

AGENCY FOR INTERNATIONAL DEVELOPMENT
PROJECT DATA SHEET

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7. ESTIMATED DATE OF OBLIGATION (Under "B:" below, enter 1, 2, 3, or 4)
 A. Initial FY **84** B. Quarter **4** C. Final FY **84**

3. COSTS (\$000 OR EQUIVALENT \$1 =)

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	1500		1500	1750		1750
(Grant)	(1500)	()	(1500)	(1750)	()	(1750)
(Loan)	()	()	()	()	()	()
Other U.S.:						
1.						
2.						
Host Country		850	850		1900	1900
Other Donor(s)						
TOTALS	1500	850	2350	1750	1900	3650

9. SCHEDULE OF AID FUNDING (\$000)

A. APPRO-RIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) RP	520	510		0		1750		1750	
(2)									
(3)									
(4)									
TOTALS									

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11. SECONDARY PURPOSES:

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

A. Code: **BS** **PVOU** **PVON**

B. Amount:

13. PROJECT PURPOSE (maximum 480 characters)

To rehabilitate and improve the health infrastructure in the Lualaba sub-region of Zaire.

14. SCHEDULED EVALUATIONS

Interim: MM YY **09 86** MM YY **09 87** Final: MM YY **09 91**

15. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 Local Other (Specify) **935**

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

17. APPROVED BY: **Mission Director**

Signature: *[Signature]*

Title: **Mission Director**

Date Signed: MM DD YY **09 11 84**

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SHABA REFUGEE HEALTH PROJECT

660-0114

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I. PROJECT SUMMARY

The Shaba Refugee Health Project will make significant improvements in health standards in Lualaba and Kolwezi Sub-Regions. This will be accomplished through capital improvements to both local public health and local curative medical programs, most of which are part of existing viable but undercapitalized programs of voluntary agencies.

The western two-thirds or more of the proposed project area was profoundly affected by the 80-Day War of 1977 during which rebel forces of Zairian origin occupied the rural areas for almost three months before retreating back into their Angolan base areas; the urbanized area of Kolwezi to the east of Lualaba Sub-Region was in turn occupied for a brief period in 1978. In addition, the area has been affected by the civil wars in Angola over the past decade, which have repeatedly pushed Angolan refugees across the frontier into Zairian territory. This movement has recently increased because of greater UNITA (Union for the Total Independence of Angola) guerilla activity in Angola's northeastern provinces. Thus, almost the entire population of Lualaba Sub-Region has experienced refugee displacement, whether national borders were crossed or not. Most recent UNHCR estimates place the total number of refugees and returnees in the three administrative zones covered by the project at 190,000. This represents more than half the population of the Sub-Region. Having left their fields (their economic livelihood as well as their food source) behind, refugees have special needs for health services. Furthermore, the same forces which created the refugee movements have dealt serious blows to existing health-care systems.

The program will make a significant improvement in health-care delivery systems in Lualaba Sub-Region over a relatively short period, but without necessitating the creation of new agencies or bureaucracies. This will be done by relying on existing networks and initiatives of private voluntary organizations, primarily church groups. It is preferable to strengthen existing institutions within the communities rather than divide "refugees" from "residents" through programs targeted at only one component of the

community by new or ad hoc organizations. Doing otherwise could easily exacerbate cleavages within the "resident" communities among those whose ethnic groups have occupied the area for varying lengths of time. Secondly, the voluntary agencies have been working in the area since the turn of the century and have viable programs in operation and new initiatives in the planning stage. Their efforts have, however, suffered seriously from the loss of equipment, skilled personnel, organization, and momentum caused by the two Shaba wars.

The Shaba Refugee Health Project is closely related to two other proposed projects, the Shaba Refugee Roads Project and the Shaba Refugee Water Supply Project. They are mutually supporting, but no one is dependent on either of the others for its success. The three projects share the common objective of improving living standards for the refugee, returned refugee, and resident portions of the local population, allowing them to participate effectively in regional development. The Roads Project intends to improve both trunk roads and farm-to-market roads within the area, which has been isolated from the national economy by the collapse of road maintenance, the almost total loss of vehicles during the war, and operational problems on the rail line across the southern portion of the Lualaba Sub-Region following the wars. Both the water and health projects envisage improved preventative health care through educational programs and improvements in water and sanitation facilities.

II. PROJECT RATIONALE AND LOCATION

All of Lualaba Sub-Region forms a part of the large Lunda plateau, extending from the highlands of western Angola to the mountainous areas of central/eastern Shaba, and cut by the western branches of the African Rift Valley System. This plateau forms the watershed between the Zaire basin to the north and the Zambezi basin to the south; further west, it also feeds streams flowing directly toward the Atlantic Ocean and to the Okavango swamps. It is basically a zone of savanna with areas of clear woodland, with heavy forests occurring primarily as remnant strands along the rivers, which flow in parallel off the sloping sides of the plateau. Hence, communications along this east-west belt have always been relatively easy, as linguistic study of parallel changes in the various Bantu language subgroups on the plateau has shown. In more recent periods, all of modern Lualaba Sub-Region was part of the Lunda state system with its heartland in present-day Kapanga Zone; as a result, the various ethnic groups share a great deal of general culture among themselves and with their neighbors in Zambia and Angola, despite underlying differences in linguistic/cultural origins before the Lunda conquest.

The national borders in the area are largely natural in the geographical sense, but arbitrary in human terms. To the west, Lualaba Sub-Region is separated from Angola by the Kasai River; to the south, the Zaire-Zambezi watershed delineates the border with Zambia.

The conflicts between population movements and administrative boundaries were one of the first problems faced by the colonial government. Although the Ruund of the Kapanga area had erected a sophisticated state system in the 17th and 18th centuries by conquest and diplomacy, new socio-economic forces in the 19th century led to its decline and the rise of a new "free-enterprise" ethnicity of the Chokwe, Iwena, and Minungu groups tied to the ivory, slave, and rubber trade working inland from the Angolan coast. The colonial administration eventually settled on a policy of using Ruund chiefs over mixed populations, with a few token (but densely populated) areas under chiefs from the new ethnic groups.

People continued to stream into Belgian territory in the early colonial period because of pacification campaigns by the Portuguese in eastern Angola and differences in colonial regimes and economic opportunity. Inter-ethnic tensions came to the surface in the late 1950s and early 1960s, particularly in Dilolo and Sandoa zones.

The current refugee problems stem from more recent political crises in Zaire and Angola. In 1977 forces of the FNLC (Congolese National Liberation Front) occupied Kapanga, Sandoa, and Dilolo zones and advanced east past Mitshatsha toward Kolwezi before the onset of a long stalemate. When the FNLC retreated into Angola, the civilian population dispersed. Some, particularly youth of military age, were forced or recruited into FNLC forces. Others simply fled for fear of reprisals, whether fleeing across the border into Angola or simply into the large uninhabited areas within Lualaba Sub-Region. The short but bloody occupation of Kolwezi by the FNLC in 1978 provoked a similar exodus, primarily toward Zambia rather than Angola. Those who had merely fled into the bush or to stay with relatives in remote villages returned to their homes relatively quickly; the major part of the surviving cross-border refugees returned after the Zairian Government declared an amnesty for returnees in 1978.

The wars had a devastating impact on the occupied areas. Vehicles were immediately conscripted. Institutions lost equipment during the war or through looting during the period of insecurity and uncertainty afterwards. Equally important, personnel resources were scattered or permanently lost through death and evacuation. Postal service and telecommunications were not reestablished until the 1980s. Local social structure has been seriously weakened. In part, this is due to the demoralization accompanying the economic effects of the war. In part, it is also due to the divisions created within communities and within families between those who fled for relatively long periods (and who often suffered greater hardships) and those refugees within Zaire who returned more quickly and thus took advantage of the property left behind by those crossing international boundaries.

A second contemporary refugee problem concerns refugees from the People's Republic of Angola who have crossed into Zaire at varying periods to escape fighting between the different rival factions following the Portuguese decision to withdraw from Angola in 1975. These Angolan refugees fall into two categories. Some have fled to relatives and acquaintances of their own ethnic groups directly across the border and are sufficiently dispersed not to be obvious. Others, especially members of the Mbundu ethnic group who have settled in the Dilolo and Kisenge areas, form "refugee communities" distinct from local Zairian residents. These are refugees from central-western Angola, historically associated with the MPLA (Popular Movement for the Liberation of Angola) faction controlling the central government since the Portuguese withdrawal, who are far from their home areas and are relatively unrelated to the resident populations in Lualaba Sub-Region.

The major problems facing the refugees and the returning refugees (and thus the population as a whole) have been in restoring health among refugees arriving in poor physical condition, tiding them over the short term until fields are established and begin to produce, and rebuilding the economic and social infrastructure. The subsistence agricultural tradition of all the ethnic groups involved is basically the same. Land for resettlement is not a critical problem, although some parts of the Dilolo are much more crowded than others. The population movements have required readjustments in social patterns where population densities are markedly increased.

UNHCR operated a major relief program in the area from 1978 through 1982 in partnership with the United Methodist Church, the proposed overall implementing agency for the Shaba Refugee Health Project. The UNHCR program, however, was aimed at immediate refugee needs and at the returning refugee component of the population only; it was not designed to improve community infrastructure or to rebuild it. Currently UNHCR is operating at a much smaller scale to relieve the Angolan refugee situation in Dilolo Zone; it has supplied used clothing and blankets through the Roman Catholic mission at Dilolo Post and plans food shipments in the near

future. Such relief work, while necessary in the short-term, can easily create dependency and foster segregation if poorly timed and continued too long. The proposed Shaba Refugee Health Project seeks to invest in programs that will continue without continued subsidy and that will not divide the community.

Results of the 1984 Zairian census will not be available for some time. Given the traumatic events of the late 1970s, the following figures from the 1970 census may not be indicative of current population distribution and numbers:

	<u>Population</u>	<u>Area</u>
Kapanga Zone	67,016	24,476 km ²
Sandoa Zone	87,469	29,608
Dilolo Zone	233,395	25,330
Kolwezi Zone	166,507	24,830 (now split between Mutshatsha Zone and urban Kolwezi)

The following rough estimates, with further geographical breakdown, may be reasonable for the present time:

Kapanga (western Kapanga Zone)	60,000
Murung (eastern Kapanga Zone)	30,000
Sandoa (western Sandoa Zone)	70,000
Kafakumba (eastern Sandoa Zone)	45,000
Dilolo (western Dilolo Zone)	140,000
Kasaji (eastern Dilolo Zone)	150,000
Mutshatshe (rural parts of ex-Kolwezi Z.)	36,000
Kolwezi urban area	<u>200,000</u>
TOTAL	731,000

UNHCR estimated the number of Angolan refugees in Dilolo Zone in July 1984 as 11,200 around Dilolo Gare and an additional 1,275 around Kisenge. The population continues to increase, although no reliable estimates are available as there is likely also movement of refugees previously counted away from the overcrowded, immediate area of Dilolo Gare towards the east. The Zairian authorities for Lualaba Sub-Region reported 16,000 and 3,500 respectively for the two concentrations around Dilolo and around Kisenge.

III. PROJECT DESCRIPTION

A. Background

On paper, there would seem to be a highly developed formal health care system in Lualaba Sub-Region. Each of the zones (territorial administrative sub-units) has at least one hospital, variously under state, church, or company sponsorship. Several additional "super-dispensaries" exist under the aegis of the various churches, each including specialized wards and services and multiple staffing. Finally, the United Methodist Church operates a system of approximately fifty one-nurse rural dispensaries throughout the Lualaba Sub-Region, a system which has been undergoing expansion during the past twenty-five years. However, at each of these levels there are serious constraints to quality health care delivery.

The Gecamines hospital in Kolwezi is the best equipped and staffed facility in the entire area, but it is a private hospital for company employees. Outsiders are admitted only on a space-available basis and on a fee scale which excludes all but the most well-to-do of Zairians. The company is neither able nor willing to assume responsibility for the entire Kolwezi urban population.

The state hospitals are in effect empty shells without equipment, drugs or supplies, specialized staff, or good administration. As elsewhere in Zaire, the government has begun to adopt a policy of turning to voluntary organizations to take over health management, and the Kolwezi state hospital was ceded to the United Methodist Church in July 1984. It will take a great deal of effort and time for the Kolwezi hospital to be brought up to acceptable service standards for the portion of the population excluded from the Gecamines facilities. Given the problems involved, the Shaba Refugee Health Project does not propose involving the state-administered hospitals heavily pending possible government initiatives to improve hospital resources and management as, for example, through management contracts with the churches.

The church-run institutions are by far the best equipped and efficiently managed rural health institutions in the area. For example, Kapanga has a complete general hospital under United Methodist auspices, with four medical doctors on the staff, a nursing school which has historically furnished a large proportion of nurses for all medical institutions in Shaba, a leprosarium, a chain of satellite rural dispensaries, and an active program of public health outreach through vaccination campaigns, maternal/child health programs, and health education. It has not yet, however, recovered from its losses during the 1977 war when Kapanga was occupied without warning. It has also been in severe financial difficulty since the September 1983 500% currency devaluation, due to depletion of working capital, since all financial transactions had been tied to previous official exchange rates. Other problems beset the Garenganze hospital at Kasaji, which has been unable to regain its former strength, lacking a doctor since 1977 and qualified staff in general since 1982. Other large centers, under various churches, may have multiple staff and specialized wards (Katoka, Kalamb, the Roman Catholic mission north of Kasaji) but lack resident doctors and complete hospital facilities. Finally, the widespread rural dispensaries have only the most rudimentary equipment. These often lack suitable facilities and are housed in simple mud huts.

The Shaba Refugee Health Project harmonizes well with the national SANRU program (Santé Rurale) administered by the Eglise du Christ au Zaïre (the federation of all Protestant churches in Zaïre) in conjunction with the Ministry of Health, USAID (through the Basic Rural Health Project, 660-0086), and other donor agencies. Like SANRU, this project takes an ecumenical approach, attempting to integrate the various functional health programs in operation in the field. In particular it will integrate rural dispensaries with reference hospitals and with village-based volunteer health agents and development committees.

However, there are certain necessary differences between the current proposal and the SANRU program. First, since the Shaba Refugee Health Project deals with an area severely affected by wars and by large refugee movements, the existing medical institutions have acute needs

at this time to restore their equipment and service levels to those existing before 1977. SANRU, which operates in all eight rural regions of Zaire, has a general policy of partial subsidy to encourage local institutions to develop, alter, or expand programs for compatibility with the national plan. Thus, SANRU does not aid all zones in Zaire at the present time but cooperates with those most capable of carrying out the program with their own resources. On the other hand, the Shaba Refugee Health Program, to deal with the needs of specific distressed areas, will identify specific needs for complete funding.

Secondly, the SANRU program has had limited effect within Kolwezi and Lualaba Sub-Regions, as well as in Shaba Region in general. Only Kapanga Zone is included in the current SANRU scheme, and its participation has only recently become effective with SANRU Phase II. Other areas in Shaba have been excluded from the SANRU program by lack of satisfactory reference hospitals with both equipment and resident medical doctors. The current project addresses this obstacle in several ways. First, it proposes rehabilitation of Mwangeji Hospital in Kolwezi to serve as the logical future reference hospital for the Kolwezi and Mutshatsha areas. In Dilolo zone, only the Kasaji-Chisengama hospital is currently a fully-equipped hospital, but the Dilolo Post and Katoka "super-dispensaries" are potential candidates for SANRU reference hospital status; all three would have to obtain resident medical doctors first, and there is a good possibility of such a resident physician for Kasaji in 1985. In Sandoa zone, the Kafakumba-Kimpuki "mini-hospital" will have a volunteer physician for a two year period, but such staffing may not continue after 1986. The present project thus addresses the problem of reference hospitals by emphasizing the role of secondary health centers ("mini-hospitals" or "Centres de Santé de Référence Facultative") which exist throughout the area on mission stations or at church administrative centers and which could be upgraded through hiring of national doctors. In the meantime and so long as full hospital facilities (operating theaters, radiological equipment, specialized staff, etc.) do not exist in all areas, communications and air transportation improvements will allow these secondary centers to work more closely with hospital facilities at Kapanga, Kolwezi, and elsewhere.

Thirdly, the current project will not directly involve state or corporate facilities to a significant degree, given the situation in the area covered, although continued cooperation within the capabilities of each sector are encouraged. In the case of Gecamines, for example, excellent private facilities exist but reduce their burden of caring for the general population through very high user fees. State facilities present major administrative and financial problems without short-term solutions within the scope of the current project. However, cooperation with these facilities does exist. State facilities are already being staffed and equipped under United Methodist administration in Kolwezi, as well as in rural areas. Informal cooperation also exists, e.g. between military doctors and the church hospitals, and between the state hospitals at Sandoa and Dilolo and the churches which provide them limited amounts of supplies. Church-operated facilities are recognized by the Zairian government and receive partial subsidies in certain programs.

Therefore, the Shaba Refugee Health Project does not envisage in the short term the centralization of administrative functions around the single existing reference hospital (as in a SANRU Health Care Zone), but rather decentralized responsibility through existing structures. This division of responsibility around existing Catholic and Protestant institutions frees the entire program from dependence on a few key supervisory personnel in a single administration. Planning will encourage cooperation to preclude duplication among the different church programs. In the case of Kapanga, coordinated planning will avoid duplication between requests through the SANRU program and through the Shaba Refugee Health Program. Given the limited resources of the SANRU program operating at a national level, it is envisaged that the Shaba Refugee Health Project would assume primary responsibility for equipping the Kapanga Rural Health Zone, with SANRU continuing to provide information and coordination functions.

B. Goal and Purpose

The goal of this project is to reintegrate the Lualaba Sub-Region repatriates and refugees into regional socio-economic development. The purpose is to rehabilitate and improve the health infrastructure in the Lualaba and Kolwezi Sub-Regions.

