model BK-V4 H

COMPANY NAME AND ADDRESS
Blow Kings
53 C Mittal Court
Nariman Point, Bombay 400021
India
Telephone: 231412;
Telex: 6714 PANA IN ;
Fax: —

SIZE

Volume of ice per pack	0.30 litres
External dimensions	163x90x33 mm.
Weight empty	78 grams
Weight filled	378 grams

PERFORMANCE
Used with the following boxes/carriers:
E4/57, 69, 76, 77, 78

COMMENTS
Test Reports: CRL A.9022, January 1990
WHO/UNICEF Standard E5/IP.2

1993 PRICES (FOB)

Minimum order:	*Set of 10*
Quantity/Price:	1 set/US$ 3.50

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APPENDIX HH

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PRODUCT INFORMATION SHEET

CODE PIS E4/83

ITEM
NID Day vaccine carrier
Model "Coolertainer for KICK POLIO" campaign

COMPANY NAME AND ADDRESS
CIP Industries
P.O Box 1782
Randburg2125
South Africa
Telephone: (27) 11 793 4420
Fax: (27) 11 793 5712

SIZE AND MATERIALS

Vaccine storage capacity	2 litres (approx 100 vials polio)
Weight fully loaded	
Weight empty	
External surface material	Wax coated corrugated cardboard, stitched seams and stapled bottom
Internal lining material	Light polyethylene sheeting
Insulation material	Polyurethane foam 33kgs/m3
Insulation thickness	30mm
External dimension	
Internal dimensions	
Vaccine storage dimensions	
Lid type & fixings	Folded and fastened with a tie
Number of icepacks required	2 or block ice in a bag
Number of icepacks supplied	None
Icepack type	E5/12 or equivalent

COMMENTS AND PERFORMANCE
Test Report: CSIR Johannesburg
Meets WHO/UNICEF standard [illegible]
Supplied with plastic [illegible]
Cold life without opening [illegible]

1995 PRICES (FOB)

Minimum order:	30,000 (Central WHO purchase)
Quantity/Price:	1/RAND 12.26 ($US 3.30) [illegible]

95

VACCINE DISTRIBUTION FOR NIDs - JULY 1996.

DISTRICT/REGION	CHILDREN 0 - 5 YEAR	DOSES OPV 1 - ROUND	OPV VIALS OF 20 DOSE	APPROX: STD BOXES
Bagamoyo	37,211	48,374	2,419	2
Kisarawe	53,039	68,951	3,448	3
Rufiji	34,159	44,407	2,220	2
Mafia	8,251	10,726	536	1
Kibaha	19,392	25,210	1,260	1
PWANI	152,052	197,668	9,883	10
PWANI REGIONAL S	15,205	19,767	988	1
Kilosa	78,001	101,401	5,070	5
Morogoro (South)	48,447	62,981	3,149	3
Kilombero	48,168	62,618	3,131	3
Morogoro (North)	44,647	58,041	2,902	3
Mahenge/Ulanga	34,824	45,271	2,264	2
Morogoro Urban	35,100	45,630	2,282	2
MOROGORO	289,187	375,943	18,797	19
MOROGORO REG. ST	28,919	37,594	1,880	2
KINONDONI	199,208	258,970	12,949	13
ILALA	97,115	126,250	6,312	6
TEMEKE	118,208	153,670	7,684	8
DAR ES SALAAM	414,531	538,890	26,945	27
D'SALAAM REG. ST	41,453	53,889	2,694	3
GRAND TOTAL	5,936,146	7,716,990	385,849	386

G

VACCINE DISTRIBUTION FOR NIDs - JULY 1996.

DISTRICT/REGION	CHILDREN 0 - 5 YEAR	DOSES OPV 1 - ROUND	OPV VIALS OF 20 DOSE	APPROX STD BOXES
Mufindi	57,547	74,811	3,741	4
Ludewa	27,169	35,320	1,766	2
Njombe	76,861	99,919	4,996	5
Makete	21,784	28,319	1,416	1
Iringa North	88,229	114,698	5,735	6
Iringa Urban	24,650	32,045	1,602	2
IRINGA	296,240	385,112	19,256	19
IRINGA REGIONAL	29,624	38,511	1,926	2
Mbinga	74,020	96,226	4,811	5
Tunduru	44,478	57,821	2,891	3
Songea South	62,661	81,459	4,073	4
Songea (N) Urban	22,605	29,387	1,469	1
RUVUMA	203,764	264,893	13,245	13
RUVUMA REGIONAL	20,376	26,489	1,324	1
Kilwa	37,573	48,845	2,442	2
Lindi Rural	67,347	87,551	4,378	4
Nachingwea	27,745	36,069	1,803	2
Liwale	12,922	16,799	840	1
Lindi Urban	11,772	15,304	765	1
LINDI	157,359	204,567	10,228	10
LINDI REGIONAL S	15,736	20,457	1,023	1
Iramba West	38,073	49,495	2,475	2
Singida Rural	89,206	115,968	5,798	6
Manyoni	33,013	42,917	2,146	2
Iramba East	40,246	52,320	2,616	3
SINGIDA	200,538	260,699	13,035	13
SINGIDA REGIONAL	20,054	26,070	1,303	1

97

VACCINE DISTRIBUTION FOR NIDs - JULY 1996.

DISTRICT/REGION	CHILDREN 0 - 5 YEAR	DOSES OPV 1 - ROUND	OPV VIALS OF 20 DOSE	APPROX STD BOXES
Bariadi	92,969	120,860	6,043	6
Maswa	54,152	70,398	3,520	4
Shinyanga W	90,246	117,320	5,866	6
Kahama East.	76,226	99,094	4,955	5
Kahama west	99,823	129,770	6,488	6
Shinyanga E	27,036	35,147	1,757	2
Meatu	74,231	96,500	4,825	5
SHINYANGA	514,683	669,088	33,454	33
SHINYANGA REG	51,468	66,909	3,345	3
Karagwe	83,767	108,897	5,445	5
Bukoba R	85,210	110,773	5,539	6
Muleba	67,656	87,953	4,398	4
Biharamulo	51,860	67,418	3,371	3
Ngara	178,335	231,836	11,592	12
Bukoba ur	13,965	18,155	908	1
KAGERA	480,793	625,031	31,252	31
KAGERA REG	48,079	62,503	3,125	3
Ukerewe	42,670	55,471	2,774	3
Magu	72,345	94,049	4,702	5
Mwanza Munic.	86,180	112,034	5,602	6
Kwimba/Ngudu	56,890	73,957	3,698	4
Sengerema	74,137	96,378	4,819	5
Geita A	120,261	156,339	7,817	8
Missungwi	45,716	59,431	2,972	3
Bukombe (Geita B	0	0	0	0
MWANZA REGIONAL	498,199	647,659	32,383	32
MWANZA REG. STOR	49,820	64,766	3,238	3
Tarime East/W	85,199	110,759	5,538	6
Serengeti	29,048	37,762	1,888	2
Musoma South	43,018	55,923	2,796	3
Musoma East	43,018	55,923	2,796	3
Bunda	46,588	60,564	3,028	3
Tarime West	0	0	0	0
MARA REGIONAL	246,871	320,932	16,047	16
MARA REGIONAL	24,687	32,093	1,605	2

98

VACCINE DISTRIBUTION FOR NIDs - JULY 1996.

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DISTRICT/REGION	CHILDREN 0 - 5 YEAR:	DOSES OPV 1 - ROUND	OPV VIALS OF 20 DOSE	APPROX: STD BOXES
Arumeru	79,100	102,830	5,142	5
Ngorongoro	18,536	24,097	1,205	1
Mbulu	63,444	82,477	4,124	4
Hanang	34,191	44,448	2,222	2
Kiteto	25,130	32,669	1,633	2
Monduli	32,452	42,188	2,109	2
Babati	54,444	70,777	3,539	4
Simanjiro	21,126	27,464	1,373	1
Arusha Municipal	36,872	47,934	2,397	2
ARUSHA - TOTAL	365,295	474,884	23,744	24
ARUSHA REGION	36,530	47,488	2,374	2
Kondoa	81,944	106,527	5,326	5
Mpwapwa	82,196	106,855	5,343	5
Dodoma East	80,584	104,759	5,238	5
Dodoma West	0	0	0	0
Dodoma Mun.	56,488	73,434	3,672	4
DODOMA	301,212	391,576	19,579	20
DODOMA REG. STOR	30,121	39,158	1,958	2
Rombo	47,453	61,689	3,084	3
Hai	44,488	57,834	2,892	3
Moshi East	74,010	96,213	4,811	5
Mwanga	22,924	29,801	1,490	1
Same	40,166	52,216	2,611	3
Moshi West	27,142	35,285	1,764	2
KILIMANJARO	256,183	333,038	16,652	17
K'NJARO REG. STO	25,618	33,304	1,665	2
Lushoto	85,031	110,540	5,527	6
Korogwe	49,755	64,682	3,234	3
Muheza	54,191	70,448	3,522	4
Pangani	11,512	14,966	748	1
Handeni	62,360	81,068	4,053	4
Tanga urban	43,972	57,164	2,858	3
TANGA	306,821	398,867	19,943	20
TANGA REGIONAL S	30,[illegible]	39,[illegible]	[illegible]	[illegible]

VACCINE DISTRIBUTION FOR NIDs - JULY 1996.

DISTRICT/REGION	CHILDREN 0 - 5 YEAR:	DOSES OPV 1 - ROUND	OPV VIALS OF 20 DOSE	APPROX: STD BOXES
TABORA	256,178	333,031	16,652	17
TABORA REGIONAL	25,618	33,303	1,665	2
Mpanda	80,961	105,249	5,262	5
Sumbawanga E	49,509	64,362	3,218	3
Sumbawanga W	56,417	73,342	3,667	4
Nkansi	38,391	49,908	2,495	2
RUKWA	225,278	292,861	14,643	15
RUKWA REGIONAL S	22,528	29,286	1,464	1
Mtwara Rural	26,260	34,138	1,707	2
Newala	64,962	84,451	4,223	4
Masasi	77,306	100,498	5,025	5
Mtwara Urb	17,063	22,182	1,109	1
MTWARA	185,591	241,268	12,063	12
MTWARA REGIONAL	18,559	24,127	1,206	1
Chunya	52,852	68,708	3,435	3
Mbeya Rural	47,365	61,575	3,079	3
Kyela	31,046	40,360	2,018	2
Rungwe	60,802	79,043	3,952	4
Ileje	21,050	27,365	1,368	1
Mbozi	86,314	112,208	5,610	6
Mbarali	38,846	50,500	2,525	3
Mbeya Urban	47,472	61,714	3,086	3
MBEYA	385,747	501,471	25,074	25
MBEYA REGIONAL S	38,575	50,147	2,507	3
Kibondo	46,224	60,091	3,005	3
Kasulu	54,137	70,378	3,519	4
Kigoma Rural	71,842	93,395	4,670	5
Kigoma Urban	27,421	35,647	1,782	2
KIGOMA	199,624	259,511	12,976	13
KIGOMA REGIONAL	19,962	25,951	1,298	1

APPENDIX FF

Tanzania - Funding for 1996 NIDs (amounts are in US dollars)

Funding Category	Funds Requested in NIDs Proposal	Funds Available and Source of Funding
Oral Polio Vaccine	OPV to cover 5,918,293 children	$1,394,498 - CDC (funds already transferred to UNICEF)
Vaccine Carriers		12,437 vaccine carriers
Planning & Training	$ 701,167	$ 55,000 - Rotary Int'l. $406,677 - USAID ✓ $ 10,000 - WHO **$471,677**
Social Mobilization	$ 384,071	$141,976 - Rotary Int'l. $111,381 - USAID **$253,357** 60,000 UNICEF
Personnel	$1,664,777	**$748,893** - Rotary Int'l. 50 UNICEF
Transport	$ 256,027	**$220,000** - Rotary Int'l.
Cold Chain Equipment	$ 432,000	**$104,400** - USAID ✓
Monitoring & Evaluation		$ 13,050 - USAID ✓
Surveillance		$ 87,000 - USAID ✓

Please make your detailed request for operational costs funding based on the totals in the third column. It is not necessary to request funds for OPV as this money has already been transferred to UNICEF. Nor is it necessary to request funds for vaccine carriers as these will be procured for you by AFRO.

APPENDIX EE

Faxes	9	5,000	45,000	78	
Postage			180,000	313	
Secretarial services			90,000	156	
Monitoring Forms and tally Sheets			3,600,000	6,250	
Stationary			1,524,000	2,646	
Grand total					5,820,192

a. Districts (117 Districts, 6 members DHMTs)							
Participants	702	6,800	2	1	9,547,200	16,575	18,121
Facilitators (1 national, 2 regional level)	7	8,800	2	3	369,600	642	
	40	2,000	1	1	80,000	139	
Supporting staff (1 secretary, 1 driver/regi	40	2,000	1	2	160,000	278	
Stationary (1 flipchart. 1 pencil, 1 noteboo	702	400		1	280,800	488	
b. Health facilities							323,494
Supervisors (1 for every 15 teams)	1133	3,000	1	1	3,400,000	5,903	
Training health workers	17,000	3,000	1	1	51,000,000	88,542	
Training volunteers	34,000	3,000	1	1	102,000,000	177,083	
Facilitators (2 from District level)	234	5,200	2	1	2,433,600	4,225	
Stationary (1 pencil and 1 notebook/	52367	400		1	20,946,933	36,366	
Transport-Fuel (approx 70 litres/distr	8190	400		2	6,552,000	11,375	
c. Training Materials							19,583
Region-Districts Field guide	1,000	2,160			2,160,000	3,750	
Vaccinators Guide	57,000	160			9,120,000	15,833	
6. AFP Surveillance					50,112,000	87,000	87,000
7. Supervision and Coordination							171,154
National (2 supervisors for each of tl	14	10,000	5	3	2,100,000	3,646	
Regional (to supervise 117 Districts)	117	6,000	3	3	6,318,000	10,969	
District (to supervise 4500 health fac	4,500	5,000	1	3	67,500,000	117,188	
Implementation (superv. to 17000 va	1,133	5,000	2	2	22,666,667	39,352	
8. Personnel							1,086,111
Lunch allowances during NIDs							
Health workers	17,000	3,000	2	2	204,000,000	354,167	
Volunteers	34,000	3,000	2	2	408,000,000	708,333	
Supervisors	1133	3,000	2	2	13,600,000	23,611	
9. Administration and miscellaneous							9,755
Communication							
Telexes	180	1,000			180,000	313	

Handouts for sensitisation meetings	6,000	600			3,600,000	6,250	
b. Promotion materials							216,968
Posters	20,000	121			2,424,950	4,210	
Stickers	1,000	980			980,000	1,701	
Banners	6	43,067			258,402	449	
Vaccination Post signs	17,000	2,250			38,250,000	66,406	
Flyers	16,000	35			560,000	972	
T-Shirts for vaccination teams	55,000	1,500			82,500,000	143,229	
c. Mass media campaign							58,795
Newspaper advertisements	24	57,000	8 weeks	3/week	1,368,000	2,375	
UHURU Newspaper							
MAJIRA Newspaper	24	327,250	8 weeks	3/week	7,854,000	13,635	
Dayly News	24	448,910	8 weeks	3/week	10,773,840	18,705	
Radio spots (2 stations)							
Radio Tanzania	45	63,904	76		2,875,700	4,993	
Radio One	87	39,839	76		3,465,950	6,017	
TV spots (3 channels)	87	31,934	76		2,778,300	4,823	
Production	3	150,000			450,000	781	
Live broadcast on NID		700,000		1	700,000	1,215	
Handouts	600	6,000			3,600,000	6,250	
d. Sensitization at regional level							52,457
RDC meetings	25	5,000	20		2,500,000	4,340	
RPHC meetings	20	5,000	20		2,000,000	3,472	
HMT meetings	343	5,000	1		1,715,000	2,977	
Regional NIDs Committees (Coordinating, Soc Mobilization, Technical)							
(in twenty regions with 10 members each)	600	10,000	1	4	24,000,000	41,667	
e. Sensitization at district level							289,453
DDC meetings	25	5,000	117		14,625,000	25,391	
DPHC meetings	20	5,000	117		11,700,000	20,313	
District NIDs Committees (Coordinating, Soc Mobilization, Technical)							
(in 117 Districts with 10 members each)	3,510	10,000	1	4	140,400,000	243,750	
f. Social mobilization at local level							1,062,326