Specific Project objectives are as follows:

1. Restoring hospital and dispensary facilities to the level of equipment, technical capacity, and inventory of expendables existing before the 1977 war.
2. Modernizing the operating components for lighting, sterilizing, refrigeration, and pumping through the use of renewable energy sources (i.e. solar) in place of petroleum-based fuels, thus eliminating a major strain on self-financing through user fees.
3. Fostering cooperation among health centers in a multiple-tier referral system through improvements to the existing air ambulance system by:
 - a. Mechanized repair of airstrips at each major medical care center and at other appropriate points, allowing evacuation to the centers.
 - b. Improvements to the United Methodist central aviation maintenance facility at Iwena to improve aircraft availability to points within Lualaba and rural Kolwezi Sub-Regions.
 - c. Provision of adequate single-side band radio equipment, with solar power sources in most locations, to those key facilities currently lacking them.

4. Reducing health maintenance costs with improved outreach of public health programs into more remote villages through:
 - a. Village-based public health representatives trained in selected pilot areas to encourage preventative medicine within their home communities and to act as referral agents for fellow villagers requiring the attention of professional medical personnel.
 - b. Extension of the primary health care dispensary system as a first point of referral from the village-based health representatives and as a basis for vaccination and maternal/child health services.
 - c. Transportation improvements (bicycles, motorcycles, and occasionally vehicles) to allow greater mobility to the nurses in the rural health centers.

C. End of Project Status

The conditions expected at the end of this project are the following:

- The repair and re-equipping of a minimum of 60 primary health care rural dispensaries, thirteen secondary referral centers with multiple medical staff and some specialized facilities, and two complete general hospitals.
- A decrease in operating costs through reduction in use of petroleum-based fuels, permitting improved health services while allowing self-financing. Dispensaries which are currently self-financing should be able to increase their activity and standards considerably; the remaining secondary centers and general hospitals should be able to reduce the percentage contribution of outside subsidies.

- An increase in village public health awareness and consequently in health standards through the training of village health agents.
- An increase in outreach (vaccination campaigns, etc.) through improved transportation for rural medical staff.
- A more integrated and rationalized overall health-care system in Lualaba and Kolwezi Sub-Regions through improved cooperation among various centers.

D. Other donor activity

The Shaba Refugee Health Project is related to two other USAID funding proposals, the Shaba Refugee Roads Project (660-0114) and the Shaba Refugee Water Supply Project (660-0116).

UNHCR is presently the major donor active in the project area, with a six-month \$500,000 emergency relief program that is aimed at addressing the immediate basic needs of the recently arrived Angolan refugees. This program is scheduled to end in late 1984. A two-year follow-on program is being planned by UNHCR with initial funding proposed for early 1985; this project, if approved and funded, will address longer-term refugee needs for the same newly-arrived group.

Other programs with governmental or international agency funding in the area are either of limited scope, only in preliminary planning stages, or marginal to the project area. Belgian government aid provides small grants to missionaries in the area, primarily the Roman Catholic missions with for the most part Belgian personnel, for education, health, and road maintenance activities; the Belgian Consulate General in Lubumbashi, as agent for the Dutch government, also provides significant logistical support for the entire non-profit medical infrastructure in drug procurement. The FAO is considering

the possibility of funding a small agricultural project in Kapanga Zone, the northernmost portion of Lualaba Sub-Region. Finally, the World Bank is planning a major agricultural project in Luiza Zone of West Kasai Region, immediately to the north of Kapanga.

Over the long-term, the major donor agencies for developmental activities in Lualaba Sub-Region are the private voluntary agencies. In sum, this refers to the United Methodist, Roman Catholic, and Brethren (Frères en Christ, Garenganze) missions, as other Zairian churches do not have significant external funding for what few programs they operate in the area. The three historic mission organizations, however, are also the implementing agencies for relatively small grants from such other agencies as the American Leprosy Mission, Friends of Father Damien, The Association of Belgian Nurses, etc. Annual statistics are not readily available for many of these programs, but on the basis of United Methodist activity plus other medical programs, the total should approach or exceed \$1,500,000 per year on a steady basis.

All such correlative undertakings would be complemented and supported by the improvements in health infrastructure proposed herein. Current funds are used primarily for immediate refugee relief needs or operating subsidies in the major medical centers, needs not touched by the current project. Improvements in health standards clearly will benefit agricultural development. Water supply improvements will also strongly complement health infrastructure investment.

IV. Project Analyses

A. Social

1. Background and Summary

The project addresses the need to help refugees and returning refugees regain self-reliance and become more productive. In particular, the Shaba Refugee Health Project addresses the generally poor health of the target population resulting from 5-10 years of frequent displacements, and the acute health problems created by relative overcrowding in what are often considered to be temporary quarters or in sites which are economically attractive (soils, etc.) but which currently present disease-control problems requiring improvements in sanitary conditions or other environmental health factors. It also addresses the general health problems of Lualaba Sub-Region, which are in themselves a serious obstacle to development. The various health sub-projects to be implemented through existing voluntary agencies will address these needs directly. Sub-projects will include facility construction and repair, more adequate equipment of posts to handle current activity, technological improvements for more cost-effective operation, extension and skills training, and transportation and communications improvements. For each of these activities the social analysis indicates that the types of interventions to be included are soundly designed insofar as they are appropriate to the social, economic, and historical context; they address critical needs; they are socially feasible; and they can have significant beneficial impact on a large portion of the population in Lualaba Sub-Region.

2. Beneficiaries

"Residents" of the project area have been in continuous habitation of their villages for at least the past seven years, and they are normally members of established ethnic communities which have been

present for at least a half century in their respective areas of Lualaba Sub-Region. "Returning refugees" are similar to the "residents" but were absent from their communities for a significant time in the late 1970s, whether as refugees outside of Zairian territory or internal refugees in Zaire but uprooted from their own homes. Like the "residents", the "returning refugees" are also largely integrated into traditional social units, although they have often been marginalized by their refugee experience. Finally, "refugees" are newcomers to Lualaba Sub-Region, who may have settled around kinsmen throughout the area or, particularly in the case of the Mbundu and other groups not formerly established in Zaire, may be concentrated in "temporary" communities around the market centers of Dilolo and Kisenge. The Shaba Refugee Health Project will address the health needs of all three components of the community in order to further integration and self-reliance among those who are presently marginalized. The demographic composition of the three groups is similar, although there may be a skewing of age and sex distribution among the "returning refugee" and "refugee" groups because of the death of the old and very young during periods of hardship, or the absence of vigorous young adults. The three component groups are all drawn from within the same savanna Bantu cultural area, and thus the subsistence farming way of life of all three groups is similar.

Since the health sub-projects are based on improvements in existing programs of voluntary agencies in Lualaba and Kolwezi Sub-Regions, health care demand is well-demonstrated, and distribution of primary health care facilities is to a great extent determined by current usage. These facilities, no matter under what sponsorship, are open to all without regard to religious, ethnic, or other affiliation. User fees are modest enough not to be an obstacle for the general populace. The various health sub-projects will directly benefit the population by improving the quality of existing services, by increasing the number and/or quality of preventative health programs, and by facilitating communications and transportation for the serious cases which require referral to higher-level facilities, for example when surgery is indicated.

One challenge to efficient health care delivery in Lualaba and Kolwezi Sub-Regions is the relatively low population density. Excepting the urban center of Kolwezi, the overall density in 1970 was slightly over 4 people per km², although population increases since then may have raised this density. This problem is somewhat alleviated by the uneven distribution of the population, with large areas effectively unpopulated and pockets of villages in locations with better soils or access to water or to transportation. The project is designed to take this problem into account through reliance on a large number of dispersed primary health care facilities (one-nurse rural dispensaries) and through expanded pilot programs to train village residents as local health agents. The presence of such medical facilities, as with road and water supply improvements in the related Shaba Refugee Roads and Shaba Refugee Water Supply Projects (660-114 and 660-116) is itself a factor in encouraging further population concentration in larger villages, in harmony with GOZ policy of using incentives for voluntary rural regrouping to facilitate such eventual infrastructure improvements as village electrification.

3. Participation of Beneficiaries

The various sub-projects have been designed by health professionals with long experience in the area, drawing on data from both Zairian and knowledgeable expatriate personnel. Since improvements will be made to already existing centers that have been basically self-supporting at the primary health care level, the implementation plan is sensitive to the indirectly expressed needs of the population as a whole.

Substantial incentives exist to help ensure proper management of the various interventions. The primary health care centers (one-nurse dispensaries) have long been basically self-supporting, and the nurse's assurance of a salary depends directly on the degree of his or her clientele support. Inactive nurses are unable to pay their

salaries or to renew their supplies through purchase from the central medical depot in Kolwezi, and through parish and district church councils (in the case of these United Methodist dispensaries) the population normally requests replacement of an inactive nurse after a period of time if he does not abandon the work of his own volition. Supervision through visits by the central medical depot staff and through church superintendents living in the area will allow for disciplinary action when needed. In addition, medical personnel is almost without exception drawn from the same rural area, and substantial traditional social sanctions often operate at the level of the village community and the rural health center in regards to staff conduct judged inimical to community interests. Field observation by the design team revealed remarkable conservation of equipment and facilities dating from the colonial period in the rural dispensaries, even in the state sector where promised salaries are often not paid; the problems were rather disrepair or wearing out of equipment and the lack of current supply systems.

At the level of village public health extension, participation of Health Agents/Primary Health Officers chosen by and from the local community will be rewarded largely through social prestige and through training opportunities outside the village. As non-material incentives, these do not present problems with financial management. In the case of equipment subject to maintenance or replacement costs, such as bicycles and motorcycles furnished to dispensary nurses, provision will be made for resale to the custodian at a modest price on condition of the individual having maintained the equipment properly for a given period. This type of incentive has already been used successfully within the area in other situations.

4. Socio-Cultural Feasibility by Activity Type

a. Facility Construction and Repair. Activity in this category consists of repairing or upgrading the physical facilities of existing health-care centers. Buildings in non-durable materials will be replaced with durable materials using an existing and tested building plan for rural dispensaries. Working with local community leaders, the construction units will enlist local community participation wherever possible, as for example in furnishing the burned bricks; this is current practice in the area with the same PVOs in dispensary, school, and church construction. The implementation schedule for building improvements can provide an incentive for the community to make its contribution in order to obtain aid in cement, roofing, etc., for the construction proper; since the construction program will be spread across a six-year period, it is possible to reprogram work according to the degree of local support. The remarkable degree of conservation of village facilities erected in durable materials during the colonial period, which the design team noted during its field visit, demonstrates that there are no problems with socio-cultural feasibility in this very large portion of the Shaba Refugee Health Project.

b. Equipment. This type of investment will replace equipment lost during the wars; replace worn materials which are overdue for replacement because of recent financial strains; and equip new centers created to meet critical demands of the growing population and of new refugee concentrations. The personnel to be involved are already familiar with the technology envisaged.

A related element will reconstitute sufficient inventories of expendables (drugs, bandages, fuel stocks where still needed) at central supply points (hospitals and secondary referral

centers, Kolwezi medical depot). The supply problem has existed since the war period because of the serious losses experienced then and the unusually high demand both at that time and during the period of refugee resettlement. However, it was particularly aggravated by Zaire's 500% currency devaluation of September 1983. Institutions which had been self-financing in purchases of drugs and other expendables suddenly found their revenues able to purchase only a fraction of what had been consumed in the immediately preceding period. The opening of new rural dispensaries and the reopening of a number closed since the wars will also require increased stocks for the Kolwezi United Methodist medical depot, as will new public health initiatives in the Kasaji and areas under Roman Catholic and Garenganze sponsorship.

- c. Technological Improvements. This will consist of replacing existing technology (dependent on petroleum-based fuels) with solar powered equipment in order to cut operating costs, or of extension of such technology to lower-level centers (as in the provision of solar lighting in rural dispensaries for night-time emergency and maternity work, or the provision of solar refrigerators in selected dispensaries far from higher-level referral units for vaccine storage to facilitate vaccination programs in more remote areas). The project is sensitive to the need to avoid high-maintenance equipment in situations where appropriate technical skills are not available.

- d. Extension and Training Programs. These activities are designed to form local public health leadership at an appropriate level to encourage better sanitation and nutritional practices within village communities. The voluntary agencies are especially well-indicated for such activity, as they already have networks reaching into almost all villages which can assist the villagers to select their

representatives. Public health work connected with the training of nurses has been going on in the Kapanga area for a number of years, although subject to transportation limitations in the period since the beginning of petroleum price inflation in 1974 and the ensuing degeneration of the road system and the loss of vehicles in 1977. All qualified nurses in the medical programs of all the various churches appear to have been trained at Kapanga, and those who have completed the 4-year course since the 1970s have had intensive public health training. The staff of Chisambu Medical Technical Institute has already begun periodic continuing education programs, particularly in public health for graduates of the former A3 nursing course and for informally trained personnel such as village midwives. The intent is to use the rural dispensary nurses as the first point of referral for the village-based public health agents, as well as to oversee the village workers during periodic visits to the village for vaccination campaigns, etc.

- e. Transportation and Communications. In order to improve referral of more serious health problems to an appropriately equipped center and to foster integration of the various autonomous programs without wasteful duplication of facilities, transportation and communications improvements are necessary. For village health agents, this will mean at most a simple bicycle. For the professional health care agents of rural dispensaries, it may mean a bicycle, a motorcycle (where continued access to fuel is not a problem), or in a few strategic locations a four-wheel drive vehicle. Major secondary referral centers will require solar powered radios and satisfactory airstrips to allow the small planes which serve as ambulances to be called promptly when needed and to land and take off with normal weight loads in order not to inflate air transportation costs unnecessarily. For example, obstacles at the end of the Kasaji airstrip, where two important secondary referral centers are located, caused

the loss of one aircraft in 1979 with one passenger fatality, and the airstrip is currently unusable due to lack of maintenance. The United Methodist Church proposes to undertake occasional mechanized maintenance as needed with its own equipment, supplemented by additional items included in Sub-Project 20. Routine maintenance (essentially grass cutting) would be the responsibility of the local user institutions with their own equipment and personnel. The church's aviation program, which has been serving medical evacuation needs and has been used by all the churches in the region for the past 23 years, also requires improvements to its central maintenance facility at Lwena in central Shaba to ensure optimal operational efficiency.

In all these cases, the technology is appropriate and has already been in use, with its extension limited only by financial (capital) constraints.

5. Impact

The impact of the project is likely to be great. It builds on existing structures which have already won the respect and confidence of the population of Lualaba and Kolwezi Sub-Regions, so participation should not be a problem. Motivation for participation is high.

The greatest constraints to be overcome in order to maximize the impact of the Shaba Refugee Health Program will likely be encountered in village-based public health. Cooperation with traditional leaders and the participation of village communities in selecting delegates for training will be of the highest importance in ensuring real impact in these programs. One favorable aspect is that the voluntary agencies have already started public health education programs in some areas, although not always with the component of village health agents. Elsewhere, programs have been developed using village representatives but without a strong public health component. Thus, despite the relative difficulty in producing short-term results in the

area of public health at the village level, the voluntary agencies are starting from a base of relevant experience.

The institutions involved are currently maintaining their health programs despite constraints in financing expansion and improvements and in overcoming the blows of refugee dislocation and drastic changes in exchange rates. Several components are specifically designed to contribute to the long-term maintenance and spread of health-care activities.

Kapanga Zone has the densest network of primary health care facilities (one-nurse rural dispensaries), with another strong cluster of intermediate-level facilities around Dilolo and Kasaji. (The band of territory from Dilolo to Kasaji has by far the highest population density in Lualaba Sub-Region.) However, the relatively populous Sandoa area poses a problem in terms of lack of adequate secondary centers. The Sandoa state hospital has grave operational problems. The leprosarium dispensary, under private control of the Roman Catholic sisters, is extending its services to tuberculosis patients and limited general medical care but is not adequately equipped nor is it logical to duplicate the facilities of the state hospital where possibilities could be envisaged for its recuperation. The Mwajinga dispensary-maternity has a two person staff and needs adequate maternity facilities and water supply (the latter foreseen in the related Shaba Refugee Water Supply Project, 660-116) before further expansion in its scope should be undertaken. For the short to medium term, barring significant changes in the management and operations of the Sandoa state hospital, patients from the Sandoa area will continue to be referred to the Kasaji and Dilolo intermediate centers and especially to the Kapanga hospital for other than routine medical needs. With an airplane based at Kapanga, existing airstrips and communications points at Mwajinga and Kafakumba Lake, and proposed communications improvements at Sandoa Post and Kafakumba-Kimpuki, it will be more cost-effective to continue present practice than to create a new referral center as a priority at this time.

B. Institutional Analysis

The overall implementing agency for this project is the Southern Zaire Annual Conference of the United Methodist Church (Communauté Méthodiste Unie du Sud Zaïre, Eglise du Christ au Zaïre) (UMC). The United Methodist Church has been involved in medical work in Lualaba and Kolwezi Sub-Regions since 1914 when the present Samuteb Memorial Hospital was founded as its first permanent mission station in the present Shaba Region. With the exception of the Gecamines hospital at Kolwezi and the small SNCZ (railroad parastatal) hospital at Mutshatsha which are essentially for company employees only, Samuteb Memorial Hospital is the one operational full hospital in the two sub-regions. In July 1984 the United Methodist Church took over management from the state of the former Mwangeji hospital in Kolwezi. The United Methodist Church also operates by far the largest number of primary health care facilities in western Shaba, with a very important network of rural dispensaries and public health work in Kapanga Zone and a separate system of autonomous dispensaries in other parts of Lualaba and rural Kolwezi Sub-Regions with from three to nine centers operating per administrative zone in July 1984. Several of these latter centers already function as reference health centers with inpatient and maternity facilities, although Rural Health Zones have not yet been created by GOZ in this latter area.

The United Methodist Church also accounts for a large percentage of skilled medical personnel in the project area. It counted two expatriate medical doctors and ten Zairian physicians among its staff in September 1984, with another expatriate surgeon currently in language/tropical medicine training in Europe. Other doctors are located at the Roman Catholic missions at Kalamb, Sandoa, and Kafakumba (without full hospital facilities), at the Dilolo and Sandoa state hospitals and the Kolwezi Gecamines and Mutshatsha SNCZ facilities, and in military service. Military doctors at Kapanga and Kolwezi use the United Methodist facilities.