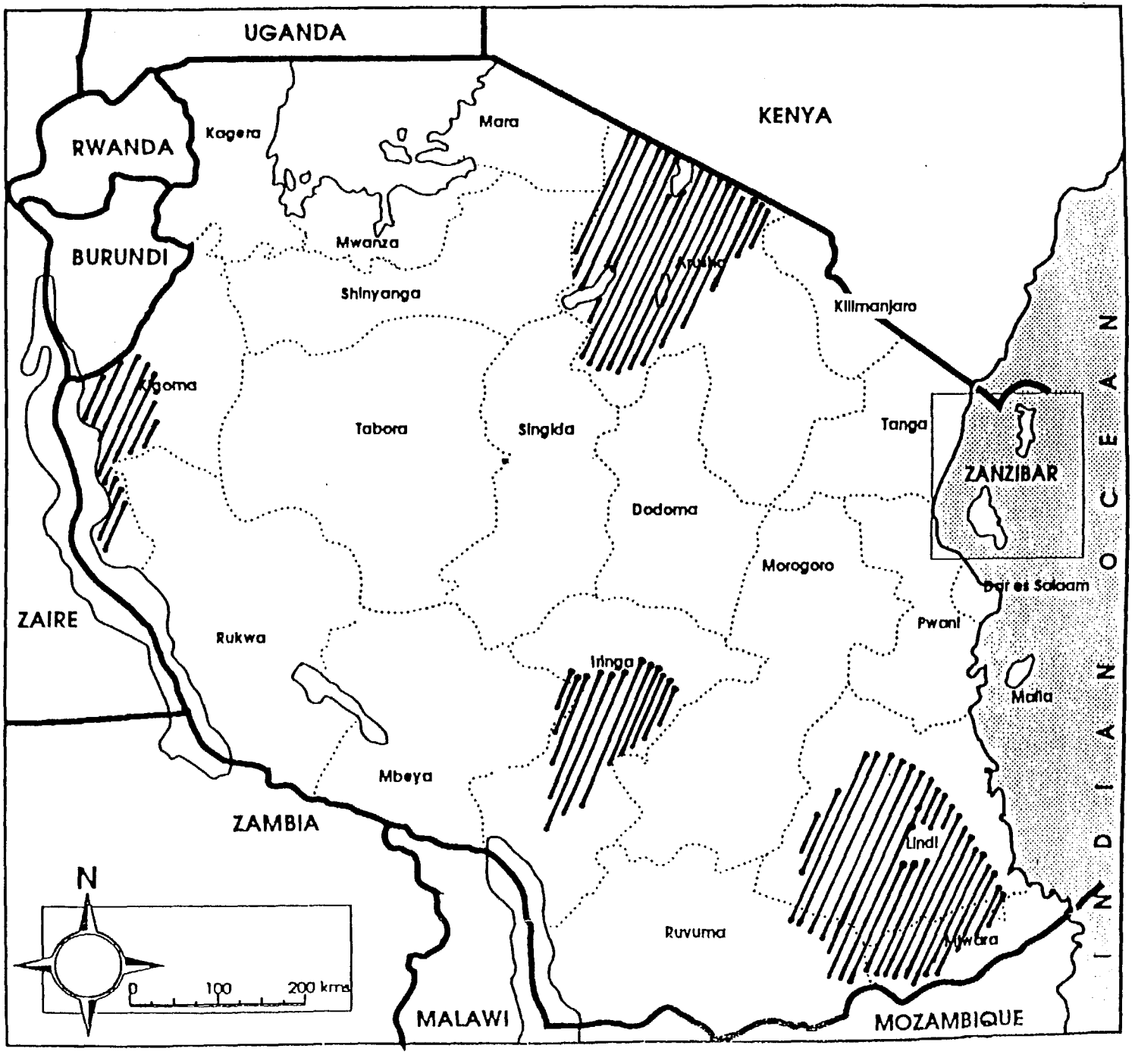
NATIONAL IMMUNISATION DAYS TANZANIA 1996
REVISED BUDGET (22-06-96)

	Number of Units	Unit cost Tsh or US$	Number of days	Number of times	Tsh	US$	Subtotals
1. Polio Vaccine	**741,979**	**1.827**				**1,355,595**	**1,355,595**
2. Vaccine Distribution and Delivery							**78,219**
Vaccine carriers	12,437	6.10				75,866	
Ice packs/plastic bags	68,000	0.04			1,355,595	2,353	
3. Social Mobilization and Sensitization							**1,711,670**
a. National level							31,672
Decision makers, religious leaders, NGOs							
Venue	1	36,000	1		36,000	63	
Allowance	20	5,000	1		100,000	174	
Refreshments	20	2,000	1		40,000	69	
MOH Officers							
Allowance	40	3,000	1		120,000	208	
Refreshments	40	2,000	1		80,000	139	
Parliamentarians							
Allowance	350	20,000	1		7,000,000	12,153	
Facilitators	6	10,000	3		180,000	313	
Fuel	200	350	1		70,000	122	
Driver	3	7,500	1		22,500	39	
Live Broadcasting radio	1	678,400	1		678,400	1,178	
RMO/RHOs/Consultant hospitals							
Venue	1	30,000	1		30,000	52	
DSA	50	10,000	3		1,500,000	2,604	
Transport	50	70,000	1		3,500,000	6,076	
Facilittors	4	9,000	1		36,000	63	
Refreshments	55	2,000	1		110,000	191	
Media Seminar							
Venue	1	30,000	1		30,000	52	
Allowance	30	5,000	1		150,000	260	
Refreshments	30	2,000	1		60,000	104	
National NIDs Committees (Coordinating, Soc Mobilization, Technical)							
	45	5,000	1	4	900,000	1,563	

ver. 24-04-96 (nids-bud5)

Village Executive officers	9,300	3,000	3	2	167,400,000	290,625	
Community NIDs Committee							
(1 Commitee in each village with 8 members each)	72,000	3,000	1	2	432,000,000	750,000	
Councillors meetings	2,500	5,000			12,500,000	21,701	
4. Transport							959,490
a. Distribution of vaccine and other materials to Districts							126,323
Air 9 Regions					900,000	1,563	
Bus 9 Regions					360,000	625	
EPI 2 Regions					2,340,000	4,063	
EPI vehicles and 13 boats					12,480,000	21,667	
Maintenance of transport							
Vehicles	259	10,000			2,590,000	4,497	
Boats	13	5,000			65,000	113	
Perdiem for drivers	145	3,000	15		6,525,000	11,328	
b. Distribution of Vaccine and other materials to health facilities							
Fuel	500	400	2	117	46,800,000	81,250	
Drivers	117	3000		2	702,000	1,219	
c. Distribution of Vaccine and other materials to vaccination posts							141,493
Fuel	10	400	2	17000	68,000,000	118,056	
Drivers	1	3,000	2	4500	13,500,000	23,438	
d. ImplementationTransport							308,840
National	7	16,000		4	448,000	778	
District	117	8,000		4	3,744,000	6,500	
Health facilities	4500	8,000		4	144,000,000	250,000	
Motorbikes, fuel	450	400	6	20	21,600,000	37,500	
Motorbikes, hiring	450	3,000	6		8,100,000	14,063	
e. Supervision Transport							382,833
National	20	16,000		6	1,920,000	3,333	
Regional	117	16,000		6	11,232,000	19,500	
District	4,500	8,000		6	216,000,000	360,000	
5. Planning and Training							361,198

APPENDIX DD



DIFFICULT AREA FOR REVERSED COLD CHAIN TANZANIA

APPENDIX CC

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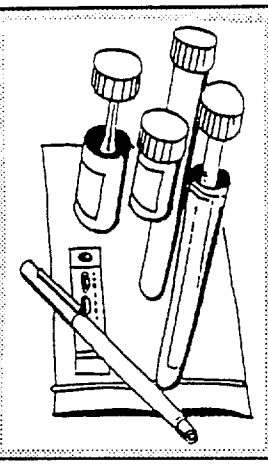
CODE
PIS
E11/02



ITEM
Polio specimen collection kit

COMPANY NAME AND ADDRESS
Bacto Laboratories Ptd. Ltd.
P O Box 295,
Liverpool
NSW 2170, Australia
Telephone: 2 602 54 99 and 602 69 12;
Fax: 61-26018293

SIZE AND MATERIALS

External dimensions	30x30x45 cm
Weight (package)	8.0 kgs.
Number per package	100
Shipping volume	0.04 m^3

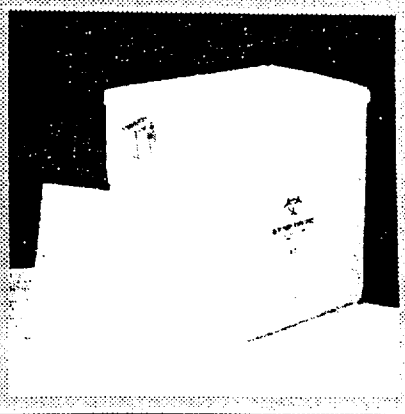
CONTENTS:

Rectal tubes	2
Specimen pots	2
Absorbent pad	1
Indelible pen	1
Laboratory report	1
Label sets	1
3M monitor	1
Zip plastic bags	2
Non-verbal instructions	1

COMMENTS
Test reports: CRL A.9027 (1990)
Samples of this kit can be supplied by WHO/EPI, Geneva on request, free of charge. Purchase direct or through UNICEF/WHO.

1993 PRICES (FOB)
Minimum order: *100*
Quantity/Price: 100-1000 $US10.00 per kit

CODE
PIS
E11/05



ITEM
Specimen carrier (Colour: Yellow)
[For the national transport of infectious specimens]

COMPANY NAME AND ADDRESS
Nylex Corporation Ltd.
P O Box 68, Mentone
Victoria 3194, Australia
Telephone: 3 581 02 11; Telex: AA 32 868 ABC;
Fax: 61-37864975

SIZE AND MATERIALS

Specimen kit capacity	2 kits (E11/02)
Weight fully loaded	4.6 kgs.
Weight empty	2.3 kgs.
External surface material	Polypropylene
Internal lining material	Polypropylene
Insulation material	Polyurethane
Insulation thickness	60 mm.
External dimensions	37x24x32 cms.
Internal dimensions	22x19x12 cms.
Storage dimensions	12x6x21 cms.
Lid type & fixings	Removable
Number of icepacks required	4
Number of icepacks supplied	0
Icepack type	E5/09

COMMENTS AND PERFORMANCE
Test Reports: CRL A.9034 (1991), 9052 (1991)
Meets WHO/UNICEF Standard E11/VC.2
Robustness in drop test: Fittings 3; Casing 3
Cold life without openings at +43°C: 87 hours
Note: Reusable when disinfected with 5% solution of sodiumhypochlorite.

1993 PRICES (FOB)
Minimum order: *1*
Quantity/Price: 1/US$ 28.00*

* Without specimen collection kits.

APPENDIX BB

ACTIVITY	EQUIPMENT	COSTS $
Epidemiological Surveillance	Stool Kits and Cold Boxes 20 @ $ 38+0.25% freight: from UNIPAC	950.0
	Gloves 30 @ $ 0.26 From (UNICEF Supply division Warehouse, Copenhagen).	7.8
	Total	957.8
Social Mobilisation		
Training of Village Health Workers and Traditional Healers to mobilise and sensitize the Community.	Stationeries (to be bought in Tanzania)	
	- Exercise books 110 @ 10.01	1.1
	- Pens 110 @ 10.29	39.1
	- Chalks - 1 box @ 1.9	1.9
Perdiem for 110 VHW and Traditional healers	- 110 @ 7.7 x 4 days	3,388.0
Perdiems for Facilitator	- 4 @ 14.4 x 8 days	460.8
	Hall for seminar 6 days @ $ 5.8	34.8
	Fare for Participants 110 @ $ 3.8	3.8
	Fuel 200 Litres @ $ 0.46	92.0
	TOTAL	4,429.3
DUTY TRAVEL Check on Social Mobilisation Activitie	1 Person for 4 days	76.9
	GRAND TOTALS	5,464.0

per district

x 117

NB We have sent one stool specimen for investigation to Lusaka virological laboratory. Below were the costs which we had incured.

Local transportation:
(Includes fare and perdiem of person who transfered the stool): $ 19.2 + 14.4 = $. 33.6

Shipping of Specimen by Air: $. 86.5

Zanzibar 25 → 1 month

Kenya [March May] ② → No result

No confirmed.

30,000 / box

DHL

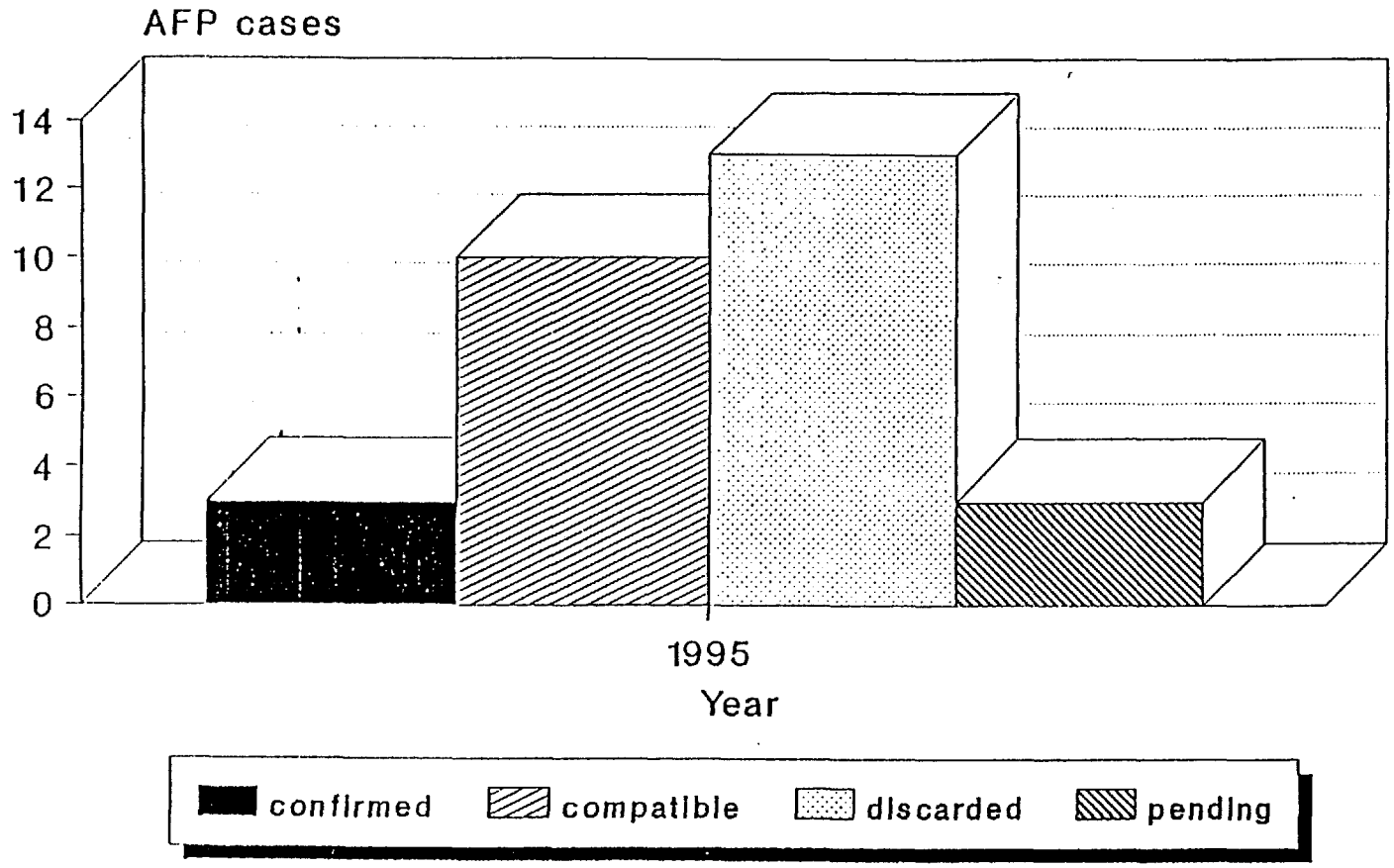
EPI → Kenya.

US $ 50 ~ 60

114

APPENDIX AA

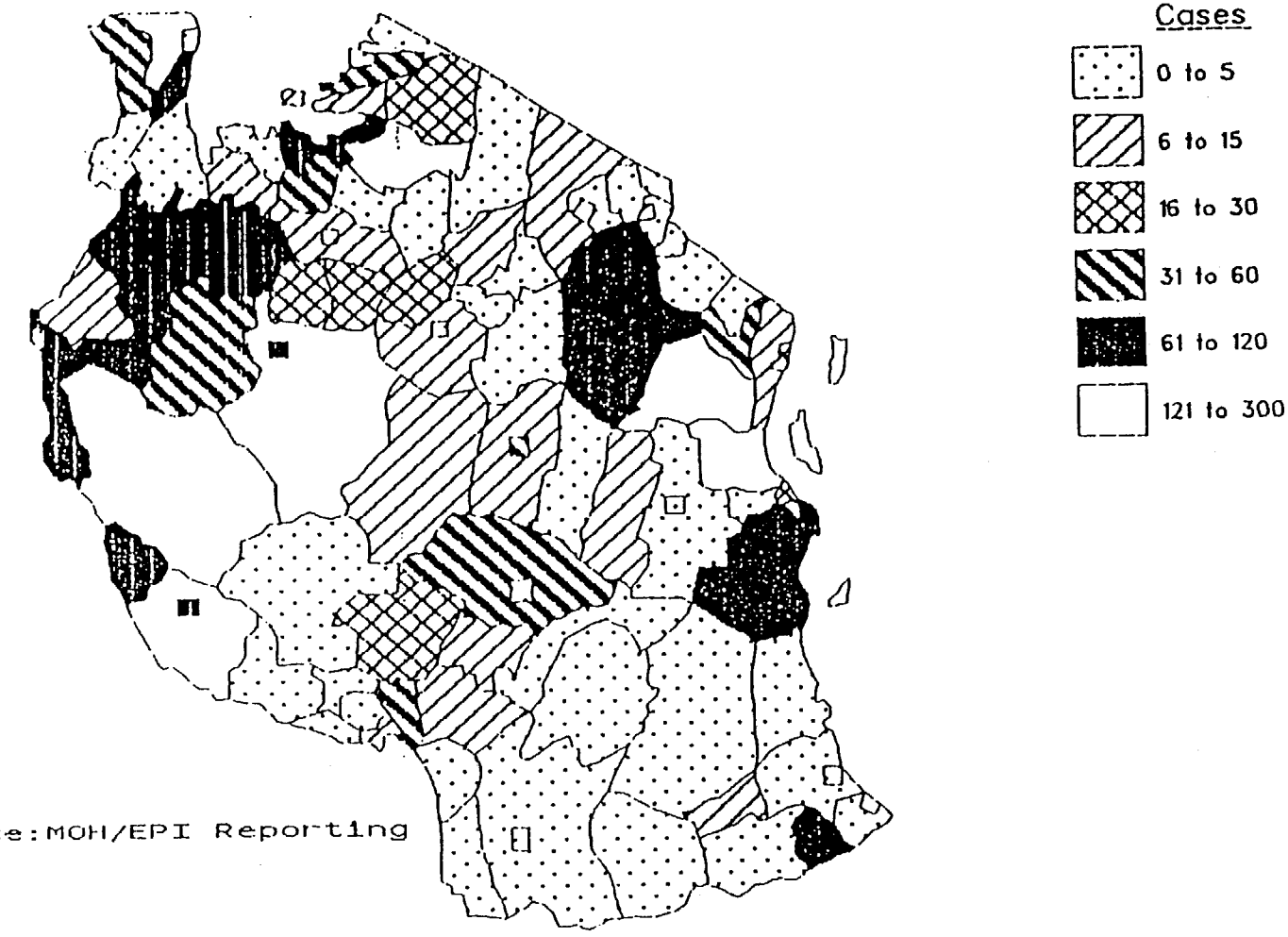
Acute poliomyelitis, Tanzania
Virological classification



Source: EPI surveillance

Reported Measles Cases by District

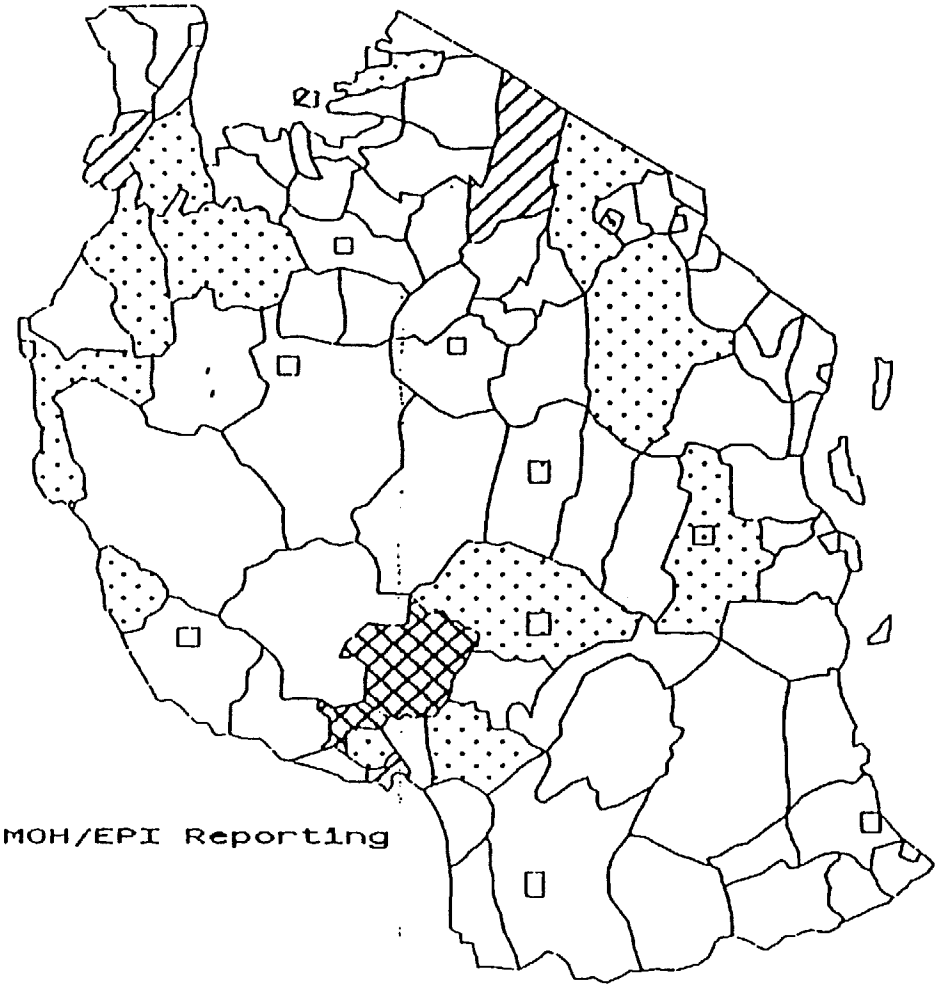
Jan – Nov 1995



Source: MOH/EPI Reporting

Reported AFP Cases by District

Jan – Dec 1995



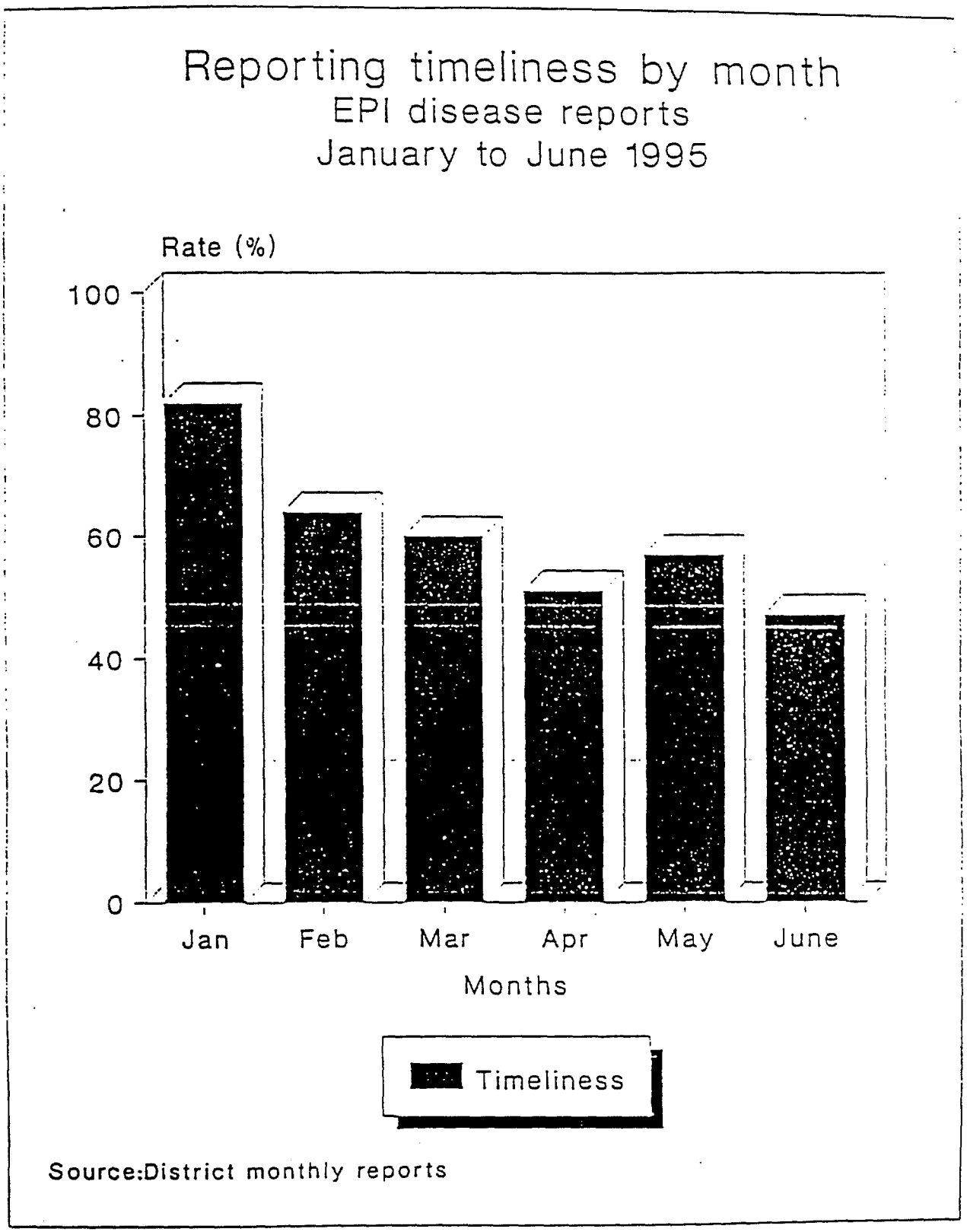
Cases

1

2

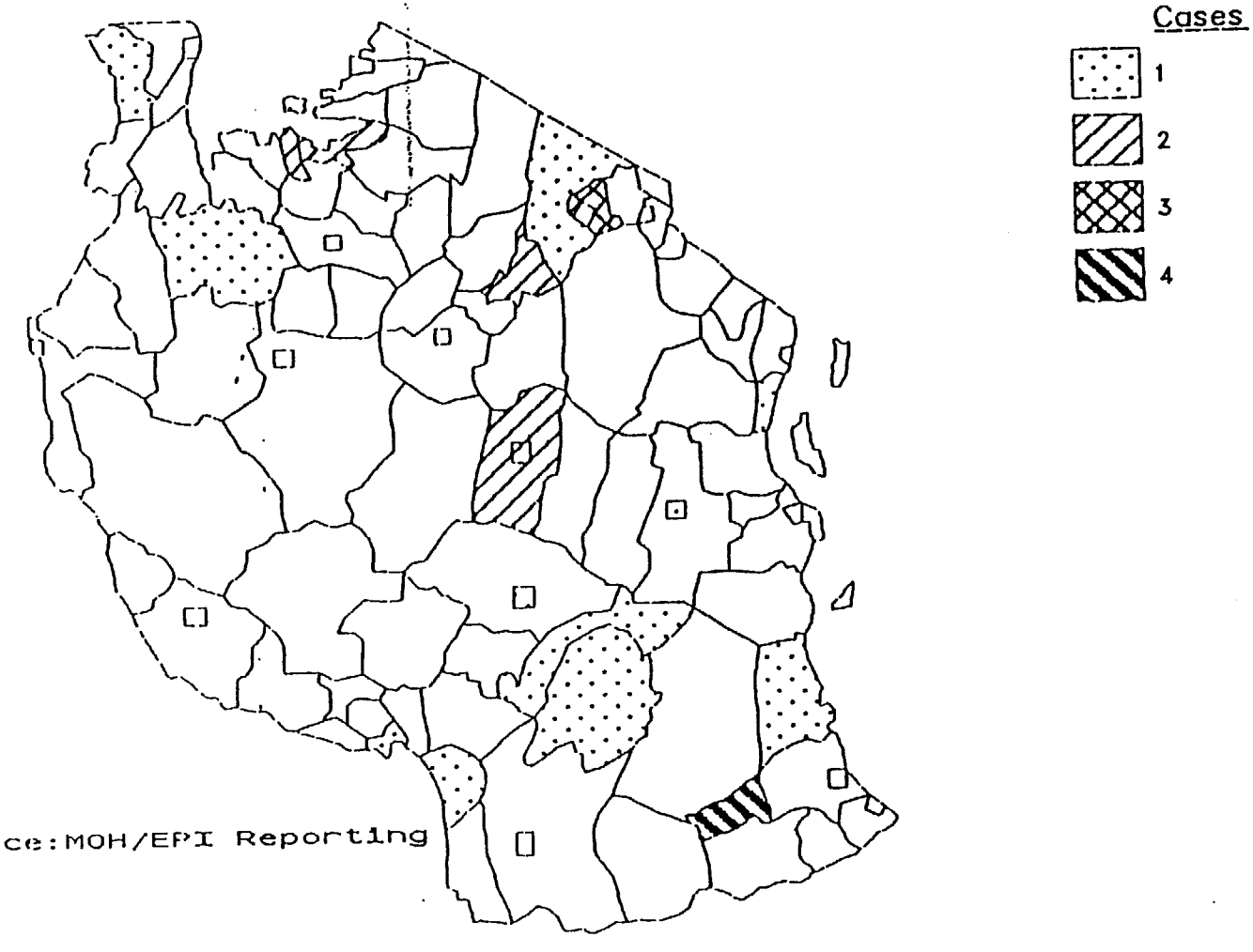
3

Source:MOH/EPI Reporting


Reporting timeliness by month
EPI disease reports
January to June 1995
Rate (%)
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
June
Months
Timeliness
Source:District monthly reports

Reported NNT Cases by District

Jan – Oct 1995



Source: MOH/EPI Reporting

APPENDIX Z

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AT HEATH FACILITY
NN DEATH : NNT INVESTIGATION
Fomu Na..... FORM

FOMU YA UFUATILIAJI YA UGONJWA WA PEPO-PUNDA/KIFO
KWA WATOTO WACHANGA
*(futa neno lisilohusika)

Wilaya..... Kituo.....Tarehe.....

Tarehe ya taarifa ya ugonjwa/kifo*.....

Taarifa imetoleva na.....

A. Taarifa ya mgonjwa/Kifo*

Kijiji/kitongoji.....Baloni.....

Mkuu wa kaya..... Jina la mama.....

Tarehe ya kuzaliwa mtoto..... Mama ni mkazi/mgeni*

B. Dalili za ugonjwa

Tarehe ugonjwa ulipoanza.....Je mtoto alinyonya na kulia vizuri katika siku mbili baada ya kuzaliwa? Ndiyo/Hapana* Je, mtoto alionyesha dalili za kukakamaa? Ndiyo/Hapana* Je, Mtoto alionyesha dalili za kushtukashtuka (spasms)? Ndiyo/Hapana* Kulikuwa na tatizo lingine? Eleza.....
.....

C. Taarifa za Kuzaliwa Mtoto

Mtoto alizaliwa wapi? Hospitali/Nyumbani/Pengine*
Alizaliswa na mkunga/TBA aliyefuzu/vengine*
Kifaa kilichotumika kukatia kitovu (taja).....
Kitovu kilitunzwaje.....

D. Hali ya Chanjo ya TT kwa Mama

Mama alipata chanjo ya TT? Ndiyo/Hapana* Kama ndiyo alipata dozi ngapi?..... Tarehe ya dozi ya mwisho..... Taarifa hiyo ya chanjo umetoa toka kwenye kadi? Ndiyo/Hapana* Mama alihudhuria kliniki ya wajawazito? Ndiyo/Hapana* Mama alipata kuhudhuria kituo cha matibabu kwa sababu zingine zaidi ya kupima mimba katika ujauzito huu? Ndiyo/Hapana*.

E. Sehemu ya Mganga wa Kutuo

Huu ni ugonjwa wa pepo-punda? Ndiyo/Hapana* Je, ugonjwa huu ungeweza kuzuilika kwa mtoto huyu? Ndiyo/Hapana* Kama ndiyo ungezuilikaje.....
.....

Hatua zipi utakazochukua ili usipate mgonjwa mwingine kwenye eneo lako.....

Jina la Mdadisi..... Sahihi.....

121

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HEALTH FACILITY MONTHLY REPORTING FORM

UFUATILIAJI WA MAGONJWA YA EPI
(FOMU YA KITUO)

Kituo.....

Mwezi unaripotiva.....

	WAGONJWA			JUMLA YA MWEZI
Measles	00000	00000	00000	
	00000	00000	00000	
	00000	00000	00000	
	00000	00000	00000	
	00000	00000	00000	
	00000	00000	00000	
	00000	00000	00000	
	00000	00000	00000	
	00000	00000	00000	
	00000	00000	00000	
Polio (Acute flaccid paralysis)	00000	00000	00000	
	00000	00000	00000	
Neonatal tetanus	00000	00000	00000	
	00000	00000	00000	

Maelezo (Milipuko, hatua zilizochukuliwa)
.....

Wagonjwa wa Neonatal Tetanus waliochunguzwa
.....