The historic role of the United Methodist Church in health care is even more striking in the case of nurses. Nurses in Zaire play a far more important role in health care than in the American medical system: diagnosing diseases, prescribing and administering medication, performing minor surgery, assisting with deliveries when complications are encountered, and promoting better sanitation and preventative health care in rural villages. All of the United Methodist rural dispensaries are staffed by at least one nurse with formal qualifications, and the field research trip in preparation of this project found that all formally trained nursing personnel encountered in the various rural medical centers had been trained at Chisambu Medical Technical Institute at Kapanga.

In addition to Lualaba and Kolwezi Sub-Regions, the Southern Zaire Annual Conference of the United Methodist Church also operates in Kambove, Likasi, Lubumbashi, Kipushi, Kasenga, and Sakania Zones outside the present project area, with at least one medical center in each zone. Other Zairian United Methodist annual conferences in Kivu, the Kasai, and Kinshasa/Bas Zaire have medical programs as well.

The Southern Zaire Annual Conference is recognized as a constituent communauté of the Eglise du Christ au Zaïre, the government-recognized federated Protestant church of the country. It is also recognized as a constituent autonomous unit in the international United Methodist Church well-known within the United States. The church, with more than 75,000 members in good standing and a constituency estimated at 300,000, is governed by an annual conference consisting of 175 ordained clergy and an equal number of lay delegates elected by local churches. Executive authority between annual conference sessions is vested in a bishop, since 1972 Bishop Katembo Kainda, with offices in Lubumbashi, and thirteen district superintendants (pastors) appointed for up to six years to advise and oversee local programs within areas of approximately one half to one entire government administrative zone. Popular representation in policy formation and execution is ensured through parish and district councils. In terms of the current project, the medical committees of district councils play important roles in overseeing medical programs and in approving the level of user fees.

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United Methodist rural dispensaries in Kapanga Zone (Kapanga and Murung church districts) have been administratively a part of Samuteb Memorial Hospital. although public health programs have had separate budgets for overseas financial assistance. United Methodist health centers in other areas are administratively autonomous, under the control of the church at the annual conference and district levels, and are self-supporting financially through user fees, even where inpatient facilities exist. Some financial subsidy is given through aid to the local community in building permanent buildings and indirectly through occasional grants and the salary of a pharmacist at the central pharmaceutical depot in Kolwezi. The operations of Samuteb Memorial Hospital itself, as with the referral medical centers with multiple staff of the other PVOs associated with the current project, require constant subsidization in light of the low economic standards in Lualaba and rural Kolwezi Sub-Regions. At the present time a very small fraction of these subsidies come from the Government of Zaire.

In addition to the United Methodist Church, other PVOs participating in the current project include the Roman Catholic Church and the Plymouth Brethren (Frères en Christ--Garenganze). The Roman Catholic Diocese of Kolwezi includes all of the project area, with medical programs traditionally operated at each of its central mission stations by nuns of various orders. At Sandoa the Franciscan sisters both operate a private leprosarium (with two medical doctors and funding supplied by the Friends of Father Damien, a Belgian non-religious PVO specializing in leprosy work) and provide some personnel for the state-administered hospital.

The Garenganze (Frères en Christ--Garenganze) church is another of the member communautés in the Protestant Church of Christ in Zaire. As opposed to the connectional polities of the United Methodist and Roman Catholic churches, it has an extremely decentralized, congregational organization characteristic of its origins in missionary work of the "Plymouth Brethren" or "Darbyite" movement of British origin, which rejected the principal of the institutional church. Medical programs are in effect the responsibility of individual missionaries or of local church groupings

which assume financial responsibility. Following pioneering work in the 1880s at Kalene Hill in what is now Zambia, Garenganze medical work began in present Zaire directly to the north at Mutshatsha Mission. After the completion of the Benguela Railroad in the 1930s, passing to the south of the Mutshatsha mission station, a new and larger medical complex was developed at the village of Chisengama, a major Lunda regional administrative chief to the west of Kasaji Station. A secondary medical program was developed at Katoka in the heavily populated Dilolo area to the west near Kahundu Station.

Administrative responsibility in the Shaba Refugee Health Project will be vested at two levels. Overall financial and accounting responsibility will be in the hands of the Field Treasury (Trésorerie Générale) of the United Methodist Church. Administratively a branch of the Board of Global Ministries of the United Methodist Church headquartered in New York City, it handles foreign currency accounts for all United Methodist annual conferences in Zaire as well as overseas gifts from North American and European United Methodist churches. The Field Treasury handles total accounts on an annual basis considerably larger than the proposed peak funding levels of the Shaba Refugee Health Project. It also has served as a central service unit for direct importation of equipment and supplies needed for church programs in Zaire, and more especially for Shaba Region because of the centralization in Lubumbashi of international airport, rail links to South Africa and the Indian Ocean coast, and GOZ customs and other offices. It also has experience as the local operating partner for the United Nations High Commissioner for Refugees (UNHCR) operations in Shaba Region after the 1977 and 1978 wars. It will coordinate foreign and local purchasing and facilitate transport arrangements.

Primary administrative and executive responsibility, however, will be vested in the directors appointed by each PVO (church) for the individual projects. The United Methodist Field Treasury will operate separate accounts for each of the 21 Sub-Projects, including Roman Catholic and Garenganze centers. The directors of the individual sub-projects will

be those appointed through normal procedures of their respective churches; they will be responsible to their ecclesiastical superiors and to USAID for the execution of their sub-project activities and for furnishing all appropriate documentation to justify expenditures necessary at the local level. Participation of Roman Catholic medical institutions in the Shaba Refugee Health Project is subject to approval by the bishop of the Diocese of Kolwezi, currently Bishop Songasonga.

C. Technical Analysis

This project is made up of a number of related components, including construction and renovation of buildings, supplying drugs and equipment, and solar power generating equipment. However, a critical aspect of this project with respect to its chances for success is the fact that the project does not propose anything new and untested. There are already solar power systems operating in the project area. Church groups possess the expertise necessary to construct or renovate health centers and dispensaries. Pharmaceutical supplies are currently being imported into the area. Unfortunately, the scale on which these activities is taking place is totally inadequate given the needs of the region's population. User-fee systems, while capable of perpetuating the provision of services at the current level, cannot generate the capital needed to finance the necessary expansion while guaranteeing quality. This project will supply that capital.

Following are brief discussions of the technical feasibility of specific project components.

1. An important component of this project involves the rehabilitation and/or construction of health centers. As stated above, the direct responsibility for the implementation of each of the sub-projects will lie with directors appointed by the church responsible for the center in question. All three of the church groups involved in this project have extensive experience in construction. They have at their

disposal professional masons, carpenters, etc., as well as individuals (expatriate and/or Zairian) with experience in the supervision of construction projects. This local availability of technical expertise, coupled with the overall simplicity and general standardization (the same plans will be employed for the construction of a number of health centers) of the work to be carried out, render it likely that the construction component of this project will be successfully carried out as described within this document.

2. Another major aspect of this project is the replenishing of stocks of supplies, hospital equipment, and pharmaceuticals which were depleted or destroyed during the wars of 1977 and 1978. This will involve the preparation and placing of orders, the receiving and storing of goods, and the distribution of these goods to area depots and dispensaries. All of this will be undertaken by the United Methodist Church, which has been importing medical supplies and pharmaceuticals into the area for 70 years. Given the success enjoyed by the Methodists in this domain to date, and the fact that they will continue to employ current successful methods, no major problems are anticipated with this project component.

3. The Methodists also have a proven track record in the importation of vehicles into Shaba Region. As above, they will utilize established procedures to effect this phase of the project.

4. Solar power systems are installed and functioning in a large number of locations in Zaire, including some in Shaba region. Both the Catholic and the Methodist Churches have experience in this area, and thus qualified personnel will be available to undertake this project component.

5. A relatively small sum will be provided for the purchase of aircraft engines and the upgrading of maintenance and landing facilities. Well qualified and experienced aviation specialists will handle this component (all work is done to FAA standards). Licensed personnel, both expatriate and Zairian, currently on staff are sufficient to handle increased activity.

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6. Training of professional health workers currently takes place in the project area, and training of village health workers has been ongoing on a small scale since 1982. Project financing will allow for an expansion of training activities. This expansion will be supervised and coordinated by professionals already active in this field. In addition, some support may be expected from the SANRU project in the form of appropriate training materials.

D. Financial Analysis

1. Sustainability

Sustainability in this project is tied to the continuing viability of the currently practiced user-fee system as a means of replenishing stocks of supplies and paying salaries. The project will provide a critical mass of these supplies, which will allow the user-fee system to finance re-supply in a timely manner. In particular, shortages of particular drugs or supplies will be less frequent and less severe. During 1983 the receipts taken in under this user-fee system totaled the local currency equivalent of approximately \$110,000. The increased availability of drugs and the rehabilitation and construction of health centers fostered by the project should result in a significant increase in this total in years to come, thereby enhancing the prospects for sustainability.

Sustainability is also affected by the activity of Private Voluntary Organizations in the health sector within the project area. In addition to serving as implementing agencies for this project, the Methodist, Catholic and Garenganze missions in this area will continue to provide substantial amounts of funding to the health sector from foreign sources. During 1983, these missions provided over \$600,000 to the hospitals and dispensaries included in the sub-projects (see Annexes). These funds were used primarily for the purchase of commodities and for salaries of expatriate personnel. It is expected that this assistance will continue at an equal, if not greater, level in the future.

2. Cost estimates and financial plan

The following cost estimates are based on figures compiled from the 21 sub-projects (see annexes). These sub-projects were used in establishing both the total costs by category (construction, equipment, etc.) and the anticipated yearly expenditures for dollars and local currency during the life of the project.

The sub-projects were prepared after consultation with representatives of the three groups who administer the health centers and hospitals involved in this project. The cost estimates which follow in Tables 1, 2, and 3 are based upon the needs and requirements as set forth in the sub-projects; however, as the sub-projects enter into greater detail than is either necessary or desirable in a PP, the estimates do not correspond exactly with totals from the sub-projects.

As is indicated in Table 2, AID's contribution to this project is heavily front-loaded, with approximately 90% of AID-financed expenditures taking place during the first year of project implementation (1985). AID's contribution is fairly evenly divided among four major investment categories, with smaller sums allocated to two other categories. These investments are as follows.

Hospital and dispensary equipment (\$400,000): This consists of a wide variety of basic equipment necessary to the proper functioning of a medical center, including examination tables, crutches, beds, centrifuges, etc. Also included here is a certain amount of office equipment which will provide support for hospital and dispensary administration.

Pharmaceutical supplies (\$400,000): These will include large quantities of all of the basic medications and supplies necessary to stock hospitals and dispensaries, such as aspirin, chloroquine, penicillin, vitamins, cotton, etc.

Electrical power generation (\$450,000): Most of this funding will be used for the purchase of solar energy systems, which will be used to operate refrigerators (for vaccines), incubators, sterilizers, and water purifiers.

Vehicles (\$300,000): These monies will be used for the purchase of four basic types of vehicles: large trucks (approx. 7 tons) for use in construction; small 4-wheel drive vehicles for supervision of rural health centers and dispensaries; tractors to be used in construction and airport maintenance; and motorcycles and bicycles to be used by extension agents.

AID funding will also be used for the purchase of aircraft maintenance equipment and radios (\$75,000) and for the purchase of certain construction materials (\$125,000) unavailable or difficult to obtain on the local market.

Table 1: Summary Cost Estimates and Financial Plan

Funding Source	\$000 or local currency equivalent in \$000 ¹			
	AID ²		GOZ ³	
	FX	LC	FX	LC
Construction/ Renovation	125	-	-	1,225
Hospital Equipment	400	-	-	375
Pharmaceutical Supplies	400	-	-	-
Electrical Power Generation	450	-	-	20
Vehicles	300	-	-	-
Aviation Equipment	75	-	-	-
Training	-	-	-	150
TOTALS	1,750	-	-	1,770

¹ Converted at the rate of 37 zaires for 1 dollar.

² Inflation and contingency allowances have been built into line item estimates for AID FX contributions

³ Inflation not included

Table 2

Projection of AID funded expenditures by by fiscal year by line item

(\$000)

<u>CATEGORY</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Construction/ Renovation	45	35	15	15	15
Hospital Equipment	335	30	35	-	-
Pharmaceutical Supplies	390	10	-	-	-
Electrical Power Generation	400	50	-	-	-
Vehicles	300	-	-	-	-
Aviation Equipment	75	-	-	-	-
TOTALS	1,545	125	50	15	15

Table 3

Projection of GOZ local currency funded
expenditures by fiscal year by line item
(\$000)

<u>CATEGORY</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>
Construction/ Renovation	500	250	175	175	125
Hospital Equipment	300	75	-	-	-
Electrical Power Generation	20	-	-	-	-
Training	30	30	30	30	30
sub-totals	850	355	205	205	155
Inflation ¹	0	18	21	32	33
TOTALS	850	373	226	237	188

¹ Calculated at 5% compounded annually, beginning in 1986.

E. Economic Analysis

1. Background

A network of health-care facilities, including personnel, exists in the project's target region. The size of the network is inadequate, the parts managed by the government do not function, and the parts managed privately (by church groups) are handicapped by lack of structures, equipment, and supplies. Part of the inadequacy is due to losses caused by the events in the 1970s connected with the refugee problem.

2. The Project

It is proposed to assist the health-care units managed by church groups by restoring and augmenting the structures, equipment, and supplies they work with. It is expected on the basis of historical experience that the management and labor already in place will be able to use this assistance effectively to expand health care substantially.

3. Economic Feasibility

As against \$760,000 per year required in years 2 through 10 to fully amortize the project's cost of \$3.624 million at 15% (as if all costs were incurred in year 1), project benefits have been identified of on the order of \$3.4 million per year. (For details, see the annex on economic analysis.)

Therefore, the proposal is projected to be economically feasible. No reasonable adjustments in amounts or timing of projected benefits would change this conclusion.

V. Implementation Plan

A. Administrative Arrangements

This project will be implemented by the United Methodist Church in Lubumbashi (Southern Zaire Annual Conference: Communauté Méthodiste Unie du Sud Zaïre). They will be responsible for the execution of the various sub-projects, although the sub-projects themselves will be largely carried out by the church or organization directly involved in that particular project (see Annex 4). The United Methodist Church will take responsibility for the procurement of necessary supplies and/or services, both locally and from sources outside of Zaire (see section D below, Procurement).

To manage this project effectively, USAID will assign a Project Officer to Shaba whose responsibilities will include:

1. Monitoring and evaluation of project activities to ensure that the management of AID resources is satisfactory;
2. assisting in the preparation of project implementation documents, particularly those relating to procurement;
3. the maintenance of liaison with the relevant host country officials;
4. assisting in the maintenance of project reporting and record keeping, including financial management information and project performance tracking.

The officer based in Shaba will have a USAID/Kinshasa backstop who will be responsible for liaison with AID/W on all project matters.

B. Implementation Schedule

The general schedule for the implementation of project activities from the date of approval until project completion is presented below.

Project paper approved by AID	September 1984
Project grant agreement signed	September 1984
Request for bids for specialized equipment issued	October 1984
First commodities list finalized	October 1984
Initial conditions precedent met	November 1984
First commodities order placed (pharmaceuticals)	November 1984
Interior renovations begin	February 1985
Exterior construction and renovations begin	May 1985
Initial special equipment order placed	May 1985
Training programs begin	July 1985
Project completion date	September 1990

C. Evaluation Plan

Three evaluations are slated for this project: one in September of 1986, one in 1987, and one in 1990. The first will be a start-up evaluation, the the second a mid-point, and the third a final.

All evaluations will coincide with, and take into account, evaluations of the Shaba Refugee Roads Project (660-0115) and the Shaba Refugee Water Supply Project (660-0116) companion refugee projects.

The first evaluation will have as its principal purpose to review project objectives, assess the degree to which project design is leading towards purpose achievement, review and confirm the validity of assumptions, assure that all participants are properly carrying out the responsibilities envisaged and assigned, and make recommendations for improving project implementation.

The evaluation team will be led by an experienced health professional and will include a civil engineer and a sociologist. The team leader will assess the likely impact of the project on health standards in the area, the civil engineer will assess the quality of the construction and rehabilitation undertaken by the project, and the sociologist will review the impact of the project on the refugee and repatriate population of the area. The mid-term evaluation will update initial evaluation findings with recommendations appropriate at that point. It will specifically review what mechanisms have been established or planned for recurrent costs and other aspects of sustainability.

The final evaluation will be conducted following the completion of all assistance provided under the project, and will provide a comprehensive assessment of the project's impact on the Lualaba Sub-Region. A thorough analysis will determine the extent to which the target population has benefited through improvements to the health infrastructure in the project area. In addition, an assessment will be made of the cumulative impact of the three refugee projects on the populace of the sub-region.

The final evaluation team will be constituted similarly to those of the earlier evaluations.

D. Procurement

This project is to be authorized in accordance with the Migration and Refugee Assistance Act of 1962.

Because the authorization for this project does not come from the Foreign Assistance Act, the provisions of that Act relating to the procurement of goods and services do not apply as a matter of law and accordingly this PP reflects greater flexibility than usually assumed in AID regarding procurement requirements.

As stated above, the major responsibility for all procurement under this project will lie with the United Methodist Church. This group (more

specifically the United Methodist Church Field Treasury) has extensive experience in the importation of a wide variety of goods. In light of this, it is expected that the United Methodist Church will follow established and proven procurement practices in importing the commodities to be financed under this project. A detailed description of these practices can be found in Annex 2.

ANNEX 1

REPUBLIQUE DU ZAIRE
MOUVEMENT POPULAIRE DE LA REVOLUTION



REGION DU SHABA
CABINET DU PRESIDENT REGIONAL DU MPR
GOUVERNEUR DE REGION

Lubumbashi, le 16 AOUT 1984

N° 10/

060005

CAB/PR-MPR/OR,SH/S.9

TRANSMIS copie pour information :

OBJET :
projet routes et santé
Sous-Région de Lualaba.