Neonatal deaths zilizoripotiwa.....

Tarehe..... Jina na sahihi.....

Imepokelewa Wilayani tarehe.....

Sahihi.....

Kumbuka:

- Mgonjwa anayeshukiwa kuwa ni Polio atoleve taarifa haraka kwa DMC, pamoja na kuingizwa kwenye fomu hii.
- Tumia EPI standard case definition kwa kutambua wagonjwa.
- Pata taarifa za wagonjwa wote, pamoja na wale wanaohudhuria MCH kliniki.
- Tumia fomu maalum ya kuchunguza mgonjwa wa Neonatal Tetanus/Deaths zilizochunguzwa.

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MEASLES OUTBREAK FORM

District ..... Year .....

Month .....

Fill at first Notification of out break		Fill at end of Outbreak							
			CASES					Death	
Date	Village/ Area	Date	<9 months	9-59 months		>5 yrs		<5 yrs	>5 yrs
				*imm	not	*imm	not		
	TOTAL								

Imm. = The children were immunised, and 'NOT' = the children were not immunised.
Determine by the child Health card or underfive register,

Note: *Immunised at least 2 weeks before onset of the disease.

Name of Reporter .....

Signature ..... Date .....

Fill in 3 copies (District, Regional, National)

EPI - 27/1

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EPI DISEASE SURVEILLANCE
(DISTRICT FORM)

District.....Name of reporter.....

Reporting month.....Signature.....

Date.....

Reports:
Expected H/facility reports.....
No. of reports received on time.....
(within 4 weeks)

	C A S E S	
	No. reported on time for the month	No. reported late from previous months
Measles		
Polio/AFP		
Neonatal Tetanus		

Measles outbreaks during the month/.....No investigated.....

Action taken.....

Polio cases investigated.....

Neonatal deaths reported..... Investigated.....

Remarks.....
.....

Date ..... Signature (DMO).....

Date received in the region .....

Signature .....

Note: Use measles outbreak form for measles outbreak)

Use suspect polio case form for AFP case) Submit 2 copies of these for to the region

Investigation)

Date received Central Unit.....

EPI-27/A

AT DISTRICT

* at district

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SUSPECT POLIO CASES FORM (LINE-LISTING)

Country:_____ Region:_____ District:_____ Town/Village_____ Year: 19_____

Investigator (s):_____

No.	Name	Residence Address	Sex (M/F)	OPV F/P Z/U (1)	Date of birth	Date of onset paralysis	Date reported district	Date feacal specimen i	Date feacal specimen ii	Lab. Result (2)	Date follow-up after 60 days	Resid. paral. (3)	Final Classif. (4)

(1) OPV doses from vacc. card: F=full, P=partial, Z=zero or U=unknown
(2) Laboratory results: P1, P2 or P3 = Polio types: E= Enterovirus: N= Negative
(3) Follow-up at 60 days: R=residual Paralysis, N=normal, L=lost to follow-up
(4) Final classification= C=confirmed: D=discarded

Note: Enter data by Day/Month/Year

CASE INVESTIGATION FORM - ACUTE FLACCID PARALYSIS

Ministry of Health, County: _____

COMPULSORY NOTIFICATION. PLEASE COMPLETE ALL INFORMATION IN FULL

Official use only: EPIDNUMBER		Received: ____/____/19____

IDENTIFICATION

Address: (Residence) _____ Health facility: _____

District: _____ Town/Village _____ Region _____

Name(s) of patient: _____ Father/mother: _____

Date of birth: ___/___/___ Age (last birthday) : years _____ months _____

Sex: M _____ F _____

NOTIFICATION/INVESTIGATION/RESPONSE

Reported by: _____ DATA REPORTED TO DISTR: ____/____/____

DATE CASE INVESTIGATED: ____/____/____ DATE OF RESPONSE: ____/____/____

Details of response (vacc.) _____

TREATMENT

OPD. Yes _____ No _____ Admitted. Yes _____ No _____ Date of admission: ___/___/___

File.No. _____ Name/address of facility: _____

INITIAL CLINICAL HISTORY

ONSET OF SIGNS AND SYMPTOMS: ____/____/____ ONSET PARALYSIS: ____/____/____

	YES	NO	Unk		YES	NO	Unk
Fever	___	___	___	Sudden	___	___	___
Nausea/vomiting	___	___	___	Flaccid	___	___	___
Diarrhoea	___	___	___	Asymmetrical	___	___	___
Constipation	___	___	___	Paralysis			
Sore throat	___	___	___	progressed more			
Muscular pain	___	___	___	than 3 days			
Headache	___	___	___	after onset			
Stiff neck	___	___	___	Ascending	___	___	___

Case died (10 days after onset: Yes ____ No ____ Date of death: ___/___/___

Had difficulty breathing ? Yes ____ No ____

	Involvement			Diminished		
	Yes	No	Unk	Tone	Strength	Reflexes
Left leg	___	___	___	___	___	___
Right leg	___	___	___	___	___	___
Left arm	___	___	___	___	___	___
Right arm	___	___	___	___	___	___
Breathing	___	___	___	___	___	___
Cervical muse.	___	___	___	___	___	___
Facial muse.	___	___	___	___	___	___

VACCINATION HISTORY

Vaccinated against polio: Yes ____ No ____ Unk ____

Dates: 1st dose: ___/___/___ Card: Yes ____ No ____

2nd dose: ___/___/___ In no card, number doses: _____

3rd dose: ___/___/___

4th dose: ___/___/___

* To be used w/ mob d distrib

CASE INVESTIGATION/HOME VISIT

	Yes	No	Unk
Patient travelled outside town/village in last 30 days ?	___	___	___
Visitors from outside the area in last 30 days ?	___	___	___
Festival, party, wedding or burial in last 30 days ?	___	___	___
Other new cases of paralysis in same town/village ?	___	___	___

Details: _____

FAECAL SPECIMEN COLLECTION

Case:	Date	Result: P1	P2	P3	Wild	Vac	Entero	Neg
1st stool:	___/___/___	___	___	___	___	___	___	___
2nd stool:	___/___/___	___	___	___	___	___	___	___
1st contact :	___/___/___	___	___	___	___	___	___	___
2nd contact:	___/___/___	___	___	___	___	___	___	___
3rd contact:	___/___/___	___	___	___	___	___	___	___
4th contact:	___/___/___	___	___	___	___	___	___	___
5th contact:	___/___/___	___	___	___	___	___	___	___

No. specimens collected: _____

FOLLOW-UP CLINICAL EXAMINATION AFTER 60 DAYS

Date: ___/___/___

	Involvement			Diminished		
	Yes	No	Unk	Tone	Strength	Reflexes
Left leg	___	___	___	___	___	___
Right leg	___	___	___	___	___	___
Left arm	___	___	___	___	___	___
Right arm	___	___	___	___	___	___
Breathing	___	___	___	___	___	___
Cervical muse.	___	___	___	___	___	___
Facial muse.	___	___	___	___	___	___

COMMENTS:

_____

_____

_____

FINAL CLASSIFICATION Polio: Yes _____ No _____ Other diag: _____

INVESTIGATOR

Name: _____ Title: _____

Unit: _____ Address: _____ Phone _____

PLEASE SEND A COPY OF THIS COMPLETED FORM BY FASTEST MEANS TO:
EPI CENTRAL UNIT, MABIBO, DAR ES SALAAM.
IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT:
Telephone: 48088, 43404, 23676, DSM.

THANK YOU FOR YOUR CO-OPERATION !

EPI DISEASE SURVEILLANCE
(REGIONAL FORM)

Region..... Name of reporter.....

Reporting month..... Signature.....

Date.....

Reports	H/facility	District
No. expected	.....	.....
No. received on time (within 4 weeks)	.....	.....

	C A S E S	
	No. reported on time for the month	No. reported late from previous months
Measles		
Polio/AFP		
Neonatal Tetanus		

Remarks (investigated cases/outbreaks).....

.....

.....

Date..... Signature (RMO).....

Date received at Central Unit.....

*

ADVERSE EFFECTS FOLLOWING IMMUNISATION (AEFI)

REPORTING FORM (HEALTH POST → DISTRICT)

A. PATIENT:

Name: ..... Sex: Female Male

Age:..... (Days/Weeks/Month)

Residence:

Village, Baloti/Street, House No.....

Ward:..... District:.....

B: AEFI:

Vaccination: Date..... Type:.....

Vaccine Batch No.....

Date of onset of AEFI:.....

Symptoms of AEFI:.....

.....

prior history of similar reaction: Yes/No

C. Vaccinator

Name:..... Designation.....

Name of Health Facility:..... District:.....

D. Notification:

Name of notifier:..... Design: .....

Name of health facility:.....District:.....

Outcome of AEFI (patient/Community).....

.....

Date:..... Signature:.....

APPENDIX Y

DISEASE CONTROL WORK PLAN 1996 - 2000

Introduction:

The Expanded Programme on Immunisation in Tanzania, has matured in terms of monitoring its activities. Performance reports, reported monthly showed a vaccination coverage OF 79% DPT3 for 1995.

The disease surveillance system has improved a lot although we still need to improve on completeness and timeliness of reporting. Completeness or reporting from district to Central Unit was 65% in 1995. This could be due to the fact that, private practioners do not give us them disease reports especially in Dar es Salaam AFP reporting has improved tremendously.
In 1994 the rate was 0.06
In 1995 the rate was 0.21
What we want is 1/100,000 under 15 year population.

The low rate of reporting could be due to lack of community data and the fact that clinicians are not adequately sensitized to report and diagnose AFP cases.

Constraints

1. Problems with data from regions with HMIS system

2. Lack of community data, therefore incomplete data

3. Lack of data from private health institutions especially in Dar es Salaam region.

4. Data interpretation is a problem by those who are handling it from the health units to the central level.

5. Election activities distracted people therefore immunisation activity was given low priority. There was country wide kerosine problems, high drop out rates and low vaccination coverages.

6. Clinicians do no involve themselves in disease surveillance.

7. Lack of staff for MCH services.

Objectives

1. To have a 90% completeness and timeliness of reporting from district level to central level.

2. Health workers dealing with data to have knowledge of analysing and interpreting it.

3. Clinicians to be able to report AFP cases.

4. The community to have knowledge on AFP and neonatal tetanus.

130

5. Achieve 90% coverage of childhood antigens and 80% of TT2+ at district level.

Strategies

1. Training to clinicians on AFP surveillance.

2. sensitize the community on AFP and neonatal tetanus surveillance

3. Train health workers on data collection analysis and interpretation.

4. Put up alternative cadre in units with no MCHA.

5. Sensitize the Private practioners on importance of EPI disease surveillance.

131

APPENDIX X

	SHINYANGA EAST	TZF 4476	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	SHINYANGA WEST	TZF 4475	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MEATU	TZH 4509	1995	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MASWA	TZG 7658	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
18	KAGERA	TZE 1694	1992	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	BUKOBA	TZG 7636	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MULEBA	TZF 4473	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	NGARA	TZG 7637	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KARAGWE	TZG 7635	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	BIHARAMULO	TZF 4474	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
19	MWANZA	TZE 1646	1992	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	UKEREWE	TZF 4458	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MAGU	TZF 4459	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MISSUNGWI	TZF 4460	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	SENGEREMA **	TZG 7643	1994	TOYOTA HILUX D/CABIN	GROUNDED	DANIDA
	GEITA "A"	TZF 4466	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	GEITA "B"	TZJ 3871	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KWIMBA	TZG 7642	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MWANZA(M)	TZJ 3870	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
20	MARA **	TZE 1696	1992	TOYOTA HILUX D/CABIN	GROUNDED	DANIDA
	MUSOMA EAST	TZG 7652	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MUSOMA SOUTH ***	TZD 4477	1991	MARUTI PICKUP	RUNNING	DANIDA
	SERENGETI	TZG 7656	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	BUNDA	TZJ 3875	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	TARIME EAST ***	TZD 4420	1991	MARUTI PICKUP	RUNNING	DANIDA
	TARIME WEST	TZG 7659	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	TOTAL RUNNING					
	TOTAL GROUNDED					
	TOTAL VEHICLES					

NB:

* These are new administrative districts allocated new vehicle but not yet collected.

** The vehicles are grounded due to either accident or major repair. Meanwhile the district/region has been allocated. temporarily another vehicle another vehicle.

***The Districts have been allocated new vehicle but have not yet come to collect are still using the old vehicle mentioned.

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CURRENT EPI UPDATED VEHICLE
STATUS AS ON 4Th July, 1996.

S/R NO.	REGION/ DISTRICT OF LOCATION	VEHICLE REGN NUMBER	YEAR OF MANUFACTURE	MAKE	CURRENT STATUS	OWNERSHIP
1	DODOMA	TZE 1698	1992	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	DODOMA EAST	TZF 4461	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	DODOMA WEST	TZH 4507	1995	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	DODOMA MUNICIPAL	TZJ 3872	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KONDOA	TZG 7646	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MPWAPWA	TZH 4515	1995	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KONGWA *	TZJ 3873	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
2	ARUSHA I	TZE 1648	1992	TOYOTA HILUX D/CABIN	GROUNDED	DANIDA
	ARUSHA II	TZJ 3886	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MONDULI	TZH 4512	1995	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KITETO	TZF 4484	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	ARUMERU	TZJ 3887	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	BABATI	TZF 4490	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MBULU	TZG 7660	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	HANANG	TZH 4503	1995	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	ARUSHA MUNICIPAL	TZJ 3888	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	LOLIONDO	TZG 7648	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	SIMANJIRO	TZH 4504	1995	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KARATU *	TZJ 3889	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
3	KILIMANJARO	TZE 1692	1992	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	HAI	TZJ 3896	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	ROMBO	TZF 4483	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MWANGA	TZH 4506	1995	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MOSHI EAST	TZG 7661	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MOSHI WEST	TZJ 3897	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	SAME	TZD 4423	1991	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
4	TANGA	TZE 1643	1992	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MUHEZA	TZF 4481	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	LUSHOTO	TZJ 3892	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KOROGWE	TZF 4482	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	PANGANI	TZG 7662	1994	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	TANGA MUNICIPAL	TZJ 3898	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	HANDENI	TZF 4485	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
5	MOROGORO	TZE 1644	1992	TOYOTA HILUX D/CABIN	GROUNDED	DANIDA
	KILOSA	TZG 7664	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MOROGORO SOUTH	TZJ 3891	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MOROGORO NORTH	TZF 4478	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MAHENGE	TZF 4479	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KILOMBERO	TZF 4480	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
6	PWANI	TZE 1695	1992	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	BAGAMOYO	TZG 7641	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KISARAWE	TZH 4510	1995	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	RUFIJI	TZF 4464	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MAFIA	TZH 4508	1995	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KIBAHA	TZF 4465	1993	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	MKURANGA*	TZJ 3880	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
7	DAR-ES-SALAAM	TZE 1645	1992	TOYOTA HILUX D/CABIN	RUNNING	DANIDA
	KINONDONI	TZJ 3893	1996	TOYOTA HILUX D/CABIN	RUNNING	DANIDA

	:ILALA	:TZJ 3894 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:TEMEKE	:TZJ 3895 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
8	:LINDI	:TZE 1630 :	1992	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MACHINGWEA	:TZJ 3881 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:LIWALE	:TZH 4516 :	1995	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:LINDI WEST	:TZF 4488 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:LINDI EAST	:TZJ 3882 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:KILWA	:TZG 7647 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
9	:MTWARA **	:TZE 1637 :	1992	:TOYOTA HILUX D/CABIN	:GROUNDED	:DANIDA :
	:NEWALA	:TZG 7640 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MASASI	:TZJ 3900 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MTAWARA U/R	:TZG 7649 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
10	:RUVUMA	:TZE 1691 :	1992	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:TUNDURU	:TZG 7653 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:SONGEA SOUTH	:TZF 4463 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MBINGA	:TZH 4501 :	1995	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:SONGEA NORTH ***	:TZD 4458 :	1991	:MARUTI PICKUP	:RUNNING	:DANIDA :
11	:IRINGA	:TZE 1641 :	1992	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:IRINGA NORTH	:TZJ 3878 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:IRINGA SOUTH	:TZG 7638 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MUFINDI	:TZH 4513 :	1995	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MAKETE	:TZG 7639 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:LUDEWA	:TZF 4472 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:NJOMBE	:TZF 4462 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
12	:MBEYA	:TZE 1647 :	1992	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MBOZI	:TZH 4502 :	1995	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MBARALI	:TZG 7655 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:KYELA	:TZJ 3869 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:RUNGWE	:TZG 7654 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MBEYA	:TZH 4505 :	1995	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:CHUNYA	:TZJ 3868 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:ILEJE **	:TZF 4457 :	1993	:TOYOTA HILUX D/CABIN	:GROUNDED	:DANIDA :
13	:SINGIDA	:TZE 1693 :	1992	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:SINGIDA RURAL	:TZJ 3874 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MANYONI	:TZG 7644 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:IRAMBA EAST	:TZG 7645 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:IRAMBA WEST	:TZF 4487 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
14	:TABORA	:TZE 1649 :	1992	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:TABORA NORTH	:TZJ 3884 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:TABORA SOUTH	:TZJ 3883 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:URAMBO	:TZF 4468 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:NZEGA	:TZG 7650 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:IGUNGA **	:TZG 7651 :	1994	:TOYOTA HILUX D/CABIN	:GROUNDED	:DANIDA :
15	:RUKWA	:TZH 4514 :	1995	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:SUMBAWANGA EAST	:TZF 4471 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:SUMBAWANGA WEST	:TZJ 3885 :	1996	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:MPANDA	:TZF 4469 :	1993	:TOYOTA HILUX D/CABIN	:GROUNDED	:DANIDA :
	:NKANSI	:TZF 4470 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
16	:KIGOMA	:TZE 1640 :	1992	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:KIGOMA RURAL **	:TZF 4489 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:KIBONDO	:TZF 4467 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:KASULU	:TZG 7663 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
17	:SHINYANGA	:TZE 1642 :	1992	:TOYOTA HILUX D/CABIN	:GROUNDED	:DANIDA :
	:BARIADI	:TZG 7657 :	1994	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:KAHAMA WEST	:TZF 4477 :	1993	:TOYOTA HILUX D/CABIN	:RUNNING	:DANIDA :
	:KAHAMA EAST	:TZJ 3899 :	1996	:TOYOTA HILUX D/CABIN	:GROUNDED	:DANIDA :

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APPENDIX W

UPDATED LIST OF EPI VEHICLES AS ON 2/7/96

S/R NO.	VEHICLE REGN. NO	MAKE	MODEL	YEAR OF MAKE	CHASSIS NUMBER	ENGINE NUMBER	DISTRICT OF LOCATION	OWNER	PROGRAME	PURPOSE	ASSIGNED TO	CONDITION OF VEHICLE
1	TZD 4465	SUZUKI SAMURAI	SJ413-JX	1990	SJ70-306419	G13 BA-188554	ILALA	DANIDA	E.P.I	MANAGEMENT	NATIONAL	GOOD
2	TZD 4461	SUZUKI SAMURAI	SJ413-JX	1990	SJ70-306341	G13 BA-188277	KINONDONI	DANIDA	E.P.I	MANAGEMENT	NATIONAL	GOOD
3	TZD 3658	TOYOTA LANDCRUISER	HZJ80R-GNS	1990	HZJ80-0006940	1HZ-0041159	KINONDONI	DANIDA	E.P.I	SUPERVISION	NATIONAL	GROUNDED
4	TZD 4456	TOYOTA LANDCRUISER	HZJ80R-GNS	1990	HZJ80-0000366	1HZ-0036722	KINONDONI	DANIDA	E.P.I	SUPERVISION	NATIONAL	GOOD
5	TZD 4427	MARUTI VAN	MG 410	1990	SJ41-IN-139950	E10A-146965	KINONDONI	DANIDA	E.P.I	STAFF	NATIONAL	GOOD
6	TZD 4429	MARUTI VAN	MG 410	1991	SJ41-IN-136543	F10A-IN-137681	KINONDONI	DANIDA	E.P.I	STAFF	NATIONAL	GOOD
7	TZD 3637	TOYOTA LANDCRUISER	HJ 75	1989	HJ75-0033947	2H-1178700	KINONDONI	DANIDA	E.P.I	MOBILE W/SHOP	NATIONAL	GROUNDED
8	TZD 4426	SUZUKI SAMURAI	SJ413	1990	SJ70-309414	G13 BA-223947	KINONDONI	DANIDA	E.P.I	ACCOUNTING	NATIONAL	GOOD
9	TZC 6541	TOYOTA HIACE BUS	LH114-BRMR	1991	LH114-6000946	2L-2934771	KINONDONI	DANIDA	E.P.I	STAFF	NATIONAL	GOOD
10	TZD 4424	TOYOTA LANDCRUISER	HZJ 75	1991	HZJ75-0008367	1HZ-0051945	KINONDONI	DANIDA	E.P.I	COLD CHAIN	NATIONAL	GOOD
11	TZE 3052	SUZUKI SAMURAI	SJ413	1992	SJ70-407223	G13 BA-30578-	KINONDONI	MOH/JICA	E.P.I	OPERATION	NATIONAL	GOOD
12	TZE 3053	SUZUKI SAMURAI	SJ413	1992	SJ70-407073	G13 BA-305342	KINONDONI	MOH/JICA	E.P.I	COLD CHAIN	NATIONAL	GOOD
13	TZE 3054	SUZUKI SAMURAI	SJ413	1992	SJ70-407100	G13 BA-305335	KINONDONI	MOH/JICA	E.P.I	TRANSPORT	NATIONAL	GOOD
14	TZE 3055	SUZUKI SAMURAI	SJ413	1992	SJ70-407275	G13 BA-305637	KINONDONI	MOH/JICA	E.P.I	TRAINING	NATIONAL	GOOD
15	TZE 7473	TOYOTA LANDCRUISER	HZJ 75	1993	HZJ75-0015939	1HZ-0094304	KINONDONI	MOH/JICA	E.P.I	COLD CHAIN	NATIONAL	GOOD
16	TZE 5208	TOYOTA LANDCRUISER	HZJ80R-GNM	1993	HZJ80-0017126	1HZ-0090615	KINONDONI	DANIDA	E.P.I	COORDINATION	NATIONAL	GOOD
17	TZD 4421	ISUZU KB P/UP	TFS54HRS	1991	JAATFS54HM 7109323	610268	KINONDONI	DANIDA	E.P.I	DISTRIBUTION	NATIONAL	GROUNDED
18	TZG 9691	TOYOTA DYNA	BU96R-MDDT3	1994	BU96-0007703	14B-1398240	KINONDONI	DANIDA	M.S.D	DISTRIBUTION	NATIONAL	GOOD
19	TZG 5964	SCANIA TRUCK	P-93-HK 4X4	1994	1202704	5112525	KINONDONI	DANIDA	M.S.D	DISTRIBUTION	NATIONAL	GOOD
20	TZG 7113	SUZUKI SAMURAI	SJ413V-JA	1994	SJ70-413026	G13 BA-628650	KINONDONI	DANIDA	E.P.I	TRANSPORT	NATIONAL	GOOD
21	TZG 7115	SUZUKI SAMURAI	SJ413V-JA	1994	SJ70-413113	G13 BA-629419	KINONDONI	DANIDA	E.P.I	COLD CHAIN	NATIONAL	GOOD
22	TZG 7116	SUZUKI SAMURAI	SJ413V-JA	1994	SJ70-443066	G13 BA-629160	ILALA	DANIDA	E.P.I	MANAGEMENT	NATIONAL	GOOD
23	TZJ 1241	TOYOTA HIACE BUS	LH114-BRMR	1995	LH114-0021300	2L-3944790	KINONDONI	DANIDA	E.P.I	STAFF	NATIONAL	GOOD
24	TZJ 1242	TOYOTA LANDCRUISER	HZJ80R-GCMKS	1995	HZJ80-0028598	1HZ-0171523	KINONDONI	DANIDA	E.P.I	COORDINATION	NATIONAL	GOOD
25	TZH 9377	HONDA MOTORBIKE	CT110	1995	JD01-1046560	JD01E-1053151	KINONDONI	DANIDA	E.P.I	ADMINISTRATION	NATIONAL	GOOD

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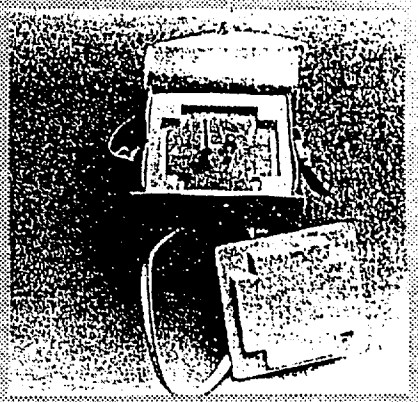
APPENDIX V

CODE
PIS
E4/19



ITEM

Vaccine carrier
Model EPI/PF/1.5

COMPANY NAME AND ADDRESS

Polyfoam Chemical Corporation
32 Miller Street
San Francisco Del Monte Avenue
Quezon City, Philippines
Telephone: 98 64 01 to 04
Fax: (632) 996 994, (632) 842 3127

SIZE AND MATERIALS

Vaccine storage capacity	1.4 litres
Weight fully loaded	4.5 kgs.
Weight empty	2.4 kgs.
External surface material	Plastic
Internal lining material	Fibreglass
Insulation material	Polyurethane
Insulation thickness	30 mm.
External dimensions	25x25x26 cms.
Internal dimensions	16x16x18 cms.
Vaccine storage dimensions	9x9x17 cms.
Lid type & fixings	Removable
Number of icepacks required	4
Number of icepacks supplied	4
Icepack type	E5/02, 10, 14

COMMENTS AND PERFORMANCE

Test report: Univalle CB.9 (1986), Sisir B00101/ (1989); CRL A.9023 (1990)
Meets WHO/UNICEF Standard E4/VC.2
This carrier meets standard specifications in all respects but is not durable and therefore has a short working life. Supplied with soft foam pad insert to hold vaccine vials.

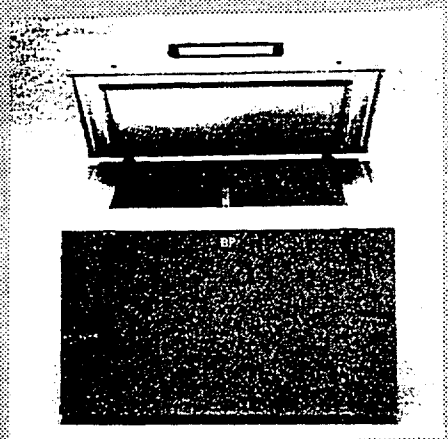
Robustness in drop test:	Fittings 1; Casing 1
Cold life without openings	50 hrs. at +32°C
	37 hrs. at +43°C

1993 PRICES (FOB)

Minimum order *40*
Quantity/Price: 1/US$ 15.20
Replacement foam pads US$0.20.

BEST AVAILABLE COPY

APPENDIX U



CODE PIS E3/37

ITEM

Photovoltaic solar refrigerator & icepack freezer
Model VR 50

COMPANY NAME AND ADDRESS

BP Solar Ltd.
Credsec House, Oxford Road
Stone, Aylesbury, Bucks HP17 8PL
United Kingdom
Telephone: 0296 747222; Telex: 838867 BPSOL G
Fax: 0296 748111

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	45		5		litres
Vaccine storage capacity	38		0		litres
External dimensions, H x W x L	63x56x84		++		cms.
Shipping volume/gross weight	0.6/100.0		—		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	2.6/10	2.6/20	kgs/hrs.
Icepack freezing, without vaccine	—	—	++	++	kgs/hrs.
Internal temperatures, minimum	+2	+1.5	++	++	degrees C.
Internal temperatures, maximum	+7	+6.5	++	++	degrees C.
Holdover time during power cut	4.0	3.0	++	++	hours
Electricity consumption:					
With icepack freezing	--	--	{0.6}	{0.7}	Kwh/24 hrs.
Without icepack freezing	0.36	0.66	--	--	Kwh/24 hrs.

Temperatures recorded during day/night (+43/+15°C) tests: Minimum +1.5; Maximum +7.5°C.

ENERGY REQUIREMENTS

Energy sources: 12VDC

SPARES NEEDED PER 10 UNITS

	Quantity	GB£/1
Complete spares kit (as specified by WHO)	1	1,500.00 (US$ 2,238.81)

COMMENTS AND ACCESSORIES

Reports: Crown Agents (1986); Meets WHO/UNICEF Standard: E3/RF.4.
If ambient temperature is permanently below +15 to +20°C, this appliance is not suitable for freezing icepacks. Freezer compartment should be used for icepacks only; it is not suitable for storage or freezing of vaccines.
Cabinet is suplied with separate LED alarms indicating "*Do not freeze icepacks*" and "*System off*" as standard. Cabinet features integral control unit calibrated for use with BP Solarbloc P series batteries.
Accessories: Basic tool kit and spares listed above.
(Refrigerator spares kit comprises: 1 control unit; 1 invertor; 15 metres array cable, 16mm sq.; 1 cooling unit; 2 lid seals; 2 thermostats.Spare module and battery set comprises: 2 dry charged batteries 6p363; 2 drums electrolyte; 1 module. Additional modules available.)

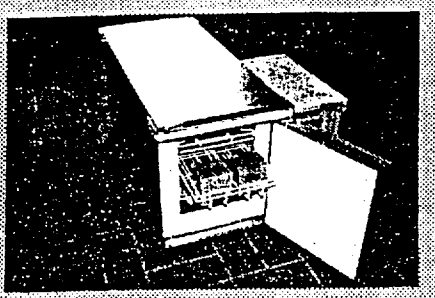
1993 PRICES (FOB UK port)

Quantity/Price:

Cabinet	GB£ 1,375.00 (US$ 2,052,24)
Complete solar system	GB£ 3,560.00 (US$ 5,313.43)

APPENDIX T

CODE PIS E3/70



DESCRIPTION

Photovoltaic solar refrigerator and icepack freezer
Stationary version - Model CFS49 IS

COMPANY NAME AND ADDRESS

NAPS Norway A/S
P. O. Box 74
Rislokka, 0516 Oslo, Norway
Telephone: (47) 22 72 30 12; Telex: 79932 Naps N;
Fax: (47) 22 72 24 35

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	49		7.3		litres
Vaccine storage capacity	30-35*		0		litres
External dimensions, H x W x L	50x100x42.5		—		cms.
Shipping volume/gross weight	0.3/47		—		cu.m./kgs.
Storage of frozen icepacks			3		kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	2.4/17	2.4/16	kgs/hrs.
Frozen icepack storage capacity	—	—	—	3	kgs
Internal temperatures, minimum	+2.5	+2.0	—	—	degrees C.
Internal temperatures, maximum	+7.0	+7.5	—	—	degrees C.
Holdover time during power cut	6.8	3.8	—	—	hours
Electricity consumption:					
With icepack freezing**	—	—	0.53	0.9	Kwh/24 hrs.
Without icepack freezing**	0.31	0.58	—	—	Kwh/24 hrs.

Temperatures recorded during day/night (+43/+15°C) tests: Minimum -0.4; Maximum +7°C.

ENERGY REQUIREMENTS

Energy sources: 12 VDC

SPARES NEEDED PER 10 UNITS	Part No.	Quantity	$US/1
Condensor fan	57000	3	50.00
Compressor	57040	1	230.00
Electronic device	57080	1	80.00
Electronic thermost & alarm/temp.display	57170	1	225.00
Fuses for CFS49	57210	3 sets	3.00

COMMENTS AND ACCESSORIES

Reports: GET, June 1989 & Feb.1990; Meets WHO/UNICEF Standard:E3/RF.4.

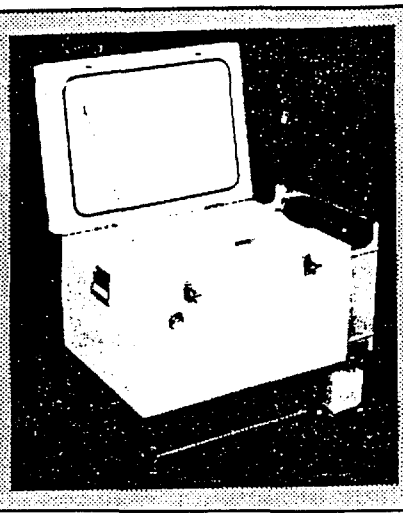
This appliance is not suitable for freezing icepacks if ambient temperature is permanently below +15 to +20°C. Freezer compartment should be used for icepacks only; it is not suitable for storage or freezing of vaccines. Accessories: Stand for refrigerator and the battery box unit; mounting tool kit, wire shelves with vaccine boxes, ventilated battery box with charging regulator integrated, cable with plug connexion between battery box + refrigerator and battery box + array. Digital thermometer with LED alarm mounted on front of refrigerator. Wire shelves in freezing compartment designed to fit all types of icepack.

1993 PRICES (FOB)

Quantity/Price:		
	Cabinet only	US$ 2,024.00
	Complete solar system with stand	US$ 5,130.00 ✓

*Storage capacity varies in accordance with type of packaging of vaccine stored.
** Figures inclusive of storage of 3 kg. frozen icepacks.