A Monsieur le Directeur
de l'U.S.A.I.D. - Zaïre,
à KINSHASA

Monsieur le Directeur,

J'ai l'honneur de vous confirmer les différents entretiens que j'ai eus avec vous au sujet de la priorité que la Région du Shaba accorde aux problèmes d'assistance aux réfugiés d'Angola et de réintégration des rapatriés zaïrois qui ne cessent d'affluer dans la Sous-Région de Lualaba.

A cet effet, la Région appuie le projet d'amélioration des routes de desserte agricole et celui de santé communautaire que l'USAID et les Nations-Unies ont élaborés pour la Sous-Région de Lualaba.

Ces projets visent essentiellement :

1. L'amélioration des routes de desserte agricole dans la Sous-Région de Lualaba, projet n°660-0115. Cela pour faciliter l'écoulement des produits agricoles vers les centres de consommation. Le coût estimé de ce projet serait de 7.500.000 US\$. L'Office des Routes en assurerait la réalisation.
2. Le système de santé dans la Sous-Région, projet n°660-0114. Le but de ce projet est de permettre à la population de la Sous-Région de Lualaba de bénéficier des soins médicaux. Le coût estimé du projet serait de 1.750.000 US\$. L'Eglise Méthodiste Unie assurera la réalisation.

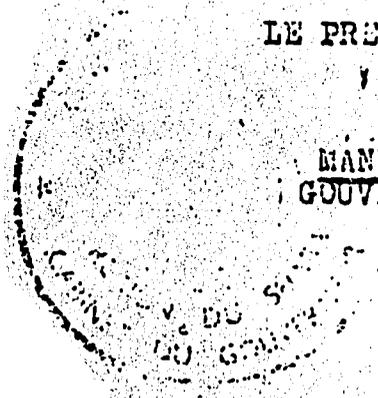
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3. la fourniture d'eau potable dans la Sous-Région de Lualaba, projet n°660-116. Le but du projet est de faire bénéficier la population de cette Sous-Région d'eau potable.
Le coût estimé du projet serait de 2.250.000 US\$.

Tout en vous remerciant d'avance de l'appui que vous apportez aux projets ci-dessus qui ont un caractère prioritaire pour la Région du Shaba, je vous prie d'agréer, Monsieur le Directeur, l'assurance de ma considération distinguée.

LE PRESIDENT REGIONAL DU LPR,

MANQUENGE BULA NYATEI
GOUVERNEUR DE REGION.



ANNEX 2

CURRENT UNITED METHODIST PROCUREMENT PROCEDURES

The United Methodist Church Field Treasury (Trésorerie Générale) is currently involved in direct importation of a wide variety of goods from various sources, with the total value varying considerably from year to year but generally running in the million dollar range.

Pharmaceuticals:

This is one of the largest categories of direct imports, currently running in the neighborhood of \$300,000 to \$500,000 annually for all related medical institutions in Zaire. As for all the missions in Shaba, pharmaceuticals and common small medical equipment are routinely purchased from IMPAS (International Medical and Pharmaceutical Advisory Services Foundation), a Dutch PVO specialized in procuring basic medical equipment for qualifying Third-World hospitals at concessionary prices and negotiating reduced transport costs. Goods are normally air freighted from Brussels directly to Lubumbashi, with the Belgian Consulate General, representing the Dutch government, handling reception and customs formalities. Because of past problems with theft in direct commercial shipment from Brussels to Lubumbashi, the Belgian military mission has been recently expediting shipments from Kinshasa.

In the case of the current project, combining the various inventory reconstitution requests from the sub-projects will allow shipment of one or more containers from Amsterdam to Lubumbashi through Southern African ports as described below under Sea Freight; this should result in considerable cost savings, particularly in the case of liquid products, as the cost of air freight averages one third of the cost FOB Lubumbashi.

In addition to common pharmaceuticals and basic medical equipment stocked by IMPAS and listed in their catalog, other medical equipment and supplies are available upon request. This includes such items, discussed below, as linens and blankets, large equipment, and vehicles for medical service.

Major Medical Equipment:

In addition to routine small equipment listed with prices in the IMPAS catalog, the Shaba Refugee Health Infrastructure Project includes a large number of items for which appropriate price estimates have not been available at the time of proposal design. IMPAS is also one of the primary candidates for provision of such goods, for their prices are far lower than those available within Zaire or within the region (South Africa, Kenya, Zambia) through commercial channels and delivery to Lubumbashi is assured.

In view of the volume and assortment of equipment in the current project, prices will be solicited through other channels as well. CHOSEN (Church Hospitals Overseas Service Equipment Needs) of Erie, Pennsylvania, is a U.S. PVO furnishing reconditioned or cosmetically blemished equipment to overseas mission hospitals, with particular expertise in sterilization equipment. ECHO (Equipping Church Hospitals Overseas) of the United Kingdom is a similar organization, with particular experience with operating room equipment.

Maintenance for Pickering X-Ray equipment (U.S. manufacture) is available in the Zambian Copperbelt in Kitwe, with easy access from Lubumbashi. Otherwise, Phillips service is generally available in Central Africa, and Balto is a Belgian brand of radiographic equipment well-known in Zaire. Further research is needed before recommendations can be made for major medical equipment of this value.

Any major equipment purchased through IMPAS can be shipped in conjunction with pharmaceuticals as outlined above. Equipment purchased through ECHO can be shipped through Garenganze mission channels, as they received containers through the port of Dar es Salaam via Zambia on a semi-monthly basis. Equipment of U.S. origin, which is expected to include the majority of large and more expensive items, can be shipped by container as described below under Sea Freight.

Hospital Linens:

Several of the medical institutions involved in the project have had excellent experience with used blankets and new linens or sheeting material purchased through IMPAS. (Cloth of equally fine ^ewave and thus of comparable durability is not available from Zairian sources.) Prices quoted in this project are based on IMPAS invoices during 1984. Similar materials may be available at concessionary prices through Church World Service or other U.S. PVOs.

Vehicles:

The United Methodist Church, as the other missions, has obtained vehicles from South Africa, Europe, Japan, and domestically within Zaire in recent years. In general, Zairian-produced vehicles are not cost-effective for official church use where customs-free privileges are available. U.S. vehicles have been found to be not cost-effective, too difficult to maintain as orphans far from spare parts suppliers, and poorly adapted to Zairian driving conditions.

The easiest and most rapid procurement channel has been purchase in South Africa, as vehicles can be driven directly to Zaire by paved all-weather roads. The disadvantages of this have been the unavailability of left-hand drive vehicles in southern Africa and recent high inflation in the South African vehicle industry. Mercedes 1113 trucks, which have been proven to be most cost effective on rural Shaba roads after comparison with a variety of European and Japanese models, have all been of South African assembly to date.

Four-wheel drive, light utility vehicles, and personal vehicles for medical work are available through IMPAS at concessionary prices. The chief disadvantage in the past has been unavailability of transit arrangements through South Africa, necessitating ocean shipment to Matadi and road delivery across Zaire with all the incumbent risks of damage through theft and roads impassible during much of the year. These complications have recently been resolved. This channel has been used when the calendar and the urgency of the need permitted.

Vehicles are also available through WEM (Weltschaftliche Evangelische Missionsgesellschaft) of Hamburg, West Germany, a PVO supplying purchasing services to Protestant missions in the Third World. Volkswagen products, for example, have been purchased at 10% below factory cost and shipped through Dar es Salaam and Kinshasa ports.

Bicycles:

For maintenance purposes, bicycles to be used by Zairians must conform to the common standards of the African popular market, which U.S. equipment does not, for spare parts are available in any small commercial center throughout Zaire and thus directly to the medical personnel in charge of the bicycle. Superior quality bicycles of British design (Raleigh) have been imported in the past and have proved to have reliability and predictable lifetimes many times greater than bicycles assembled in Zaire with only a slight differential in cost. The United Methodist Church has imported several boxcars of bicycles in recent years for pastors, school personnel, hospital employees, and other church staff.

Motorcycles:

Honda motorcycles, of Japanese origin, have been purchased in South Africa in recent years. The Roman Catholic mission at Kasaji has purchased similar equipment (the 90cc model formerly bought) of Japanese manufacture through U.S. distributors. Research is necessary to ensure that standardization is maintained with the current Trail 110 model, as models change frequently and from market to market, but it may be less expensive to make purchases in the larger U.S. market. Commonality is absolutely necessary to ensure future spare parts supplies to the Zairian personnel responsible for the motorcycles.

Solar Panels and Related Equipment:

It is expected that this equipment, with the possible exception of wiring, will be purchased in the U.S. and shipped as indicated below under Sea Freight. It is one of the largest components of the Shaba Refugee Health Infrastructure Project.

Single-Sideband Communications Radios:

It is expected that this equipment, including both radios and related solar power supplies, will be purchased in the U.S.A. and shipped as indicated below under Sea Freight. Almost all radio equipment operated by the various churches in the project area is of American origin.

A strong preference has been indicated for Matrix Herald model equipment in terms of power-to-price ratio, reliability, and ease of service. All three churches involved currently operate some Matrix Herald units with several years of service experience. This model has been previously chosen for standardization in new purchases where such policies exist.

Tractors:

Massey-Ferguson equipment is preferred because of the availability of spare parts in most countries in the region. Massey-Ferguson operates numerous U.S. factories, but it is essential to verify that North American and African models are identical.

Office and Miscellaneous Equipment:

U.S. equipment requiring electric power is handicapped by the use of 220V 50Hz power supply in Zaire. Some equipment is built specifically for export or contains no motors or other equipment liable to damage by the differing frequencies.

Typewriters require special ordering in order to obtain French keyboards. IBM, Olympia, and Hermes maintenance are available within the area. Due to IBM internal corporate rules, difficulty has been experienced in the past in purchasing 220V 50Hz equipment for delivery to a U.S. intermediate delivery point. Typewriters have generally been purchased directly from Europe and shipped by air freight because of the keyboard problem.

Gestetner duplicating machines are recommended as they make up at least 85% of all duplicating equipment found in schools and offices throughout the area. They are familiar to operators and to repairmen; spare parts are available through original equipment dealers in the region and through cannibalization of the many existing machines.

It is strongly recommended that photocopiers purchased be MITA DC-132 model machines, as they account for 7 of 8 United Methodist photocopiers currently in service in Shaba. They are also found among other churches in Shaba Region.

Sea Freight:

Under NO circumstances should any materials be shipped through the port of Matadi for the Shaba Refugee Health Infrastructure Project. Zairian internal transportation is slow and inadequate, and security from damage and loss are minimal. Loss rates between Matadi and Lubumbashi average 50%.

Shaba has excellent transportation links, however, with southern African and Indian Ocean ports. The United Methodist Church has standing arrangements with Trans-Global Export Co., a Johannesburg firm dealing with PVOs and having historical links to the Seventh-Day Adventist mission in Zaire, for purchases in South Africa and for transit forwarding services for containers or vehicles originating in the U.S., Europe, or Asia.

The United Methodist Church has also opened links with a Newport News, Virginia, firm with ties to the Purchasing Service of the Presbyterian churches in Zaire for consolidation and forwarding of cargo by container from the U.S.A. through South African ports.

Because of the complexity of satisfactory shipping arrangements to Zaire and the high risk of loss and damage, it is strongly recommended that these firms with current experience and good performance records be used. Although technically not non-profit organizations, they should be extremely competitive in final cost because of their orientation toward serving church missions and other non-profit PVOs and their resulting low overhead.

ANNEX 3

SUB-PROJECTS

1. Samuteb Memorial Hospital, Kapanga (United Methodist)
2. United Methodist Rural Dispensaries (Kapanga Sector)
3. United Methodist Rural Dispensaries (Southern Sector--Lualaba Portion)
4. Kolwezi Medical Center (United Methodist)
5. Mwangeji Hospital, Kolwezi (United Methodist administration for Zaire Government)
6. Kasaji-Chisengama Hospital (Garenganze)
7. Katoka Medical Center (Garenganze)
8. Mutshatsfa Mission Dispensary (Garenganze)
9. Kasaji-Lueo Medical Center (Roman Catholic)
10. Dilolo Post Medical Center (Roman Catholic)
11. Kafakumba-Kimpuki Medical Center (Roman Catholic)
12. Sandoa Leprosarium Dispensary (Roman Catholic)
13. Ntit Medical Center, Kapanga (Roman Catholic)
14. Kalamb Medical Center (Roman Catholic)
15. Chisambu Medical Technical Institute, Kapanga (United Methodist)
16. Kapanga Public Health Program (United Methodist)
17. Kasaji Rural Development Program Health Component (Roman Catholic)
18. Katoka Rural Development Program Health Component (Garenganze)
19. Communications Improvements
20. Air Transportation Improvements
21. Kanzenze Medical Center (Roman Catholic)

Annex 4

DETAILED LISTS OF SUB-PROJECTS WITH COST ESTIMATES

The following documents were prepared for submission to USAID during the design phase of the project. In many cases, price estimates (as with pharmaceuticals purchased through IMPAS) were based on hard and current data, although certain imponderables (such as cost reductions through container-lot sea freight in place of air freight for drugs) remain. In other cases, costs estimates were informed estimates only. In other cases (as with dairy cattle and solar electrical equipment), no price estimates were hazarded at the preliminary stage. Therefore, it is not to be expected that totals in this appendix will necessarily agree fully with final estimates contained in the body of the PP.

During the design period, fruitful contacts were also engaged with SANRU, the national public health program coordination program operated for the Department of Health of the GOZ by the ECZ (Church of Christ in Zaire, the federation of Protestant churches) with financing from USAID and other donors. After study of the data from Lualaba Sub-Region, it seems entirely feasible for GOZ-approved Rural Health Zones to be structured around the existing Secondary Referral Health Centers at Dilolo P.o.c., Katoka, and Kafakumba-Kimpuki as well as the Kasaji-Chisenqama hospital once measures are taken to obtain resident physicians, presumably by hiring Zairian doctors graduating from the existing university medical schools. Kolwezi should be able to create its Rural Health Zone at this time without waiting for the desired qualitative improvements in curative health facilities. Given the extremely low population density of Mitshatsha Zone (the rural area around Kolwezi), the proximity of Kanzenze mission to Kolwezi, and the preliminary stage in the reinstatement of its Secondary Referral Health Center, it probably remains more efficient to attach the entire Mitshatsha area to the former Mwangeji Hospital in Kolwezi.

While the definition and creation of these Rural Health Zones is not a necessary part of the current project proposal but rather a matter for discussion among the local medical authorities and the GOZ, it is obviously of importance that improvements to the existing system not be in conflict with the announced GOZ medical development objectives. There is clearly no such conflict, and the design process for this PP has itself proved most valuable to the institutions involved in advancing their planning for the Rural Health Zone program.

COST ESTIMATE SUMMARY:

Project:	Local Funding	Overseas Funding
1. Samuteb Memorial Hospital	6,819,188 Z	\$ 218,013 + solar projects
2. Kapanga Dispensaries	9,793,086 Z	\$ 132,229 + solar
3. Southern Sector Dispensaries	20,451,340 Z	\$ 491,741 + solar
4. Kolwezi Medical Center	2,472,759 Z	\$ 22,826
5. Mwangeji Hospital	4,642,920 Z	\$ 278,333
6. Kasaji-Chisengama Hospital	1,174,075 Z	\$ 68,025 + solar, ag
7. Katoka Medical Center	2,451,266 Z	\$ 110,268 + solar, ag
8. Mutshatsha Medical Center	204,920 Z	\$ 11,182 + solar
9. Kasaji-Lueo Medical Center	-----	\$ 2,410 + solar
10. Dilolo Post Medical Center	1,213,008 Z	\$ 24,000 + solar
11. Kafakumba-Kimpuki Medical Center	2,523,071 Z	\$ 6,559 + solar
12. Sandoa Leprosarium Dispensary	18,000 Z	\$ 16,232 + solar
13. Ntit Medical Center	1,031,596 Z	\$ 8,858 + solar
14. Kalamb Medical Center	714,693 Z	\$ 5,103 + solar
15. Chisambu Medical Technical Inst.	567,230 Z	\$ 25,715 + solar
16. Kapanga Public Health Program	1,364,937 Z	\$ 29,016
17. Kasaji Rural Development Program	2,400 Z	\$ 31,117 + solar
18. Katoka Rural Development Program	4,754,685 Z	\$ 13,450
19. Communications Improvements	-----	\$ 29,000
20. Air Transportation Improvements	683,680 Z	\$ 71,100
21. Kanzenze Medical Center	273,500 Z	\$ 10,888 + solar
	61,156,184 Z	\$ 1,606,065 + solar + ag

Costs have been estimated as follows:

1. Steel doors, door frames, windows, beds: production by Cité des Jeunes (Catholic trade school in Lubumbashi) from locally-purchased materials; would be cheaper if materials imported by the churches.
2. Other construction materials purchased locally at Lubumbashi retail prices, August 1984.
3. Drugs and small medical equipment: FOB Lubumbashi from IMPAS (International Medical and Pharmacy Advisory Service, Amsterdam); published prices plus factor for air freight based on 1983 costs (would be cheaper if large order placed at once for container shipment).
4. Where no published IMPAS prices or recent bills available and for large medical equipment, prevailing U.S. prices plus factor for shipping. Many items may be available through IMPAS, ECHO (Equipping Charity Hospitals Overseas, U.K.) or CHOSEN (Christian Hospitals Overseas Secure Equipment Needs, Erie, PA) which supply donated reconditioned or blemished equipment.

5. Vehicles and other equipment based on cost experience of the churches with regional purchasing by the churches.
6. All local funding costs are figured in constant zaires at the August 1984 level; prices will necessarily have to be inflated according to Zairian inflation, although this is impossible to predict in a quantifiable form.
7. Should the U.S. Dollar portion of the budget exceed available funding after cost estimates for the solar equipment not yet included in costing become available, the budgets can be amended to provide funding in Zaires for some items currently budgeted in Dollars. To the extent that the churches are capable of providing their own hard currency to purchase such equipment overseas as initially planned, the switch from dollar funding to zaire funding could be done at prevailing official exchange rates. For example, the United Methodist Church should be able to provide a minimum of \$25,000 annually in foreign exchange over and above its current needs (which, among other things, include converting zaire funds from medical user fees in order to purchase drugs and supplies from overseas). However, to the extent that such switching would require local purchasing instead of direct importing by the churches (with their non-profit nature and privilege of customs-free importation), Zaire purchase costs are greater than regional purchasing costs by approximately a factor of 3.