APPENDIX S



CODE PIS E3/22

DESCRIPTION

Refrigerator and icepack freezer, absorption type
Model RCW 42 EK (P)

COMPANY NAME AND ADDRESS

Electrolux (Luxembourg)
4, rue de la frontière
L'9412 Vianden
Luxembourg
Telephone: 84595; Telex: 3468 ELUX VI;
Fax: 848 11 300

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	40		--		litres
Vaccine storage capacity	24		--		litres
External dimensions, H x W x L	72x56x85		--		cms.
Shipping volume/gross weight	0.33/58		--		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	1.1/24	0.2/24	kgs/hrs.
Icepack freezing, without vaccine	—	—	++	++	kgs/hrs.
Internal temperatures, minimum	+2.5	+2	++	++	degrees C.
Internal temperatures, maximum	+6.1	+9	++	++	degrees C.
Holdover time during power cut	12.5	6.5	--	--	hours
Power consumption: electricity	1.6	2.2	--	--	Kwh/24 hrs.
Power consumption: kerosene	0.23	0.4	--	--	lts/24 hrs.
Power consumption: LP gas	—	—	—	—	kgs/24 hrs.

Temperatures recorded during day/night (+43/+15°C) tests: Minimum -1; Maximum +9°C.

ENERGY REQUIREMENTS

Energy sources: 220V + 12V + Kerosene*

SPARES NEEDED PER 10 UNITS	Part No.	Quantity	XEU/1
Lamp glass (metal)	293.0244.00/5	10	4.02 (US$ 4.79)
Wick	292.8554.02/7	60	2.57 (US$ 3.06)
Gasket	292.8510.02/9	5	4.42 (US$ 5.26)
Flue brush	292.8557.00/4	20	3.45 (US$ 4.11)
Electrical heater, 220VAC	292.9491.41/9	2	5.75 (US$ 6.85)

COMMENTS AND ACCESSORIES

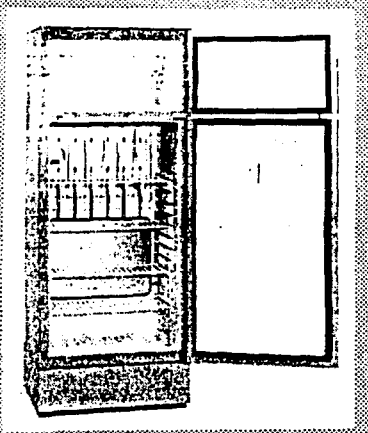
Reports: CRL A.9003 (1992). Meets WHO/UNICEF Standard: E3/RF2.
Note: This refrigerator has a very limited freezing capacity.
Accessories: Locking door(s), external thermometer, lamp glass, flue brush, rack for freezing 4 x 0.3 litre icepacks. Can be supplied with trays for freezing icecubes instead (RCW 42 EK (C); and with 12 volt and 120 volt heating elements. (See revised modification kit, E7/44.)

1993 PRICES (FOT Luxembourg)

Quantity/Price**:		
	1-39:	XEU 930.00 (US$ 1,107.14)
	40-99	XEU 884.00 (US$ 1,052.38)
	100+	XEU 845.00 (US$ 1,005.95)

* If required without 12 V equipment, a deduction of XEU 16.00 (US$ 19.05) per appliance.
** Cost of export packing for sea freight not included in price (allow approximately XEU 37.50 (US$ 44.64) per appliance.)

APPENDIX R



CODE PIS E3/28
UNICEF Stock number: 11-216-10

ITEM
Refrigerator & freezer, absorption type
Model V 240 KE Kerosene and electric

COMPANY NAME AND ADDRESS
Sibir International AB
S-105 45 Stockholm
Sweden
Telephone: +46-8-738 61 18;
Fax: +46-8-738 75 38
Telex: 11600 ELHEAD S

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	240		33		litres
Vaccine storage capacity	68		30		litres
External dimensions, H x W x L	151x59x68		--		cms.
Shipping volume/gross weight	0.854/113		--		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	2.9/24	3.4/24	kgs/hrs.
Icepack freezing, without vaccine	—	—	++	++	kgs/hrs.
Internal temperatures, minimum	+3	+3	-21	-15	degrees C.
Internal temperatures, maximum	+6	+7	-21	-15	degrees C.
Holdover time during power cut	[11]	6	++	4	hours
Power consumption: electricity	4.3	5.2	—	—	Kwh/24 hrs.
Power consumption: kerosene	0.9	1.0	—	—	lts/24 hrs.
Power consumption: LP gas	—	—	—	—	kgs/24 hrs.

Temperatures recorded during day/night (+43/+15°C) tests: Minimum 0; Maximum +9°C.

ENERGY REQUIREMENTS
Energy sources: Kerosene or 220VAC/50Hz; other voltages on request.

SPARES NEEDED PER 10 UNITS	Part No. (Mfg.)	Stock No. (UNICEF)	Quantity	US$/1
Wick (Cotton)	196062 40 03-00/4	11-216-11	50	1.832*
Glass flue	196094 01 32-00/8	11-216-13	20	6.702*
Flame spreader	196062 40 06-00/7	--	10	6.65
Wick cleaner	196062 40 12-00/5	11-216-14	20	0.782*
Electrical heater, 220VAC	196093 00 79-20/1	11-216-20**	2	12.67*
Flue brush	196093 01 03-00/1	11-216-15	10	11.503*

COMMENTS AND ACCESSORIES
Reports: CATR. A.9968 (1983), A.99112 (1982), A.9911 (1982); Meets WHO/UNICEF Standard: E3/RF2. Available also for 120 VAC or 240 VAC on special request. Standard execution for 220VAC. For other voltages (120 or 240 VAC) heating elements can be ordered separately. Packed in a seaworthy plywood case. Fitted with temperature stabilizer for use in climates with wide day/night temperature variations. Supplied with standard package of essential spare parts for Aladdin blue flame burner (5 wicks, 3 lamp glasses, 3 flame spreaders, 5 wick cleaners, 1 gallery). Accessories: Locking door(s); external thermometer; flue brush.

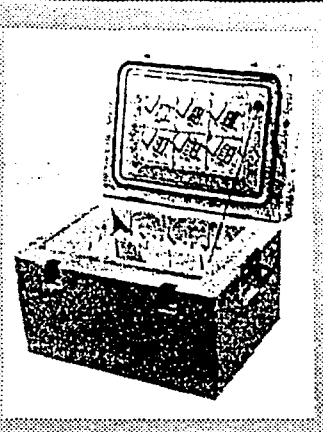
1993 PRICES (FOT Copenhagen/Denmark)
Quantity/Price: 1/US$ 1,654.13*

* Unicef price.
** Consult Unicef catalogue for part number for previous model (S2325).

APPENDIX Q

CODE
PIS
E4/05

UNICEF
Stock
number:
11-850-51



ITEM

Long range vaccine cold box
Model RCW 25, 991.1510.01, with icepacks

COMPANY NAME AND ADDRESS

Electrolux (Luxembourg)
4, rue de la frontière
L-9412 Vianden
Luxembourg
Telephone: 84595; Telex: 3468 ELUX VI;
Fax: 848 11-300

SIZE AND MATERIALS

Vaccine storage capacity	20.7 litres
Weight fully loaded	39.4 kgs.
Weight empty	15.9 kgs.
External surface material	Plastic
Internal lining material	Plastic
Insulation material	Polyurethane
Insulation thickness	105 mm.
External dimensions	71x55x50 cms.
Internal dimensions	50x34x27 cms.
Vaccine storage dimensions	42x26x19 cms.
Lid type & fixings	Hinged
Number of icepacks required	24
Number of icepacks supplied	24
Icepack type	E5/09, 16, 18

COMMENTS AND PERFORMANCE

Test report: Univalle CB.2 (1983),
CATR.G.99220 (1980) & CRL.A.9007 (1990)
Meets WHO/UNICEF Standard E4/CB2

Robustness in drop test:	Fittings 2; Casing 5
Cold life without openings	226 hrs. at +32°C
	181 hrs. at +43°C

1993 PRICES (FOB)

Minimum order	*1*
Quantity/Price	1/US$ 336.06*

* UNICEF price, includes icepacks and triwall packing.

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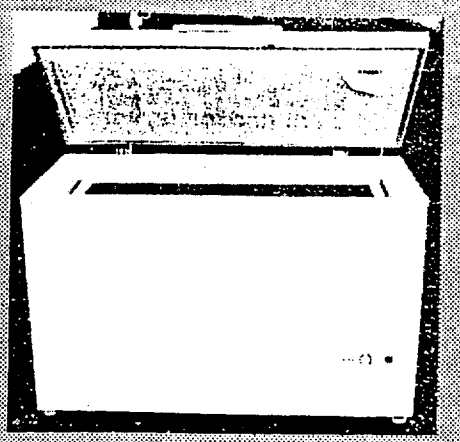
APPENDIX P



CODE PIS E3/68

ITEM
Icelined refrigerator, compression type
Model MK 302

COMPANY NAME AND ADDRESS
Vestfrost A/S
P. O. Box 2079
Spangsbjerg mollevej 100
DK 6705 Esbjerg 0, Denmark
Telephone: 45 79 14 22 22; Telex: 54122 VEFRO DK;
Fax: 45 79 14 23 55

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	282		—		litres
Vaccine 1torage capacity	204		—		litres
External dimensions, H x W x L	85x68x126		—		cms.
Shipping volume/gross weight	0.94/105.0		—		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	—	—	kgs/hrs.
Icepack freezing, without vaccine	—	—	—	—	kgs/hrs.
Internal temperatures, minimum*	0.2	-1.7	—	—	degrees C.
Internal temperatures, maximum*	+8.0	+6.7	—	—	degrees C.
Holdover time during power cut	47.5	57	—	—	hours
Power consumption: electricity	0.58	1.39	—	—	Kwh/24 hrs.
Thermostat setting:					
Continuous energy	6.0	8.0	--	--	
Intermittent energy	6.0	8.0	--	--	

Temperatures recorded during day/night (+43/+15°C) tests: Minimum -2.1; Maximum +4.1°C.

ENERGY REQUIREMENTS

Energy sources: 220 VAC/50 Hz
Minimum of 8 hours electricity needed per 24 hours at 43°C.

SPARES NEEDED PER 10 UNITS	Part No.	Quantity	US$/1
Starting device for compressor	02 70 38 066	3	—
Thermostat for refrigerator	70 38 016	—	—
Compressor, Danfoss TFS 5AT	03 65 38 084	1	—
MK Basket	69.38.012	1	6.00

COMMENTS AND ACCESSORIES

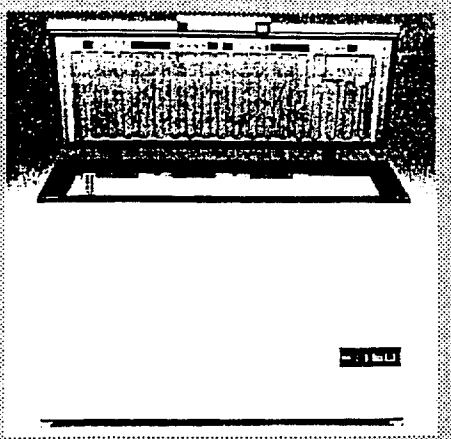
Reports: Vestfrost/Bureau Veritas 88/02; Meets WHO/UNICEF Standard:E3/RF.3.
• **As of June 1993, this appliance is insulated with CFC-free foam.**
Appliance equipped with LST compressor which requires voltage stabilizer with 5-minute cut-in delay.
Accessories: Locking lid.
Optional: Baskets, vaccine tray. Thermometer integrated into control panel.
x **Warning:** Temperatures near the base of this icelined refrigerator are liable to fall below zero so this area is not suitable for the storage of DPT, TT and Hepatitis-B vaccine.

1993 PRICES (FOB)

Quantity/Price: 1/DEM 980.00 (US$ 601.23)

* Measured during intermittent energy test (8 hours on, 16 hours off).

APPENDIX O



CODE PIS E3/27

ITEM
Freezer, compression type
Model SB 300, Low energy

COMPANY NAME AND ADDRESS
Vestfrost A/S
P. O. Box 2079
Spangsbjerg mollevej 100
DK 6705 Esbjerg 0, Denmark
Telephone: 45 79 14 22 22; Telex: 54122 VEFRO DK;
Fax: 45 79 14 23 55

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	—		296		litres
Vaccine storage capacity	—		188		litres
External dimensions, H x W x L	—		85x126x68		cms.
Shipping volume/gross weight	—		0.94/98.0		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	12/24	13/24	kgs/hrs.
Icepack freezing, without vaccine	—	—	++	++	kgs/hrs.
Internal temperatures, minimum	—	—	-23	-21	degrees C.
Internal temperatures, maximum	—	—	-20	-19	degrees C.
Holdover time during power cut	—	—	26	18	hours
Power consumption: electricity	—	—	1.7	2.3	Kwh/24 hrs.
Power consumption: kerosene	—	—	—	—	lts/24 hrs.
Power consumption: LP gas	—	—	—	—	kgs/24 hrs.

Temperatures recorded during day/night (+43/+15°C) tests: Minimum -22; Maximum -19°C.

ENERGY REQUIREMENTS
Energy sources: 220 VAC/50 Hz

SPARES NEEDED PER 10 UNITS	Part No.	Quantity	$US/1
Starting device for compressor	70.38.181	3	5.00
Thermostat for freezer	70.38.480	3	6.50
Compressor, Danfoss FF 7.5 AT OC	60.38.059	1	65.50
SB Basket	69.38.006	1	4.00

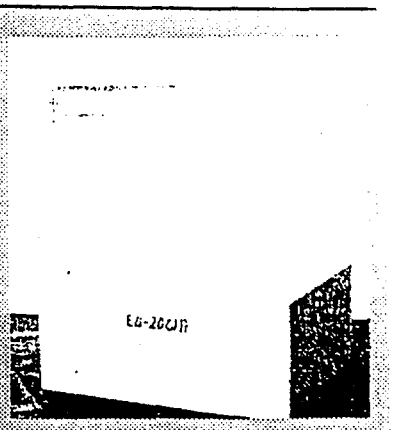
COMMENTS AND ACCESSORIES
Reports: Univalle Ref.1 (1983); Meets WHO/UNICEF Standard: E3/FR.1.
- **As of June 1993, this appliance is insulated with CFC-free foam.**

Fast freezing compartment. Available in various voltages, including 110, 200, 240VAC, 50 or 60 Hz. Also available in different sizes: 200 litres (E3/78) and ***sizes which have not been tested:*** 140, 250 & 400 litres. Accessories: Locking lid.
Optional: Baskets for quick icepack freezing. Thermometer integrated into control panel.

1993 PRICES (FOB)
Quantity/Price: 1/DEM 667.00 (US$ 409.20)

APPENDIX N

CODE
PIS
E4/33



ITEM

Vaccine packaging, Class A
Model Sarnacel 2.0532.20

COMPANY NAME AND ADDRESS

Sarnatech
Folien und Schaumstoffe AG
P. O. Box 177, 6060 Sarnen
Switzerland
Telephone: 041 66 99 66;
Telex: 866 427 SARN CH; Fax: 041 66 87 17

SIZE AND MATERIALS

Vaccine storage capacity	16.2 litres
Weight fully loaded	25.0 kgs.
Weight empty	2.2 kgs.
External surface material	Polystyrene
Internal lining material	Polystyrene
Insulation material	Polystyrene
Insulation thickness	65 mm.
External dimensions	63x51x40 cms.
Internal dimensions	50x38x27 cms.
Vaccine storage dimensions	46x22x16 cms.
Lid type & fixings	Removable
Number of icepacks required	32
Number of icepacks supplied	0
Icepack type	E5/02, 14

COMMENTS AND PERFORMANCE

Test Reports: Univalle CB.2 (1983)
Meets WHO/UNICEF Standard E4/VP.1, Class A
Cold life without openings 113 hrs. at +32°C
77 hrs. at +43°C

1993 PRICES (EX WORKS)

Minimum order *50*
Quantity/Price: 1/CHF 39.00 (US$25.83)

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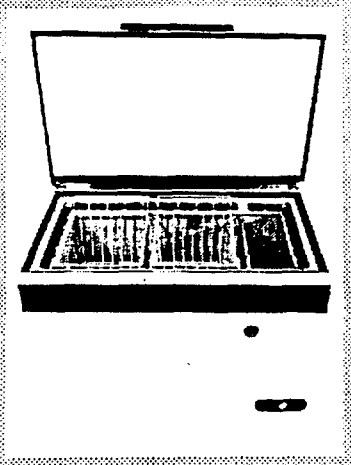
APPENDIX M



CODE PIS E3/24
UNICEF Stock number: 11-530-20

ITEM
Icelined refrigerator or freezer, compression type
Model TCW 1151 (920 4239 04)

COMPANY NAME AND ADDRESS
Electrolux (Luxembourg)
4, rue de la frontière
L-9412 Vianden
Luxembourg
Telephone: 84595; Telex: 3468 ELUX VI;
Fax: 848 11-300

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	250*		—*		litres
Vaccine storage capacity	200*		—*		litres
External dimensions, H x W x L	85x66x105*		—*		cms.
Shipping volume/gross weight	0.85/95.0*		—*		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	5/24	5/24	++	++	kgs/hrs.
Icepack freezing, without vaccine	++	++	++	++	kgs/hrs.
Internal temperatures, minimum**	+1	-3	++	++	degrees C.
Internal temperatures, maximum**	+3	+3	++	++	degrees C.
Holdover time during power cut	40	22	++	++	hours
Power consumption: electricity	0.9	1.5	++	++	Kwh/24 hrs.
Power consumption: kerosene	—	—	—	—	lts/24 hrs.
Power consumption: LP gas	—	—	—	—	kgs/24 hrs.

Temperatures recorded during day/night (+43/+15°C) tests: Minimum -3; Maximum +3°C.

ENERGY REQUIREMENTS
Energy sources: 220 VAC/50Hz. Min. number of hours electricity needed per 24 hours: 8 hours at 43°C.

SPARES NEEDED PER 10 UNITS	Part No. (Mfg.)	Stock No. (UNICEF)	Quantity	Price US$/1
Starting device for compressor	291.2087.05/9	11-537-50	3	4.89***
Capacitor for compressor	291.2146.00/4	11-537-40	1	10.314***
Thermostat for refrigerator use	291.2478.01/9	11-537-61	3	7.13***
Thermostat for freezer use	291.2477.00/3	11-537-60	3	7.173***
Compressor, Danfoss FR8.5B	210.0251.11/1	11-537-41	1	97.97***

COMMENTS AND ACCESSORIES
Reports: ScanAtlas/WHO 1981; Univalle, Oct.1986; Meets WHO/UNICEF Standard E3/RF.3.
Warning: Temperatures near the base of this icelining refrigerator are liable to fall below zero so this area is not suitable for the storage of DPT, TT and Hepatitis B-vaccine.
Accessories: Locking door(s); external thermometer; baskets.
Note: Starts and operates on electricity supply from 165 to 255 volts. Can be supplied for 115 volts also.

1993 PRICES (FOT Copenhagen, Denmark)
Quantity/Price: 1/US$ 1,772.92***

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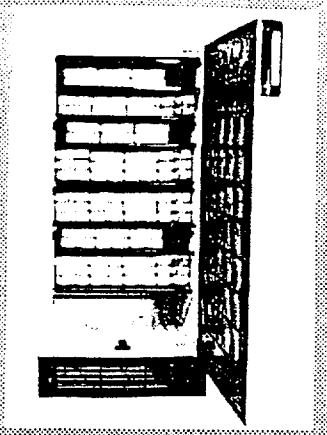
* Size figures apply for both [illegible]

APPENDIX L



CODE PIS E3/26
UNICEF Stock number: 11-516-20

ITEM
Icepack freezer, compression type
Model TFW 791 (922 58 02 01)

COMPANY NAME AND ADDRESS
Electrolux (Luxembourg)
4, rue de la frontière
L-9412 Vianden
Luxembourg
Telephone: 84595; Telex: 3468 ELUX VI;
Fax: 848 11-300

	REFRIGERATOR		FREEZER		UNITS
SIZE					
Manufacturers gross volume	—		234		litres
Vaccine storage capacity	—		0		litres
External dimensions, H x W x L	—		125x60x68		cms.
Shipping volume/gross weight	—		0.65/74.0		cu.m./kgs.
PERFORMANCE AT	**32**	**43**	**32**	**43**	**degrees C.**
Icepack freezing, with vaccine	—	—	++	++	kgs/hrs.
Icepack freezing, without vaccine	—	—	30/14	36/21	kgs/hrs.
Internal temperatures, minimum	—	—	-22	-27	degrees C.
Internal temperatures, maximum	—	—	-18	-21	degrees C.
Holdover time during power cut	—	—	3.4	2.6	hours
Power consumption: electricity	—	—	1.8	2.9	Kwh/24 hrs.
Power consumption: kerosene	—	—	—	—	lts/24 hrs.
Power consumption: LP gas	—	—	—	—	kgs/24 hrs.

Temperatures recorded during day/night (+43/+15°C) tests: Minimum -27; Maximum -13°C.

ENERGY REQUIREMENTS
Energy sources: 220 VAC/50 Hz

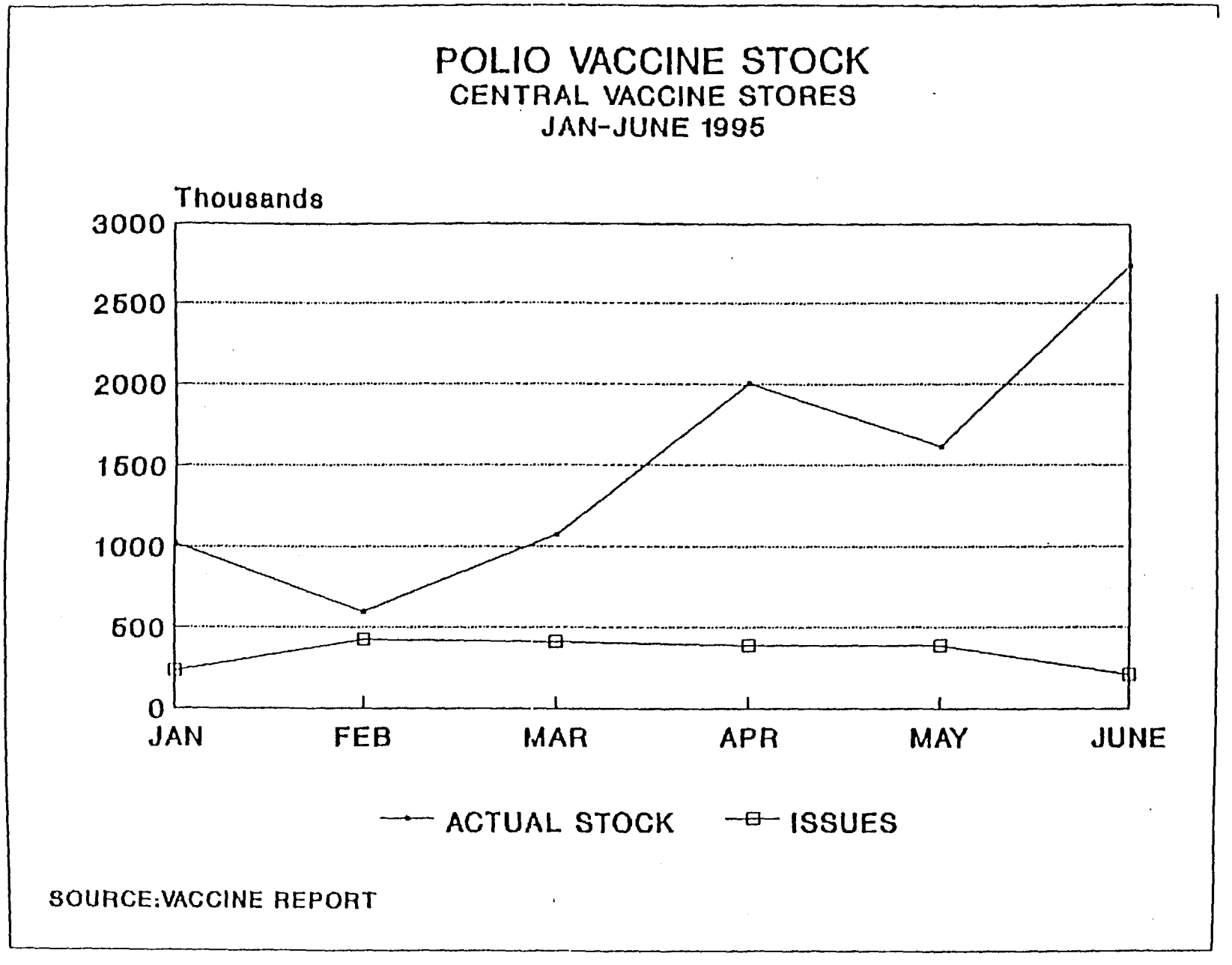
SPARES NEEDED PER 10 UNITS	Part No. (Mfg.)	Stock No. (UNICEF)	Quantity	Price US$/1
Thermostat for freezer	294.0091.00/8	11-537-65	3	19.39*
Starting device for compressor	291.2087.05/9	11-537-50	3	4.89*
Capacitor for compressor	291.2146.00/4	11-537-40	1	10.314*
Compressor, Danfoss FR8.5B	210.0251.11/1	11-537-41	1	97.97*

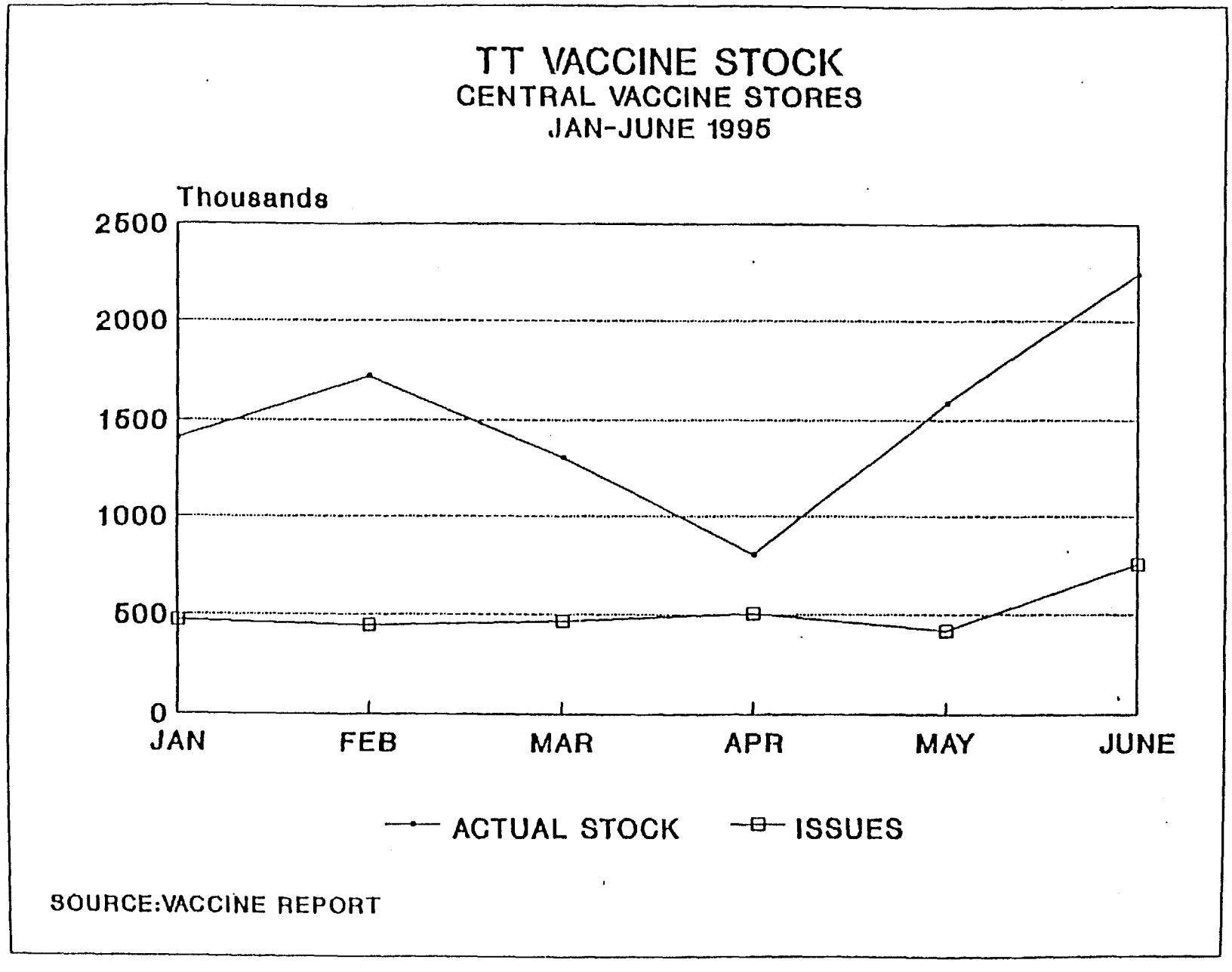
COMMENTS AND ACCESSORIES
Reports: Univalle.Ref.1 (1983); Meets WHO/UNICEF Standard: E3/FR.2.
50 litres storage space for pre-frozen icepacks.
Accessories: -

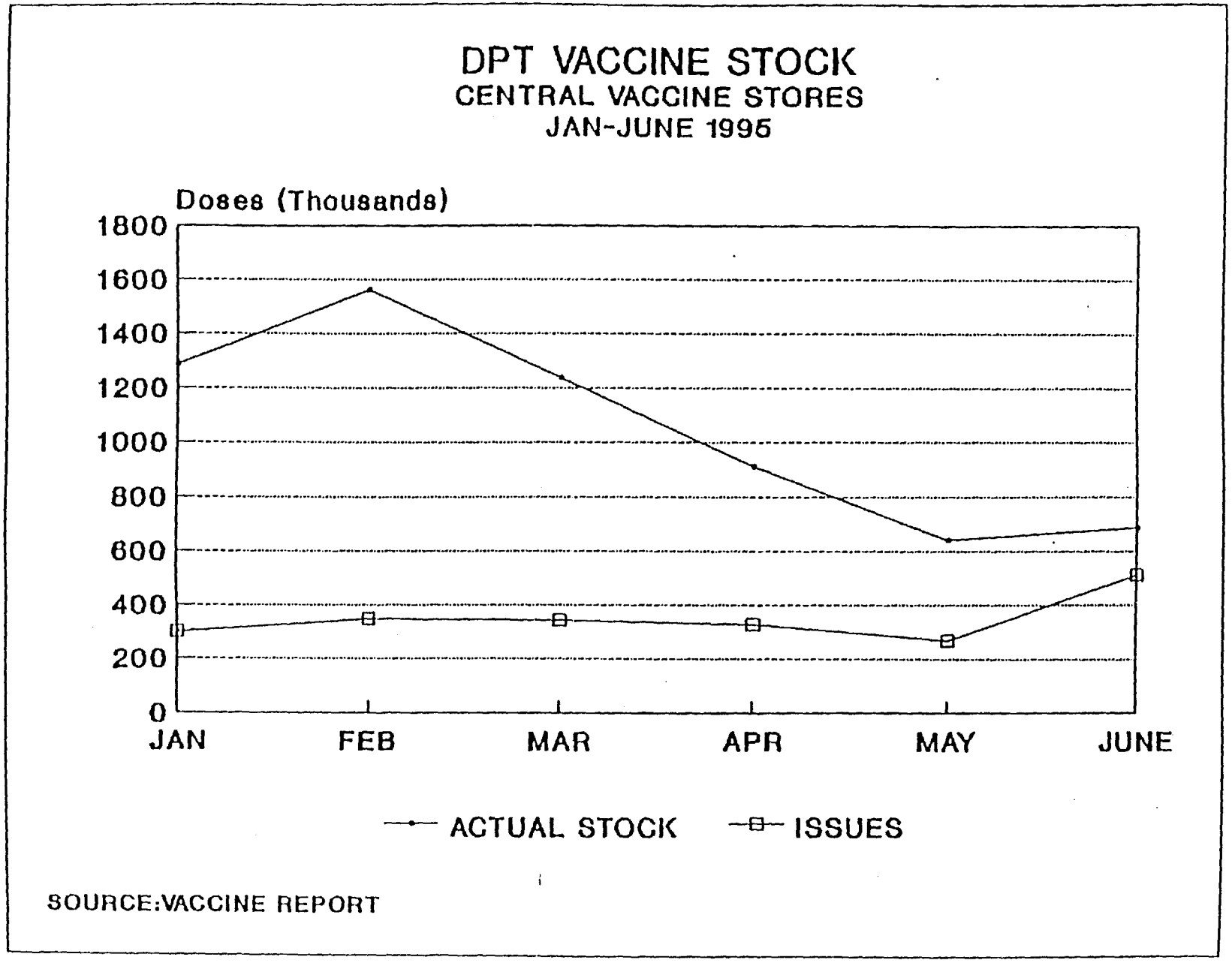
1993 PRICES (FOT Copenhagen/Denmark)
Quantity/Price: 1/US$ 1,520.70*