SUB-PROJECT 1: SAMUTEB MEMORIAL HOSPITAL, KAPANGA-MUSUMB

Samuteb (formerly Piper) Memorial Hospital was founded in 1914. It has historically been the only hospital in Kapanga Zone, serving 90,000 people in an area of 15,000 square miles. However, because of the dearth of hospitals in Lualaba Sub-Region having both trained physicians and also medications and equipment, it has provided major health care services for a far larger area during recent decades.

The hospital is equipped with the usual dispensary, maternity, and wards for men, women, and children. It also has two modern operating rooms, laboratory, radiology, physically separated tuberculosis and isolation units, and maintenance facilities. A leprosarium with both a residual traditional residential program and an active outpatient clinic is located at Kabaj, approximately 15 kilometers from Musumb. The hospital has a long tradition of favoring outpatient care through satellite dispensaries and preventative medicine and has experimented in the past with health maintenance/insurance schemes with the local traditional authorities. It is a Phase II participant in the SANRU scheme.

The current bed capacity of the hospital proper is 224 (31 men's ward, 31 women's ward, 40 pediatrics, 21 maternity, 100 tuberculosis (seemingly unusually large because of the need to supervise medication over a long period to avoid loss of effectiveness), 1 private room. A 38-bed addition to the maternity was interrupted by the 1977 war and awaits completion. Staff on August 1, 1984, consisted of four medical doctors (two Zairian generalists, one expatriate surgeon/gynecologist, one expatriate pediatrician), one expatriate nurse-practitioner, six Zairian diplomé nurses (A2 level), 14 Zairian infirmier auxiliaire nurses (A3 level), and 44 other personnel.

In 1983 there were 57,017 outpatient visits to the hospital's central dispensary; 3,390 hospital admissions for 71,190 bed-days; 443 births; and 271 surgical operations.

In addition to creating Chisambu Medical Technical Institute to train nurses for service in rural Shaba, the hospital has also carried out periodic in-service training programs to upgrade the skills of traditional midwives and to form midwives for hospital and dispensary service. Improvements to the nursing school complex are included in Sub-Project 15, «Chisambu Medical Technical Institute».

Water-supply improvements have been the first priority of Samuteb Memorial Hospital because of the great expense of operating the current gasoline-driven pump and the need to limit water consumption below optimal hospital conditions. These improvements are to be included in the Shaba Refugee Water Project.

Building Improvements:

Solar Power:

- Main hospital complex:
- 35 15W fluorescent fixtures (12V DC)
 - 6 40W fluorescent fixtures (12V DC)
 - 3 Refrigerators (12VDC; 5cu.ft. minimum)
 - 1 Incubator for laboratory (12V DC or with an additional Inverter)
 - 1 Sterilizer (for instruments, equipment, etc.; (12V DC)
 - 1 Water still (to prepare injectable water to avoid recurrent cost of purchasing from abroad)
 - 5 Inverters (Prefer Best Model M12-1000 with circuit protection; distributed by Communications Associates as above)
- Sufficient solar panels and battery storage capacity
- Regulator-controller with voltmeter and ammeter
- 500m Wire (#12, bi-conductor, or as recommended)

- Pediatrics building:** 6 15W fluorescent fixtures (12V DC)
Sufficient solar panels and battery storage capacity
Controller-regulator with voltmeter and ammeter
100m Wire (#12 stranded, bi-conductor, or as recommended)
- Tuberculosis wards:** 8 15W fluorescent fixtures (12V DC)
3 8W fluorescent fixtures (12V DC)
Sufficient solar panels and battery storage capacity
100m Wire (#12 stranded, bi-conductor, or as recommended)
Controller-regulator with voltmeter and ammeter
- Isolation ward:** 6 8W fluorescent fixtures (12V DC)
Sufficient solar panels and battery storage capacity
50m Wire (#12 stranded, bi-conductor, or as recommended)
Controller-regulator with voltmeter and ammeter
- 3 Solar water heaters (Surgery, Maternity, Laundry).

Conventional Electrical Supply:

- 1 10kVA Lister diesel generator set
New wiring to Surgery and Radiology requiring continued use of conventional power plus to Maternity and Laboratory (approximately 120m of separate 4x4mm armored cable for separate lines or equivalent larger size for 50m of main line plus 20m of line to individual units)

Roof repairs:

- 40 sheets Roofing (3.0m x 0.70m; currently roofed in corrugated aluminium)
40 sheets Masonite for ceiling repairs (2.4m x 1.2m)
6 kg Roofing putty to plug small leaks
30 m Trim board along roof

Completion of New Maternity Ward: (Foundation built 1975; see enclosed building plan)

Repairs to Tuberculosis Ward («Vieux Batiment»):

The original hospital building, replaced in the 1950s by the current main hospital complex, had its thatched roof replaced by corrugated metal roofing during the 1970s, creating serious heat problems because of the low roof and small windows.

Installation of ceilings.

Cement repairs to walls, both under new roof and along ground-line to protect original burned brick/mud mortar walls from undermining by rain

New Sanitary Installations:

With adequate water supply foreseen, present pit latrines adjacent to hospital buildings must be replaced with septic tank facilities in view of concentration of personnel and present odor problems in hospital buildings.

- 18 Combination squat toilet/showers with flushing mechanism
6 Septic tanks
6 Lavatory washbasins in wards
3 Laundry sinks for patient use

Paint:

- 3000 kg Exterior masonry paint (white)
- 3000 kg Exterior masonry paint (red-brown)
- 4000 l. Semi-gloss enamel paint (light blue)
- 4500 kg Interior latex paint (white)

Equipment:

- 300 Steel beds
- 300 Plastic-covered foam mattresses
- 1 Mercedes 1113 truck (necessitated by dispensary construction program; model previously chosen for standardization)
- 5 Binocular microscopes
- 1 Anesthesia machine for surgery (220V 50Hz or 12V DC)
- 6 Isolettes for Maternity (12V DC or with additional inverters)
- 3 Intravenous pumps (12V DC or with additional inverters)
- 1 Oxygen concentrator (12V DC or with additional inverter)
- 1 Gestetner mimeograph machine (model previously chosen for standardization)
- 1 Typewriter (Long-carriage, French keyboard)
- 10 Four-drawer filing cabinets
- 2 Treadle-powered sewing machines
- 10 Adjustable adult crutches
- 6 Adjustable youth crutches
- 5 Adjustable child crutches
- 5 Examination tables (simple but with several drawers)
- 1 Delivery table for Maternity

Fuel Stocks:

Until the 1974 fuel price rises and the 1977 war, the hospital maintained a large fuel stock (up to 100 barrels) in normal times because of the frequent shortages at the Petro-Fina outlet at Kasaji. Since the war, supplies have often fallen to the minimum needed to get a truck to Lubumbashi or other supply point when fuel became available, preventing use of such hospital facilities as surgery, running water, etc. Despite the plan to replace diesel generators for lighting and other routine electrical supply purposes, a major investment in fuel stocks remains necessary. Diesel generation will remain necessary for the foreseeable future for surgery, welding, and other peak loads. Given the plans to have two large trucks and three landrover-type vehicles in operation, with heavy transportation demands associated with dispensary construction, a capital investment in a stockpile of 100 barrels of diesel fuel and 25 barrels of gasoline seems reasonable to avoid interference with the implementation schedule.

Drug and Supply Stocks:

The Hospital Central Pharmacy, which supplies not only the hospital wards and outpatient pharmacy but also 19 rural dispensaries and 12 additional village health agents in the Kapanga area, has not been able financially to rebuild its pharmacy stocks since the 1977 war. Drugs and supplies are normally ordered from the IMPAS Foundation in the Netherlands, with the Belgian Consulate General in Lubumbashi expediting transportation and customs. However, frequent shortages between shipments require high-cost purchases from commercial sources within Zaire or absolute lack of material during certain periods.

- 100,000 Aspirin 300mg
- 100,000 Aspirin 500mg
- 100,000 Chloroquine 100mg
- 100,000 Chloroquine 50mg
- 1000 l. Chloroquine mixture
- 100,000 Chloroquine injectable

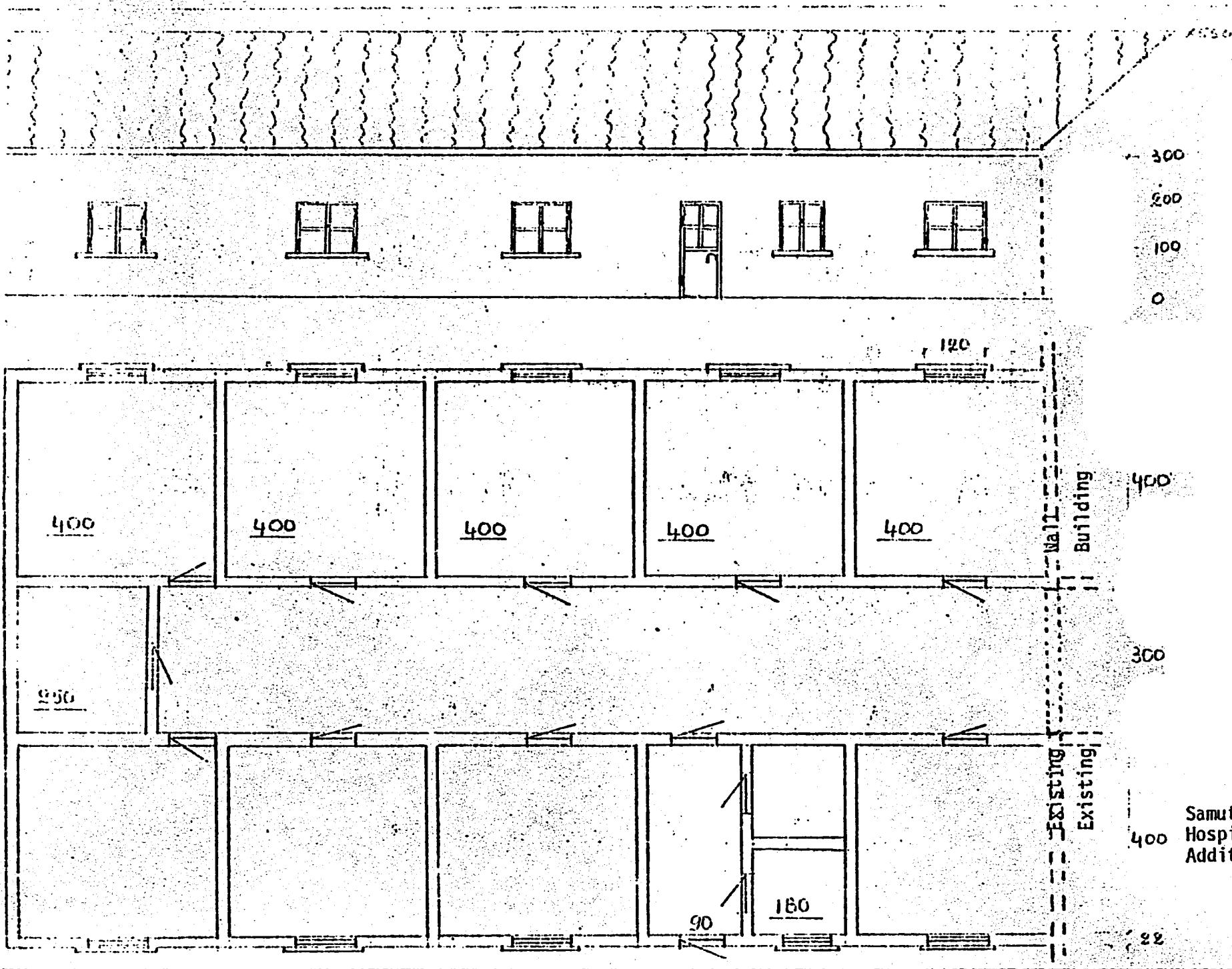
100,000 Penicillin injectable
80,000 Mebendazol
100,000 l. Baxters glucose
100,000 Multivitamins
100,000 B-Complex vitamins
100,000 Iron tablets
10,000 pkg Adhesive bandages
1,000 rolls Adhesive tape
100kg Antiseptic cream
30,000 Chloramphenicol
1000 l. Mercurochrome
3,000 Cipin syrup
50,000 Diazepam 5mg
5000 l. Multivitamin syrup
1,000 Tetracycline ophthalmic ointment
100kg Cotton wool

SUB-PROJECT 1: SAMUTED MEMORIAL HOSPITAL, KAPANGA (UNITED METHODIST)
 COST ESTIMATES AND IMPLEMENTATION SCHEDULE:

All Improvements are requested for 1985:

Building Improvements:

	Local Purchases	Overseas Purchases
1. Roof repairs to Main Hospital Complex:		
30 m	Roof trim boards @160Z/pc	1,280 Z
40 shts	Masonite (2.4m x 1.2m) @ 600Z	24,000 Z
40 shts	Corrugated steel roofing @ \$13	
1 kg	Roof putty @60Z	80 Z
	Labor	3,000 Z
	Transport	12,000 Z
		<hr/>
	33,280 Z	\$ 5,280
2. Completion of New Maternity Ward: (See plan)		
1100 sacks	Cement @ 250Z/sack	275,000 Z
240 shts	Corrugated steel roofing @\$13	
843 m	4x4 for roof trusses @38,50Z	32,456 Z
360 m	7x7 for roof trusses @35Z	12,600 Z
900 pcs	Masonite @ 600Z	60,000 Z
440 m	7x7 for ceiling framing @35Z	15,400 Z
23 m	Ridge capping @\$6.20	
1 pc	Steel door (standard size) @8909Z	3,909 Z
13 pcs	Steel door frames (std) @2423Z	31,499 Z
12 pcs	Wooden doors (standard) @1850Z	22,200 Z
9 pcs	Steel window frames (1.2m x 1.0m) @5000Z	45,000 Z
76 m	Roof trim @160Z/pc	12,160 Z
450 m	Lath for ceiling @12Z/m	5,400 Z
15 kg	Nails (12cm) @90Z	1,350 Z
10 kg	Nails (6cm) @90Z	900 Z
8 kg	Roofing nails @120Z	960 Z
3 kg	Nails (3cm) @90Z	270 Z
8 kg	Nails (8cm) @90Z	720 Z
5 kg	Nails (5cm) @90Z	7,200 Z
400 pcs	Bolts @20Z	8,000 Z
4 pcs	Reinforcing rod (8mm x 12m) @208Z	832 Z
	Labor	60,000 Z
	Transport	200,000 Z
		<hr/>
	592,856 Z	\$ 3,263
3. Repairs to Tuberculosis Ward («Vieux Batiment»):		
852 m	7/7 for ceiling framing @35Z	29,820 Z
870 m	Lath for ceiling @12Z	10,440 Z
180 pcs	Masonite @600Z	108,000 Z
18 kg	Nails (6cm) @90Z	1,620 Z
15 kg	Nails (8cm) @90Z	1,350 Z
3 kg	Nails (3cm) @90Z	270 Z
30 sack	Cement @250Z	7,500 Z
	Labor	40,000 Z
	Transport	50,000 Z
		<hr/>
	199,000 Z	
4. New Sanitary Installations		
6 pcs	Septic tanks @188,276Z	1,129,656 Z
	89 sacks cement @250Z	
	7293 bricks @22Z	
	10 reinforcing rod @208Z	
13 pcs	Turkish toilet slabs @1100Z	19,800 Z
18 pcs	Shower heads @305Z	5,490 Z
18 pcs	Valves 3/4 inch @185Z	3,330 Z



Samuteb Memorial
Hospital Maternit
Addition

2-1

ECH 11

6 pcs	Lavatory sinks @4000Z	24,000 Z
3 pcs	Laundry sinks @3100Z	12,400 Z
100 m	3/4 inch pipe @107Z	10,700 Z
	Assorted pipe fittings	5,000 Z
	Sewer pipe & fittings to septic tanks	40,000 Z
	Transport	95,000 Z
	Labor	50,000 Z
	TOTAL	1,887,276 Z

5. Paint:

3000 kg	Exterior masonry paint (white) @110Z	330,000 Z
3000 kg	Exterior masonry paint (red-brown)	330,000 Z
4000 l.	Semi-gloss enamel paint (light blue) @275Z	700,000 Z
4500 kg	Interior latex paint (white) @72Z	324,000 Z
	TOTAL	1,684,000 Z

Equipment:

300	Steel beds @3000Z	900,000 Z	
300	Plastic-covered foam mattresses @2270Z	681,000 Z	
1	Mercedes 1113 truck		\$ 35,000
5	Binocular microscopes		\$ 3,500
1	Anesthesia machine for surgery (220V 50Hz or 12V DC)		\$ 760
6	Isolettes for Maternity (12V DC or with inverter)		\$ 900
3	Intravenous drip counters (12VDC or with inverter)		\$ 775
1	Oxygen concentrator		\$ 500
1	Gestetner mimeograph machine		\$ 1,200
1	Typewriter (Manual, long-carriage, French keyboard)		500
10	Four-drawer filing cabinets @23,490Z	234,490 Z	
2	Treadle-powered sewing machines @3500Z	7,000 Z	
10	Adjustable adult crutches @\$10		\$ 100
6	Adjustable youth crutches @\$10		\$ 60
5	Adjustable child crutches @\$10		\$ 50
5	Examination tables @11,070	55,350 Z	
1	Delivery table @24,936Z	24,936 Z	
	TOTAL	3,203,776 Z	\$ 43,345

Drug and Supply stocks:

100,000	Aspirin 300mg @\$1.91/1000	\$ 191
100,000	Aspirin 500mg @\$2.54/1000	\$ 254
100,000	Chloroquine 100mg @\$6.47/1000	\$ 647
100,000	Chloroquine 250mg @16/1000	\$ 1,600
1,000 l.	Chloroquine mixture @\$1.98/l.	\$ 1,980
100,000	Chloroquine injectable @\$4.58/100	\$ 4,580
100,000	Penicillin injectable @\$299.30/1000	\$ 29,930
80,000	Mebendazol @\$10.42/1000	\$ 834
100,000 l.	Baxter's glucose (IV) @\$0.93/l	\$ 93,000
100,000	Multivitamins @\$1.65/1000	\$ 165
100,000	B-Complex vitamins @\$1.62/1000	\$ 162
100,000	Iron tablets @\$1.35/1000	\$ 135
1,000	pkg. Adhesive tape 2.5cm x 5m @\$42.21/100	\$ 422
100kg	Antiseptic cream (chlorhexidine + cetrimide) @\$2.63	\$ 263
30,000	Chloramphenicol @\$16.93/1000	\$ 51
1,000 l.	Mercurochrome @\$8 to formulate 50 l.	\$ 160
3,000 l.	Noscapine syrup @\$2.62	\$ 7,860
1,000	Tetracycline ophthalmic ointment @\$17.65/100	\$ 177
100kg	Cotton wool @\$3.63/kg	\$ 363
	TOTAL	\$142,825

Conventional Electrical Supply:

1	10kva Lister diesel generator set	\$ 15,000
	New wiring to Surgery Radiology	

Fuel Stocks:

100 barrels diesel fuel @ 3000Z
 25 barrels gasoline @ 6000Z

Local Purchases	Overseas Purchases
300,000 Z	
150,000 Z	
<hr/>	
450,000 Z	

Solar Energy:

49 Fluorescent fixtures (15W 12VDC) with tubes
 6 Fluorescent fixtures (40W 12VDC) with tubes
 9 Fluorescent fixtures (8W 12VDC) with tubes
 3 Refrigerators (12VDC; 5-10cu.ft.)
 1 Incubator for laboratory (12VDC)
 1 Sterilizer (12VDC)
 1 Water still (to prepare injectable water; 12VDC)
 5 Inverters (Best Model M12-1000 recommended)
 @\$1660
 4 Controller-regulators with ammeter & voltmeter
 850m Stranded #12 bi-conductor wiring
 Sufficient solar panel capacity
 Sufficient battery storage capacity
 3 Solar water heaters (large) @20,000Z

\$ 8,300

60,000 Z

SUB-PROJECT 2: United Methodist Rural Dispensaries (Kapanga Group)

Medical outreach from Samuteb Memorial Hospital into outlying areas of Kapanga Zone dates back many decades in the form of tours by medical personnel through the villages. The scheme of satellite dispensaries has been in operation for twenty years, with the dispensaries administered through Samuteb Memorial Hospital and with their receipts accounting for approximately 40% of the total hospital income at present.

The 1977 war seriously disrupted the dispensary system through the loss of equipment and medicine, both in the scattered dispensaries and in the mother hospital, and through the loss of transportation at the hospital to maintain the supply and oversight functions. A number of permanent buildings had been started at key dispensaries with church funding, but most remain unfinished for lack of funds and of transport for cement, roofing, etc. Equipment is also inadequate from the point of view of the needs and of the level of staff training.

The SANRU project (Soins de Santé Primaires en Milieu Rural) is cooperating with the Samuteb Memorial Hospital (Sub-Project 1), the United Methodist Rural Dispensaries of Kapanga Sector (Sub-Project 2), and the Roman Catholic medical centers at Ntit and Kalamb in one of their Zones de Santé Rurale. Shaba Region was not included in Phase 1 of the SANRU program, and thus the program is only beginning to affect Kapanga. The SANRU program affects the reference hospital only as an administrative center for the Zone de Santé Rurale and is thus not discussed at length in conjunction with Sub-Project 1. Nor are the Ntit and Kalamb Catholic dispensaries deeply involved, partly through philosophical approaches to medical programs and government involvement and partly through the SANRU program's lack of clear status for the optional secondary referral medical center without full hospital status. To date, the Kapanga Zone de Santé Rurale has received seven bicycles for rural dispensaries. Several Yamaha 175 motorcycles have been received but have proved both too powerful for local operating conditions and too expensive to fuel; permission has been sought to sell and replace them with Honda Trail 110 which (with the former Trail 90 model) have become the standard motorcycle in Shaba for the United Methodists and for several of the Roman Catholic missions. A landrover-type vehicle is awaited in September 1984 for supervisory functions.

The SANRU project includes both Rural Health Centers (well-equipped dispensaries oriented toward public health programs and village-based Rural Health Agents without professional medical training. It does not include funding to provide adequate buildings for the Rural Health Centers with trained nursing staff, one of the major aspects of the current proposal. There is considerable potential for overlap in terms of equipment and consumable medical supplies. Account has been taken of items already received from SANRU in formulating the present lists. However, it is not possible to avoid listing items which SANRU may furnish at a later time, as the SANRU program is not intended to equip all Primary Health Centers in all potential Rural Health Zones of Zaire; the existing Kapanga dispensary network is far more extensive than in other areas of the country. Adjustments in the current proposal can be made later to account for effective SANRU contributions to Kapanga area dispensaries.

A uniform equipment package is proposed for all dispensaries. Those centers currently having more of the items on the list are also those which are most active and need larger numbers of each item. Many of these will likely become multiple-staff posts within the foreseeable future, as Kalamb has already done.

Two dispensary plans are proposed where new construction is required. The first is a plan tested over a decade elsewhere in Shaba for those centers where existing medical activity already justifies a full dispensary building with laboratory and observation beds. The second plan, for less active posts, permits expansion to the full building when patient volume justifies additional construction.

In addition, numerous health posts are located in villages which cannot at present financially support a trained nurse. These are staffed by health agents: villagers sent to the hospital for periodic training sessions in first aid and the administration of basic oral medications. They are not authorized to give

injections or to make laboratory examinations, and thus their equipment needs are greatly simplified. It is not proposed to build permanent buildings for the health posts at the present time.

Major Dispensaries:

A. Chibalak
B. Chibung
C. Chitazu
D. Chiyung
E. Kabaji (Leprosarium)
F. Kalamb
G. Kambamb
H. Kaninchin
I. Mpand a Kalend

Lesser Dispensaries:

j. Chamb
k. Chibab
l. Chivund
m. Dinying
n. Kambangu
o. Kamwang
p. Mulambu
q. Ntembu
r. Rubwiz
s. Samaband

Health Posts:

aa. Chal
bb. Chikamb
cc. Isang
dd. Kambundu
ee. Kanteng
ff. Masend
gg. Masak
hh. Moj
ii. Murub
jj. Mutombu a Chibang
kk. Mwant Kandal
ll. Ngungu

Proposed Construction Timetable:

- 1985: Chitazu (complete interior of dispensary; build maternity)
Kalamb (full dispensary plus ward unit)
Kambangu (complete dispensary already started)
Kamwang (complete dispensary already started)
- 1986: Kambamb (full dispensary)
Kabaji (renovation of existing permanent building)
Kaninchin (full dispensary)
Chibalak (full dispensary)
- 1987: Chibung (full dispensary)
Chiyung (full dispensary)
Mpand a Kalend (complete building already started)
Samaband (small dispensary)
- 1988: Mulambu (small dispensary)
Ntembu (small dispensary)
Dinying (small dispensary)
Rubwiz (small dispensary)
- 1989: Chamb (small dispensary)
Chivund (small dispensary)
Chibab (small dispensary)
Chal (complete building already started; formerly an important dispensary but currently only a health post because of conflict between village authorities and former nurse)

General Dispensary Equipment List: (x 19 dispensaries)

- 1 Insulated box for vaccine transport
- 2 Sphygmomanometers
- 4 Stethoscopes
- 1 Binocular microscope
- 6000 Microscope slides
- 6000 Microscope slide cover plates
- 1 Baby scale (pan type rather than suspended sling) (must be in metric units)
- 1 Adult scale (must be in metric units)
- 2 Bandage scissors
- 12 Hemostats
- 36 #10 scalpel blades with 1 #3 handle
- 12 Mayo scissors (5 1/4 inch)
- 1 Grinding stone

- 1 reflex hammer
- 1 Sahli hemoglobinometer kit with spare tubes
- 1 Examining table (simple but with several drawers)
- 1 Stainless steel canister for dressings
- 1 Lockable steel cabinet for storage
- 2 Covered stainless steel instrument trays
- 1 Large covered pan to boil instruments (must withstand wood or charcoal fire)
- 1 Kerosene stove (1 burner)
- 2 Stainless steel emesis basins
- 1 Solar panel plus battery with 1 15W fixture and two 8W fixtures
- 1 Kerosene lamp
- 1 Hand-operated centrifuge
- 1 Bicycle (less 7 bicycles total already received from SANRU)
- 1 Kitchen timer
- 1 Otoscope (must use ordinary expendable batteries)
- 100 Glass syringes
- 6 Crile forceps
- 6 Halsted forceps
- 1 Set of 5 health education flip-charts by Courtejoie (worms, tuberculosis, alcoholism, malnutrition, malaria)

For the 9 Full Dispensaries only:

- 2 Single steel beds
- 2 Plastic-covered foam mattresses
- 2 Blankets
- Material sufficient for 4 sheets

For Kalamb Ward Unit only:

- 30 Single steel beds
- 30 Plastic-covered foam mattresses
- 30 Blankets
- Material sufficient for 120 sheets

For the Chitazu Maternity only:

- 10 Single steel beds
- 10 Plastic-covered foam mattresses
- 10 Blankets
- Material sufficient for 40 adult sheets and 28 baby sheets
- Additional solar panel
- 1 40W/12V fluorescent fixture
- 5 8W/12V fluorescent fixtures
- 1 runabout (stand on wheels with bowl) with 4 spare bowls
- Material sufficient for 40 towels
- 5 vomit bowls
- 5 bedpans with 10 covers
- 5 fluid measures
- 1 trolley table
- 2 lockable steel cupboards
- 1 delivery table
- 2 stethoscopes
- 2 Pinard's stethoscopes
- 1 Sphygmomanometer
- 1 oxygen cylinder with masks and nasal catheters
- solar water heater
- 2 scrubbing brushes
- 5 stainless steel emesis basin
- Double basin-rack
- 4 IV stands
- 2 syringe dishes

- 50 glass syringes and needles of assorted size
- 2 stainless steel trays
- 8 gallipots
- 2 stainless steel bowls
- 3 artery forceps (14 inch)
- 2 sponge-holding forceps
- 1 episiotomy scissors
- 2 blunt-nosed forceps
- 2 toothed forceps
- 2 cord scissors
- 2 measuring jugs
- 30 baby mucus extractors (glass)
- 2 stitch holders
- 1 resuscitation table for baby
- 1 baby scales (pan rather than sling type; must be in metric units)
- 7 baby cots (pan type; must be in metric units)
- 7 baby mattresses (plastic-covered foam)
- 14 baby blankets
- 10 thermometers of each: high range, low range, rectal
- 4 cheatles forceps
- 2 dishes for cheatles forceps
- 1 large pressure-cooker for sterilization

For the Kalamb and Chibab Dispensaries and Chitazu Maternity only:

- 1 Refrigerator (12V DC; 3-5 cu.ft.)
- Sufficient supplementary solar panels and battery storage

Health Post Equipment List (x 12)

- 1 Set of 5 health education flip-charts by Courtejoie (worms, tuberculosis, alcoholism, malnutrition, malaria)
- 1 Bicycle
- 12 Thermometers
- 1 Charcoal stove
- 1 Basin
- 1 Stainless steel covered instrument tray
- 2 Stethoscopes
- 1 Sphygmomanometer
- 1 Pickup forceps for dressings
- 1 Lockable steel cabinet
- 1 Baby scales (pan type rather than with suspended sling) (must be in metric)
- 1 Adult scales (must be in metric units)
- 1 Bandage scissors

Equipment for Supervision from Samuteb Memorial Hospital:

- 1 Mercedes 1113 truck (necessitated by dispensary construction program; model previously chosen for standardization)
- 1 Toyota Landcruiser (model previously chosen for standardization)
- 1 Typewriter (long-carriage, French keyboard)
- 3 Honda Trail 110 motorcycles (model previously chosen for standardization)

SUB-PROJECT 2: UNITED METHODIST RURAL DISPENSARIES (KAPANGA SECTOR)

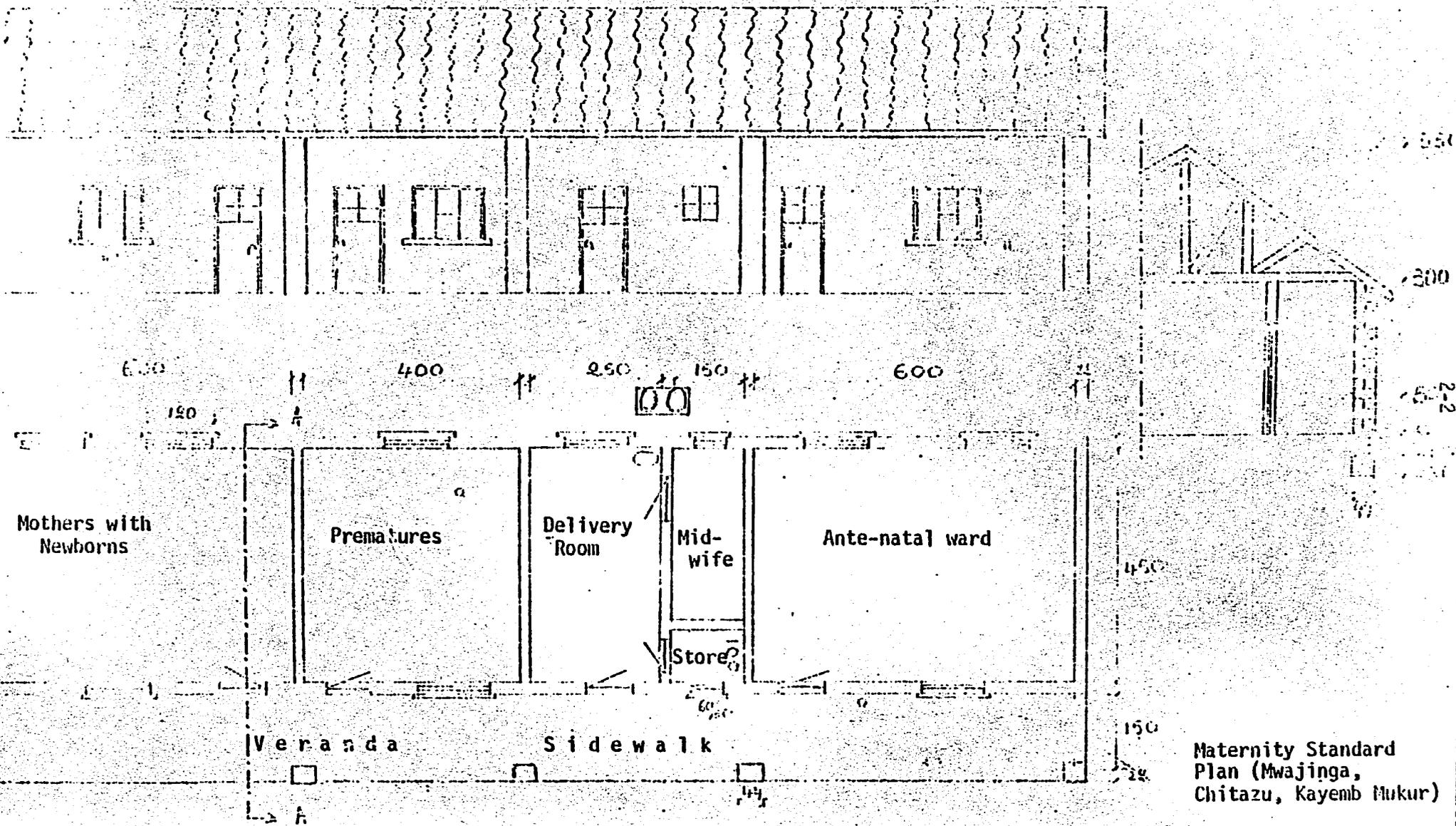
COST ESTIMATES AND IMPLEMENTATION SCHEDULE:1985: Dispensary Construction:

1. Completion of interior of Chitazu Dispensary:

280 m	7/7 for ceiling framing @35Z	9,800 Z	
50 shts	Masonite @600Z	30,000 Z	
250 m	Lath for ceiling @12Z	3,000 Z	
10 kg	Nails (6cm) @90Z	900 Z	
5 kg	Nails (4cm) @90Z	450 Z	
1 kg	Nails (3cm) @90Z	90 Z	
1 pc	Steel door (std) @8909Z	8,909 Z	
4 pcs	Wooden doors (std) @1850Z	7,400 Z	
5 pcs	Steel door frames @2432Z	12,160 Z	
7 pcs	Steel windows (1.2m x 1.0m) @5000Z	35,000 Z	
70 scks	Cement @250Z	7,500 Z	
1 crt	Window glass @34,500Z	34,500 Z	
70 kg	Window putty @110Z	7,700 Z	
1 pc	Stainless steel sink with drainboard	3,500 Z	
	Labor	40,000 Z	
	Transport	80,000 Z	
	TOTAL	281,909 Z	