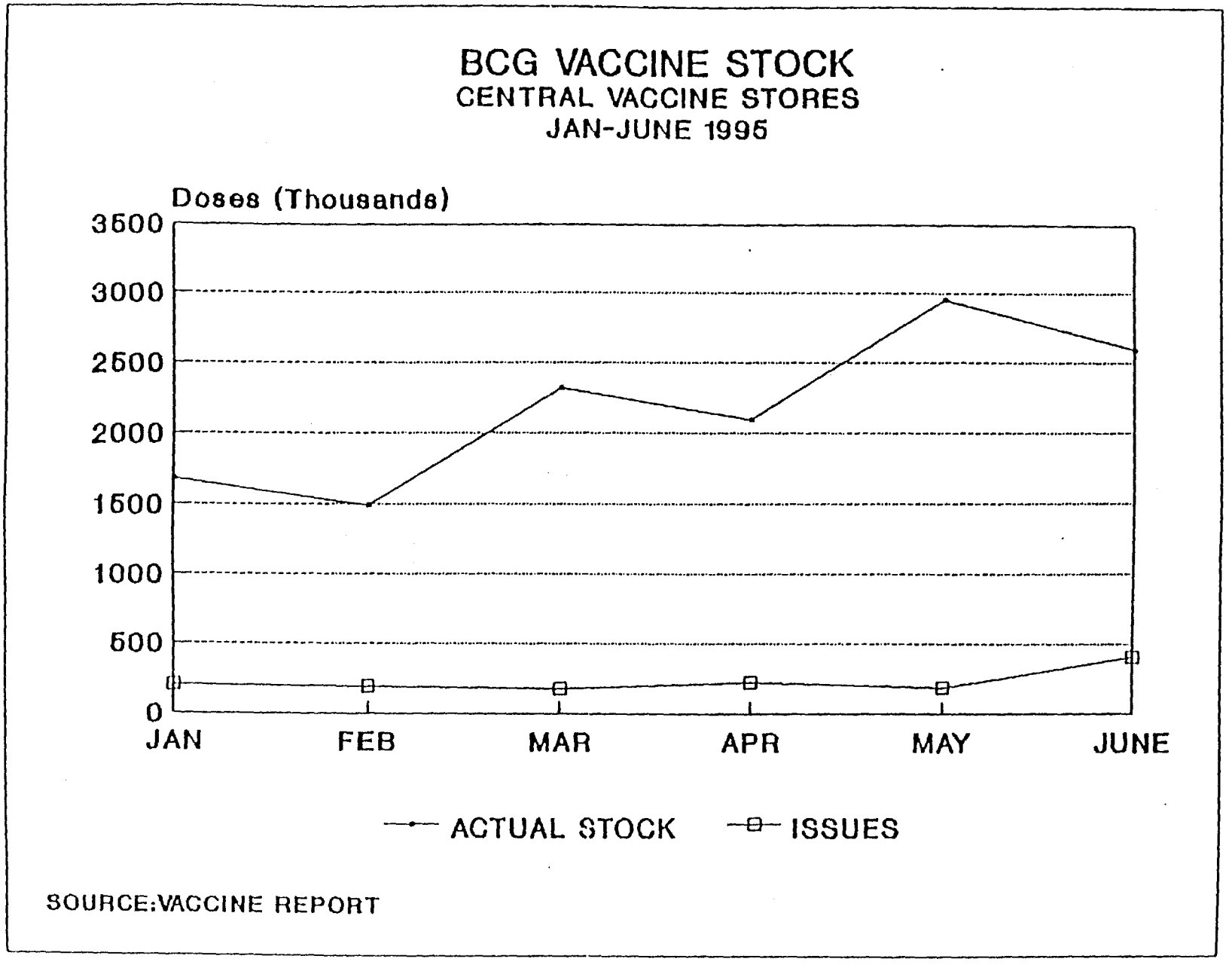
* Unicef price.

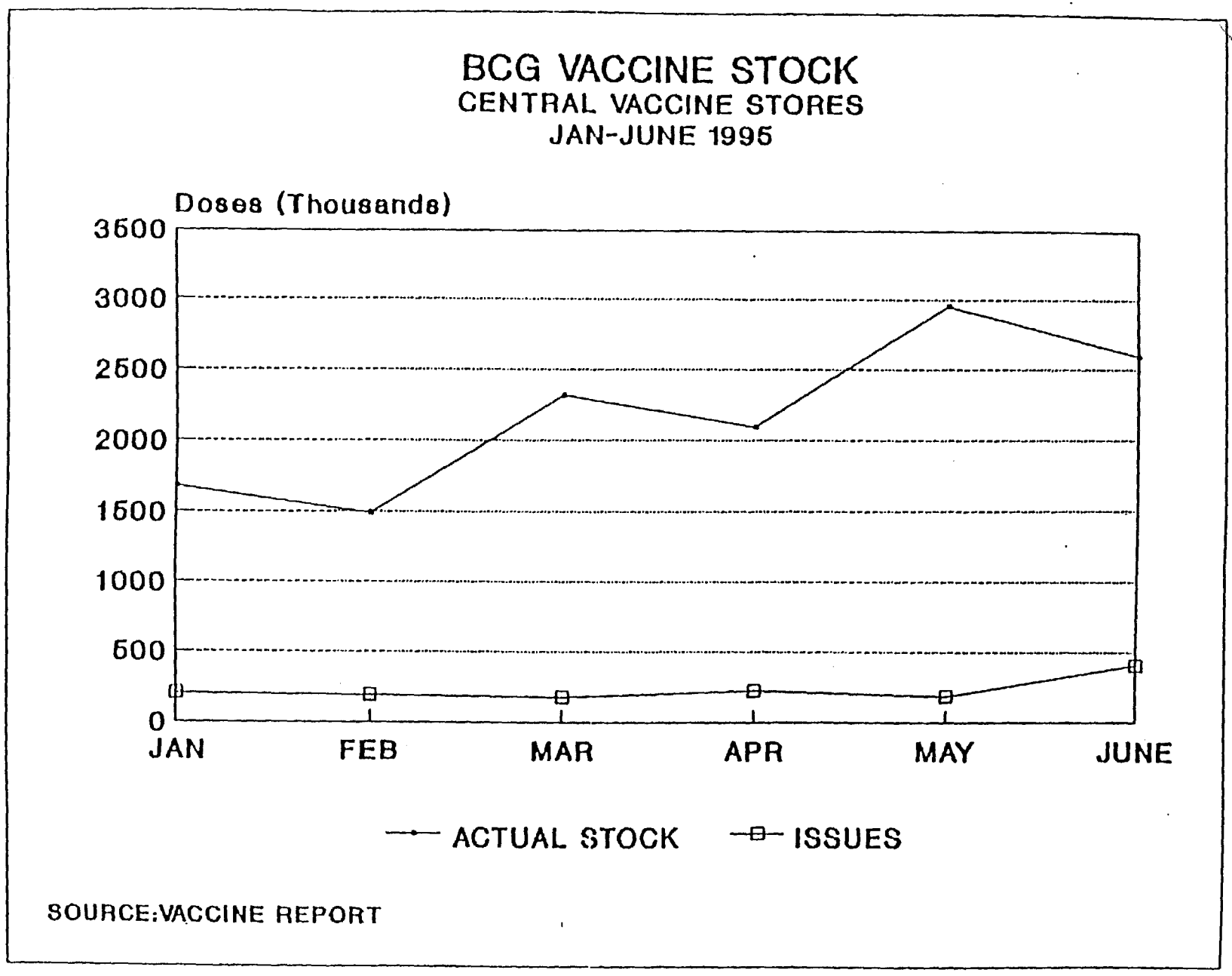
APPENDIX K


POLIO VACCINE STOCK
CENTRAL VACCINE STORES
JAN-JUNE 1995
Thousands
3000
2500
2000
1500
1000
500
0
JAN
FEB
MAR
APR
MAY
JUNE
ACTUAL STOCK
ISSUES
SOURCE:VACCINE REPORT


TT VACCINE STOCK
CENTRAL VACCINE STORES
JAN-JUNE 1995
Thousands
2500
2000
1500
1000
500
0
JAN
FEB
MAR
APR
MAY
JUNE
ACTUAL STOCK
ISSUES
SOURCE:VACCINE REPORT

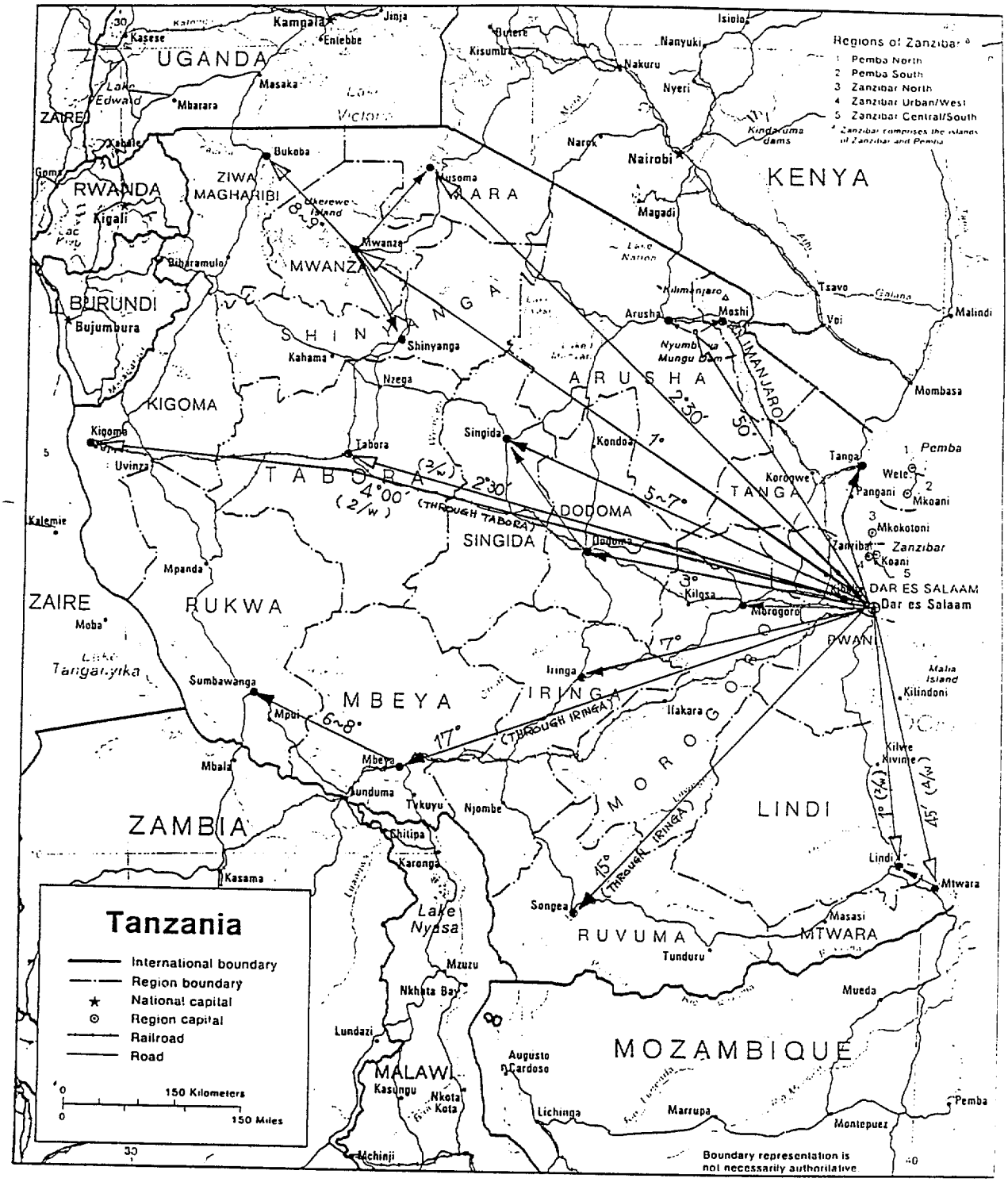

DPT VACCINE STOCK
CENTRAL VACCINE STORES
JAN-JUNE 1995
Doses (Thousands)
1800
1600
1400
1200
1000
800
600
400
200
0
JAN
FEB
MAR
APR
MAY
JUNE
ACTUAL STOCK
ISSUES
SOURCE:VACCINE REPORT


BCG VACCINE STOCK
CENTRAL VACCINE STORES
JAN-JUNE 1995
Doses (Thousands)
3500
3000
2500
2000
1500
1000
500
0
JAN
FEB
MAR
APR
MAY
JUNE
ACTUAL STOCK
ISSUES
SOURCE:VACCINE REPORT


BCG VACCINE STOCK
CENTRAL VACCINE STORES
JAN-JUNE 1995
Doses (Thousands)
3500
3000
2500
2000
1500
1000
500
0
JAN
FEB
MAR
APR
MAY
JUNE
ACTUAL STOCK
ISSUES
SOURCE:VACCINE REPORT

APPENDIX J

VACCINE DISTRIBUTION NETWORK
TANZANIA



DRAWN BY YUKI SHIROISHI
BASED ON THE DATA
PROVIDED BY MR. K. KAGARUKI,
NATIONAL COLD CHAIN OFFICER,
EPI UNIT, MOH, TANZANIA

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167

APPENDIX I

VACCINE SUPPLY, NEEDS AND SHORTFALLS
EPI TANZANIA, 1995 - 2000

Year	Vaccine		Doses ('000)	Cost US. $ ('000)	Donor Contrib US $ ('000)	Donor	Short-fall US $ ('000)
1995	BCG		3,490	593	616	Danida	
	DPT		4,860	437	497	Danida	
	OPV	routin	5,460	710	653	Jica	
					55	RI	
		suppl	2,249	292	207	RI	85
	Meas	routin	3,120*	624	? 450	Unicef	
	TT	routin	8,000**	696	? 450	Unicef	
1996	BCG		3,590	610	425	Danida	185
	DPT		4,626	416	334	Danida	82
	OPV	routin	5,613	730	80	RI	650
		suppl	2,312	301	30	RI	271
	Meas	routin	3,207*	641		Unicef	
	TT	routin	8,000**	696		Unicef	
1997	BCG		3,690	627			
	DPT		4,756	428			
	OPV	routin	5,770	750			
		suppl	2,377	309			
	Meas	routin	3,297*	659			
	TT	routin	8,000**	696			
1998	BCG		3,800	646			
	DPT		4,889	440			
	OPV	routin	5,932	772			
		suppl	2,444	318			
	Meas	routin	3,389*	678			
	TT	routin	8,000**	696			
1999	BCG		4,010	682			
	DPT		5,026	452			
	OPV	routin	6,098	793			
		suppl	2,512	327			
	Meas	routin	3,484*	697			
	TT	routin	8,000**	696			
2000	BCG		4,125	701			
	DPT		5,167	465			
	OPV	routin	6,269	815			
		suppl	2,582	336			
	Meas	routin	3,582*	714			
	TT	routin	8,000**	696			

* outbreak response included in routine forecasting
** response to cases " " "

SOURCE: JICA, TANZANIA

APPENDIX H

170

Estimated routine vaccine needs and costs for the period 1995 to 2000
for the United Republic of Tanzania

Antigen	1995		1996		1997		1998		1999		2000	
	Qaunt '000 Vials	Cost $.000	Quant vials '000	Cost $'000	Quant vials '000	Cost $'000	Quant vials '000	Cost $'000	Quant vials '000	Cost $'000	Quant vials '000	Cost $'000
BCG	400	680.-	410	700.-	420	720.-	435	740.-	450	760.-	460	780.-
DPT	450	390.-	470	400.-	490	420.-	490	420.-	500	420.-	500	420.-
OPR routine	550	550.-	560	560.-	580	580.-	600	600.-	650	650.-	650	650.-
MEASLES	340	544.-	360	576.-	370	592.-	380	610.-	390	630.-	400	650.-
TT routine	500	400.-	450	360.-	400	320.-	400	320.-	400	320.-	400	320.-
		2,564		2,596		2,632		2,690		2,780		2,820

APPENDIX G

VACCINE STATUS REVIES

DATE.....

	CURRENT STOCK (DOSES)	ORDERED NOT YET RECEIVED (DOSES)	TOTAL STOCK ACTUAL STOCK &ORDERED (DOSES)	AVERAGE CONSU-PTION	WILL LAST IN MONTHS	WILL LAST UNTIL	NEW ORDER SHOULD ARRIVE	NEW ORDER AMOUNT	WILL LAST UNTIL
BCG									
DPT									
OPV									
MSLS									
TT									

APPENDIX F

		Mahudhurio ya Kwanza					Mahudhurio ya [illegible]					
UZAZI WA MPANGO	Vidonge	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	[illegible]
	Kitanzi	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
	Kufunga kizazi		00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
	Sindano		00000	00000	00000	00000	00000	00000	00000	00000	00000	[illegible]
	Mpira (condom)		00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
	Njia za asili		00000	00000	00000	00000	00000	00000	00000	00000	00000	[illegible]
	Njia zingine		00000	00000	00000	00000	00000	00000	00000	00000	00000	[illegible]
Wakati wa kuzaliwa		K U C H A N J W A										
	BCG 0		00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	[illegible]
	Polio 0		00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	[illegible]
WATOTO Chini ya miezi 12	BCG		00000	00000	00000	00000	00000	00000	00000	00000	00000	[illegible]
	DPT	Ya kwanza			Ya pili				Ya tatu			
		00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	000 [illegible] 00000
	Polio	Ya kwanza			ya pili				Ya tatu			
		00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000
	Surua	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000
WATOTO Miezi 12 hadi miaka 5	BCG	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000
	DPT	Ya kwanza			Ya Pili				Ya tatu			
		00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000
	Polio	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000
	Surua	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000
WANAWAKE	Pepopunda	Ya kwanza										
		00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000
		Ya pili						Ya tatu				
		00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	[illegible]
		Ya nne						Ya tano				
		00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	[illegible]
	Chanjo Nyingine	Majeruhi (pepopunda)					Watoto wa shule BCG					
		00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	[illegible]

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