2. Construction of Chitazu Maternity (standard plan):

	Burned bricks and site furnished by community		
310 m	4x11 for roof trusses @38.5Z	11,935 Z	
242 m	7x7 for roof trusses @35Z	8,470 Z	
126 pcs	Bolts for roof trusses @20Z	2,520 Z	
150 pcs	Steel corrugated roofing @\$13		\$ 1950
23 m	Roof ridging @\$6.20		\$ 143
68 m	Roof trim boards @160Z/pc	2,720 Z	
70 pcs	Masonite @600Z	42,000 Z	
336 m	7x7 for ceiling framing @35Z	11,760 Z	
4 pcs	Steel doors (standard) @ 8909Z	35,636 Z	
2 pcs	Wooden doors (standard) @1850Z	3,700 Z	
6 pcs	Steel door frames (std) @2423Z	14,538 Z	
3 pcs	Steel windows (1.2m x 1.0m) @5000Z	45,000 Z	
2 pcs	Steel windows (0.6m x 0.6m) @2500Z	5,000 Z	
20 kg	Nails (12cm) @90Z	1,800 Z	
10 kg	Nails (8cm) @90Z	900 Z	
10 kg	Nails (6cm) @90Z	900 Z	
10 kg	Nails (5cm) @90Z	900 Z	
20 kg	Roofing nails @120Z	2,400 Z	
350 m	Lath for ceiling @12Z	4,200 Z	
1 crt	Window glass @34,500Z	34,500 Z	
120 kg	Window putty @110Z	13,200 Z	
3 pcs	Reinforcing rod (8mm x 12m) @208	624 Z	
1 pc	Stainless steel sink with drain	3,500 Z	
1 pc	Solar water heater	20,000 Z	
401 scks	Cement @250Z	100,250 Z	
	Labor	85,000 Z	
	Transport	200,000 Z	
	TOTAL	571,451 Z	



Maternity Standard Plan (Mwajinga, Chitazu, Kayemb Mukur)

3. Construction of Kalamb Large Dispensary (standard plan):

Burned bricks and site furnished by community

128 pcs	Corrugated steel roofing @910 (3.0m x 0.70m)		16,540 Z
440 m	4/11 for roof trusses @38.50Z		16,940 Z
120 m	7/7 for roof trusses @35Z		4,200 Z
59 m	Roof trim @160Z/pc		2,400 Z
162 pcs	Bolts @20Z		3,240 Z
17 m	Roof ridging @\$6.20		105 Z
10 kg	Nails (12cm) @90Z		900 Z
6 kg	Nails (3cm) @90Z		540 Z
6 kg	Roofing nails @120Z		720 Z
9 kg	Nails (5cm) @90Z		810 Z
6 kg	Nails (4cm) @90Z		540 Z
1 kg	Nails (3cm) @90Z		90 Z
240 m	7/7 for ceiling framing @35Z/pc		8,400 Z
58 pcs	Masonite @600Z		34,800 Z
270 m	Lath for ceiling @12Z		3,240 Z
8 pcs	Steel windows (1.2m x 1.0m) @5000Z		40,000 Z
1 pc	Steel door (standard) @8909Z		8,909 Z
8 pcs	Steel door frames (std) @2423Z		19,384 Z
7 pcs	Wooden doors (standard) @1850Z		12,950 Z
2 pcs	Wooden pass-through windows @240Z		480 Z
1 crte	Window glass @34,500Z		34,500 Z
100 kg	Window putty @110Z		11,000 Z
740 sks	Cement		185,000 Z
2 pcs	Stainless steel sinks		6,500 Z
3 pcs	Reinforcing rod (8mm x 12m) @208Z		624 Z
	Labor		100,000 Z
	Transport		195,000 Z
	TOTAL		489,567 Z

\$ 105

\$ 1769

4. Construction of Kalamb Ward Unit (standard plan):

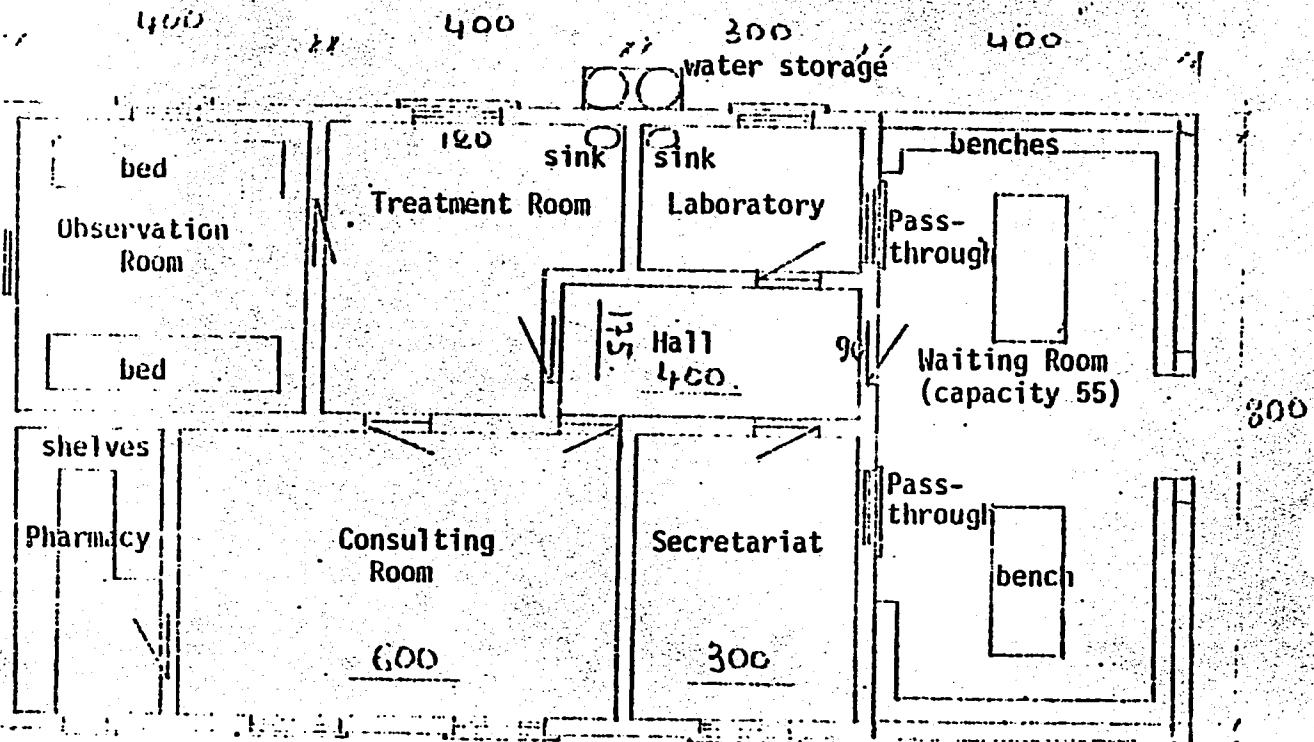
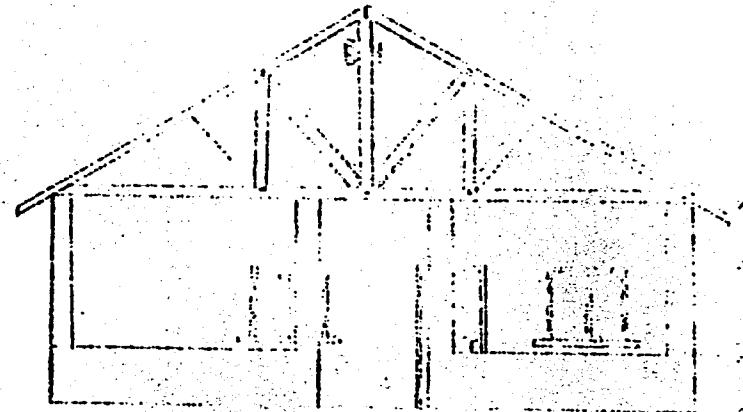
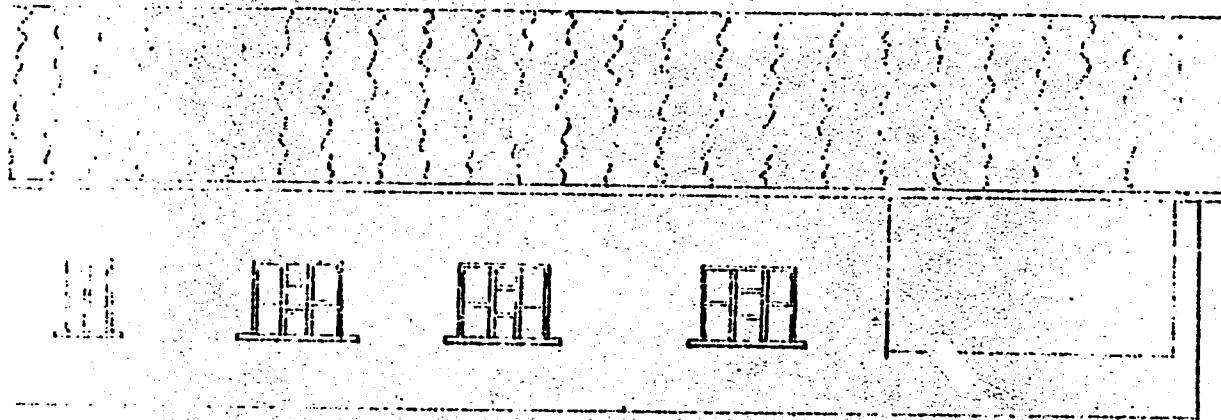
Burned bricks and site furnished by community

	Lumber as in Chitazu Maternity		81,085 Z
	Roofing as in Chitazu Maternity		\$ 1,950
	Roof ridge capping as in Ch. Matern.		\$ 143
	Nails & bolts as in Chitazu Matern.		9,420 Z
4 pcs	Steel doors (standard) @8909Z		35,936 Z
4 pcs	Steel door frames (std) @9,692Z		9,692 Z
12 pcs	Steel windows (1.2m x 1.0m) @5000Z		60,000 Z
1 crt	Window glass @34,500Z		34,500 Z
120 kg	Window putty @110Z		13,200 Z
3 pcs	Reinforcing rod (8mm x 12m) @208Z		624 Z
349 sck	Cement @250Z		87,250 Z
	Labor		80,000 Z
	Transport		160,000 Z
	TOTAL		569,707 Z

\$ 2,093

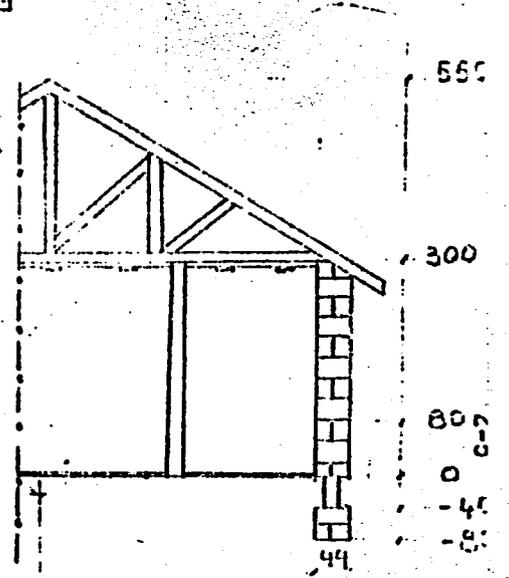
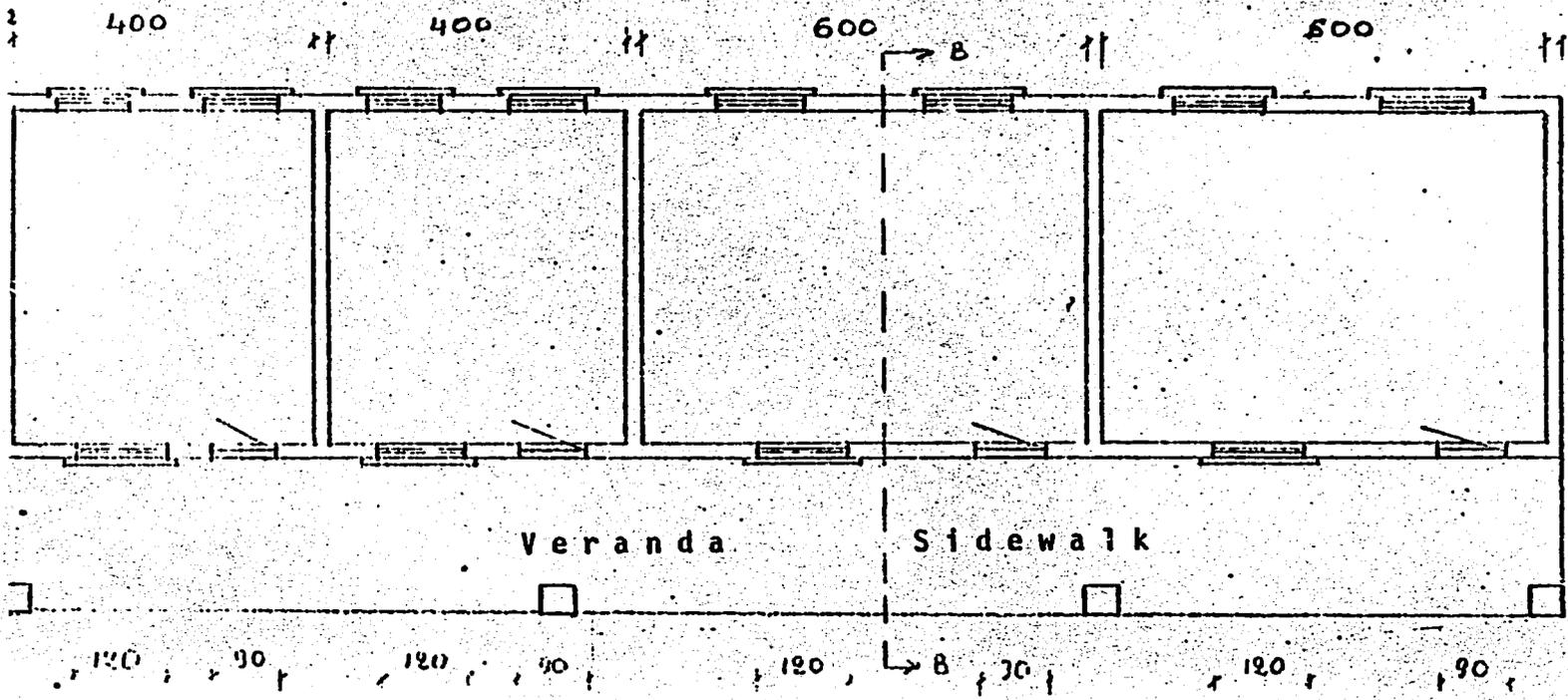
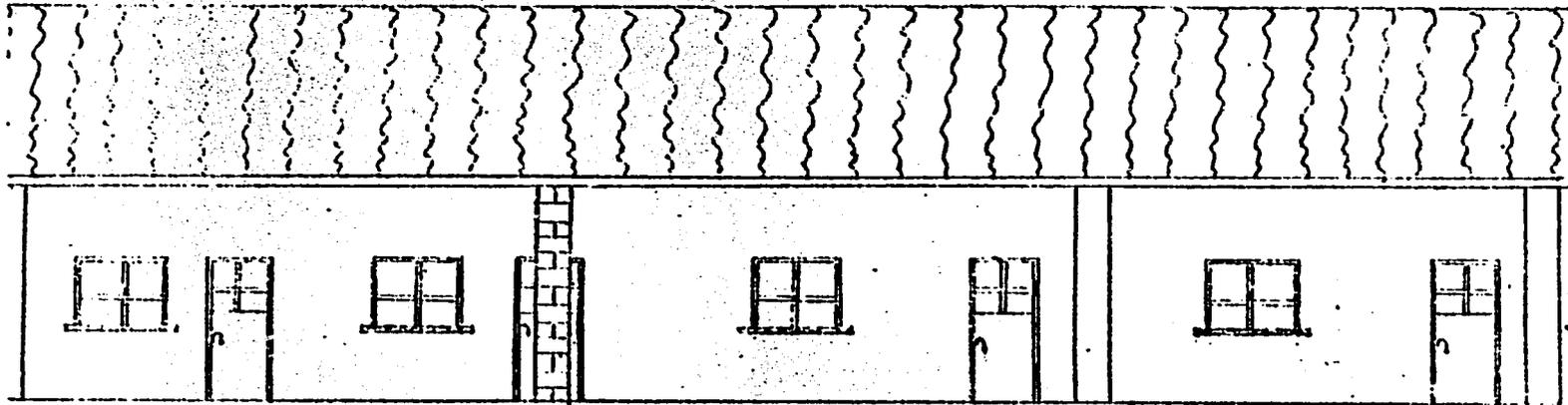
5. Completion of Kambangu Dispensary:

8 pcs	Steel door frames (std) @2432Z		19,456 Z
1 pc	Steel door (std) @8909Z		8,909 Z
7 pcs	Wooden doors (std) @1850Z		12,950 Z
8 pcs	Steel windows (1.2m x 1.0m) @5000Z		40,000 Z
1 crt	Window glass @34,500Z		34,500 Z
80 kg	Window putty @110Z		8,800 Z
1 pc	Stainless steel sink with drain- board and accessories @3500Z		3,500 Z
330 m	7/7 for ceiling framing @35Z		11,550 Z
33 shts	Masonite (1.2m x 2.4m) @600Z		19,800 Z



Large Dispensary Standard Plan

6/11/11



450

200 Simple Ward Unit Standard Plan

ECH. 1/10

39X

300 m	Loch for ceiling #12Z	3,800 Z
11 kg	Nails (6cm) @90Z	990 Z
5 kg	Nails (4cm) @90Z	540 Z
1 kg	Nails (3cm) @90Z	90 Z
123 scks	Cement @250Z	30,750 Z
	Labor	50,000 Z
	Transport	95,000 Z
	TOTAL	340,435 Z

6. Completion of Kamwag Dispensary:

As for #5 (Kambangu): 340,435 Z

Combined Dispensary Equipment List:

19 pcs	Insulated box for vaccine transport (free from P.E.V./UNICEF?)		
51 pcs	Sphygmomanometer @\$41.07	\$	2,095
102 pcs	Stethoscopes @\$7.25	\$	741
19 pcs	Binocular microscopes @\$700	\$	13,300
114,000 pcs	Microscope slides @\$19.83/1000	\$	2,266
114,000 pcs	Microscope slide cover plates @\$7.72	\$	880
32 pcs	Baby scales (pan rather than sling type; must be metric weights) @\$59.45	\$	1,902
31 pcs	Adult scales (must be metric weights) @\$48.83	\$	1,514
50 pcs	Bandage scissors @\$3.45	\$	173
228 pcs	Hemostats @\$6.22	\$	1,418
684 pcs	Scalpel blades (#10) @\$9.17/100	\$	64
19 pcs	Scalpel handles (#3) @\$2.85	\$	54
228 pcs	Mayo scissors @\$9	\$	2,052
19 pcs	Whetstone (to sharpen instruments) @\$2	\$	38
19 pcs	Vaginal specula (small) @\$3.50	\$	67
19 pcs	Vaginal specula (medium) @\$3.50	\$	67
19 pcs	Vaginal specula (large) @\$3.50	\$	67
382 pcs	Thermometers (high-range; must be metric) @\$0.77	\$	294
10 pcs	Thermometers (low-range; must be metric) @\$0.77	\$	8
10 pcs	Thermometers (rectal; must be metric) @\$0.77	\$	8
19 pcs	Reflex hammers @\$4		76
19 pcs	Sahli's hemoglobinometer kit (+ spare tubes)	\$	17
19 pcs	Examining tables @11,070Z	210,330 Z	
19 pcs	Stainless steel canister for dressings	\$	760
33 pcs	Lockable steel cabinets @17,649Z	582,417 Z	
52 pcs	Stainless steel instrument trays with covers @\$3		156
20 pcs	Large pressure cookers for sterilization @\$85	\$	1,700
19 pcs	Kerosene stove (1 burner) @\$20	\$	380
16 set	Solar lighting installation		
	3 15W 12VDC fluorescent fixtures		
	1 Controller-regulator		
	1 Battery		
	1 Solar panel with mounting apparatus		
	15m Stranded #12 bi-conductor wiring		
1 set	Solar installation (Kalamb)		
	7 15W 12VDC fluorescent fixtures		
	1 Refrigerator (12V DC; 3-5 cu.ft.)		
	1 Controller-regulator		
	Sufficient battery capacity		
	Sufficient solar panel capacity with mounting apparatus		

1 set Solar installation (Chitazu)			
1 40W 12V DC fluorescent fixture			
7 15W 12V DC fluorescent fixtures			
1 Refrigerator (12V DC; 3-5 cu.ft.)			
1 Controller-regulator			
Sufficient battery capacity			
Sufficient solar panel capacity			
with mounting apparatus			
40m Stranded #12 bi-conductor wiring			
1 set Solar installation (Chibab)			
3 15W 12V DC fluorescent fixtures			
1 Refrigerator (12V DC; 3-5 cu.ft.)			
1 Controller-regulator			
Sufficient battery capacity			
Sufficient solar panel capacity			
15m Stranded #12 bi-conductor wire			
19 pcs Kerosene lamps @145Z		2,755 Z	
19 pcs Centrifuge (hand-operated) @\$44.93			\$ 654
24 pcs Bicycles (preferably with standard parts for Zaire) @\$190			\$ 4,560
19 pcs Kitchen timers @\$10			\$ 190
19 pcs Otoscope (must use ordinary expendable batteries) @\$24			\$ 456
1950 pcs Glass syringes and needles (assorted) @\$2.50			\$ 4,875
114 pcs Crile forceps @\$13			\$ 1,482
114 pcs Halsted forceps @\$10			\$ 1,140
6 set Courtejoie health education flip charts (worms, tuberculosis, alcoholism, malnutrition, malaria) @684Z		4,104 Z	
58 pcs Steel single beds @3000Z		174,000 Z	
58 pcs Plastic-covered foam mattresses @2270Z		131,660 Z	
58 pcs Blankets @\$3.18			\$ 184
520 m. Sheeting material (brown; 1.7m wide) @\$5.5			\$ 2,860
1 pc Runabout (wheeled stand with bowl) with four spare bowls @\$23			\$ 23
5 m Terry towel material (app. 1m wide) @88Z	440 Z		\$ 43
5 pcs Vomit bowls (stainless steel) @\$8.50			\$ 48
5 pcs Bedpans with lids @\$9.50			\$ 10
5 pcs Fluid measures (graduated cylinders) @\$2			\$ 10
1 pc Trolley table @\$30			
1 pc Delivery table @24,936Z		24,936 Z	
2 pcs Pinard's stethoscopes @\$4			\$ 8
1 pc Oxygen cylinder			\$ 100
Masks and nasal catheters (assorted)			\$ 10
1 pc Solar water heater		20,000 Z	
2 pcs Scrubbing brushes @60Z		120 Z	
5 pcs Stainless steel emesis basins @\$10			\$ 50
1 pc Double basin rack on wheels @\$16			\$ 16
4 pcs IV stands @1,219Z		4,876 Z	
2 pcs Syringe dishes @\$9.50			\$ 19
2 pcs Syringe forceps @\$4			\$ 8
3 pcs Gallipots (plastic) @\$4/100			\$ 4
2 pcs Stainless steel bowls @\$4			\$ 8
3 pcs Artery forceps (14 inches) @\$7.40			\$ 22
2 pcs Sponge-holding forceps @\$4.98			\$ 10
2 pcs Toothed forceps @\$2.59			\$ 5
2 pcs Cord scissors @\$15			\$ 30

2 pcs	Measuring jugs (stainless steel pitcher)		\$	8
30 pcs	Baby mucus extractors (glass) @\$2		\$	60
2 pcs	Stitch holders @\$8.82		\$	17
1 pc	Resuscitation table for baby	4,000 Z		
7 pcs	Baby beds @5405Z	37,835 Z		
7 pcs	Plastic-covered foam baby mattresses @883Z	6,181 Z		
14 pcs	Baby blankets @115Z	1,610 Z		
4 pcs	Cheatles forceps @\$19		\$	76
2 pcs	Dishes for Cheatles forceps @\$9.50		\$	19
12 pcs	Charcoal stove @30Z	30 Z		
12 pcs	Pickup forceps for dressings @\$19		\$	228
12 pcs	Large basins (Stainless steel) @\$20		\$	120
		TOTAL		47,640
Equipment for Oversight				
1	Mercedes 1113 truck (for construction)		\$	35,000
1	Toyota Landcruiser		\$	22,000
1	Typewriter (long-carriage, French keyboard, manual)		\$	500
3	Honda Trail 110 motorcycles @\$1350		\$	4,050
		TOTAL		61,550

1986: Dispensary Construction:**1. Construction of Kambamb Large Dispensary (standard plan):**

As Kalamb Large Dispensary above: 489,567 Z \$ 1,769

2. Renovation of Kabaj Leprosarium Dispensary:

108 shts	Steel corrugated roofing @\$13		\$	1,404
16 m	Roof ridge capping @\$6.20		\$	99
5 pcs	Steel doors (standard)@8909Z	44,545 Z		
8 pcs	Wooden doors (standard) @1850Z	14,800 Z		
46 m	Roof edging @40Z	1,920 Z		
15 scks	Cement @250Z	3,750 Z		
1 pc	Stainless steel sink with drain-board with accessories	3,500 Z		
1 pc	Lavatory sink with accessories	3,100 Z		
	Labor	20,000 Z		
	Transport	35,000 Z		
		TOTAL		1,503

3. Construction of Kaninchin Large Dispensary (standard plan):

As Kalamb Large Dispensary above: 489,567 Z \$ 1,769

4. Construction of Chibalak Large Dispensary (standard plan):

As Kalamb Large Dispensary above: 489,567 Z \$ 1,769

1987: Dispensary Construction:**1. Construction of Chimbang Large Dispensary:**

As Kalamb Large Dispensary above: 489,567 Z \$ 1,769

2. Construction of Chiying Large Dispensary:

As Kalamb Large Dispensary above: 489,567 Z \$ 1,769

3. Completion of Mpand a Kalend Dispensary:

280 m	7/7 for ceiling framing @35Z	9,800 Z		
50 shts	Masonite (2.4m x 1.2m) @600Z	30,000 Z		
250 m	Lath for ceiling @12Z	3,000 Z		

10 kg	Nails (6cm) @90Z	900 Z	
5 kg	Nails (4cm) @90Z	450 Z	
1 kg	Nails (3cm) @90Z	90 Z	
7 pcs	Steel windows (1.2m x 1.0m) @5000Z	35,000 Z	
1 pc	Steel door (standard) @8909Z	8,909 Z	
3 pcs	Wooden doors (std) @1850Z	5,550 Z	
70 scks	Cement @250Z	17,500 Z	
1 crt	Window glass @34,500Z	34,500 Z	
70 kg	Window putty @110Z	7,700 Z	
1 pc	Stainless steel sink with drain- board and accessories	3,500 Z	
	Labor	40,000 Z	
	Transport	75,000 Z	
	TOTAL	271,599 Z	

Construction of Samaband Small Dispensary (standard plan):

The Small Dispensary standard plan is designed for potential later expansion to the full Large Dispensary plan.

Burned bricks and site provided by the community

60 shts	Steel corrugated roofing @S13 (3.0m x 0.70m)		\$ 780
10 m	Roof ridge capping @\$6.20		\$ 62
255 m	4/11 for roof trusses @33.5Z	9,818 Z	
100 m	7/7 for roof trusses @35Z	3,500 Z	
38 m	Roof trim boards @40Z	1,600 Z	
32 pcs	Masonite (1.2m x 2.4m) @600Z	19,200 Z	
114 m	7/7 for ceiling framing @35Z	3,990 Z	
150 m	Lath for ceiling @12Z	1,800 Z	
1 pc	Steel door (standard) @8909Z	8,909 Z	
4 pcs	Steel door frames (std) @2432Z	9,728 Z	
3 pcs	Wooden doors (std) @1850Z	5,550 Z	
2 pcs	Wooden pass-through windows @240Z	480 Z	
4 pcs	Steel windows (1.2m x 1.0m) @5000Z	20,000 Z	
6 kg	Nails (12cm) @90Z	540 Z	
5 kg	Nails (8cm) @90Z	450 Z	
5 kg	Roofing nails @120Z	600 Z	
48 pcs	Bolts (15cm) @20Z	960 Z	
48 pcs	Bolts (11cm) @20Z	960 Z	
270 scks	Cement@250Z	67,500 Z	
50 kg	Window putty @110Z	5,500 Z	
1 pc	Stainless steel sink with drain- board and accessories	3,500 Z	
2 pcs	Reinforcing rod (8mm x 12m) @208Z	516 Z	
1 crt	Window glass @34,500Z	34,500 Z	
	Labor	50,000 Z	
	Transport	100,000 Z	
	TOTAL	348,599 Z	\$ 842

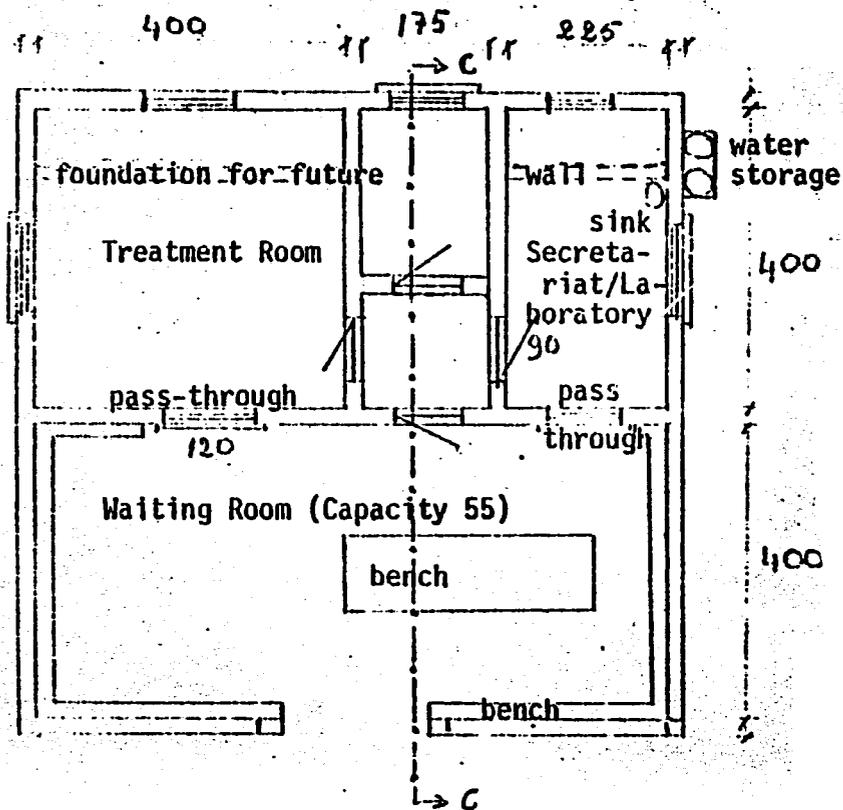
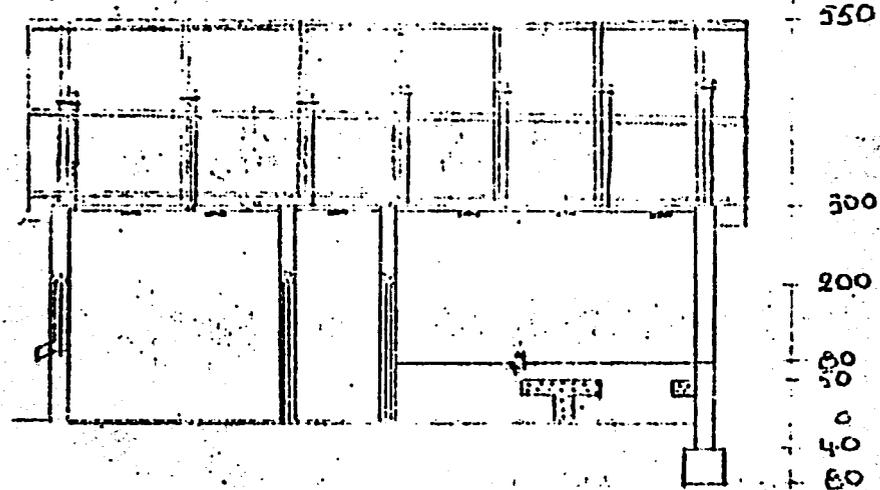
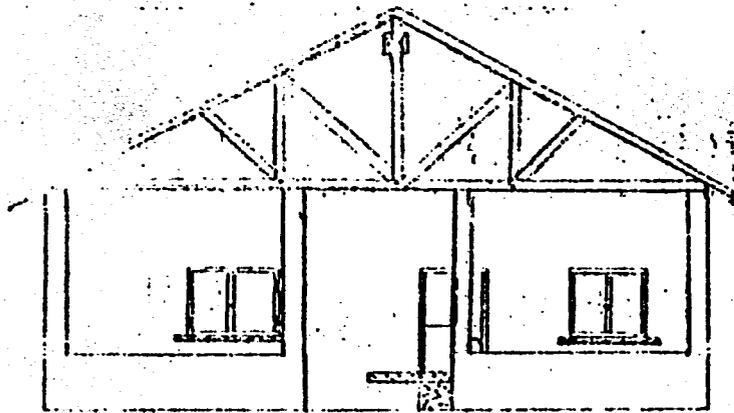
1983: Dispensary Construction:

1. Construction of Mulambu Small Dispensary:

As Samaband Small Dispensary: 348,599 Z \$ 842

2. Constuction of Ntembu Small Dispensary:

As Samaband Small Dispensary: 348,599 Z \$ 842



2-10

Small Dispensary Standard Plan
 (Can later be lengthened to Large
 Dispensary Standard Plan)

ECH. 1/10

3. Construction of Dinying Small Dispensary:

As Samaband Small Dispensary: 348,599 Z \$ 842

4. Construction of Rubwiz Small Dispensary:

As Samaband Small Dispensary: 348,599 Z \$ 842

1989: Dispensary Construction:

1. Construction of Chamb Small Dispensary:

As Samaband Small Dispensary: 348,599 Z \$ 842

2. Construction of Chivund Small Dispensary:

As Samaband Small Dispensary: 348,599 Z \$ 842

3. Construction of Chibab Small Dispensary:

As Samaband Small Dispensary: 348,599 Z \$ 842

4. Completion of Chal Dispensary:

280 m	7/7 for ceiling framing @35Z	9,800 Z
50 shts	Masonite (2.4m x 1.2m) @600Z	30,000 Z
250 m	Lath for ceiling @12Z	3,000 Z
10 kg	Nails (6cm) @90Z	900 Z
6 kg	Nails (4cm) @90Z	450 Z
1 kg	Nails (3cm) @90Z	90 Z
1 pc	Steel door (std) @8909Z	8,909 Z
7 pcs	Steel windows (1.2m x 1.0m) @5000Z	35,000 Z
3 pcs	Wooden doors @1850Z	5,550 Z
30 scks	Cement @250Z	7,500 Z
1 crt	Window glass @34,500Z	34,500 Z
70 kg	Window putty @110Z	7,700 Z
1 pc	Stainless steel sink with drain- board and accessories	3,500 Z
	Labor	45,000 Z
	Transport	70,000 Z
	TOTAL	261,899 Z

SUB-PROJECT 3: UNITED METHODIST RURAL DISPENSARIES (Portion of Southern Sector Which Falls Within Lualaba Sub-Region)

With the exception of rural dispensaries within or immediately adjacent to Kapanga Zone which are administered by Samuteb Memorial Hospital, other United Methodist rural dispensaries in Shaba are autonomous institutions under the oversight of the local church (district superintendent, district medical committee). These originally grew out of small medical projects on mission stations other than Kapanga--according to the presence of a missionary wife with nursing training or first-aid needs of school students. They have developed into a systematic program of medical outreach during the past two decades under Zairian leadership and staffing, with the most rapid growth in the number of dispensaries since the mid 1970s. All these dispensaries are stocked by the Kolwezi Medical Depot (along with others outside Lualaba Sub-Region) and overseen by doctors from the Kapanga and Kolwezi hospitals. Each dispensary is financially autonomous and must be self-supporting to continue operation according to the church's guidelines.

These dispensaries, in Sandoa, Dilolo, and Mutshatsha Zones of Lualaba Sub-Region, operate in areas that are currently not part of the pilot SANRU program (Soins de Santé Primaire en Milieu Rural) operated by the Eglise du Christ au Zaïre in conjunction with the Ministry of Health of the Zairian government, the United States Agency for International Development, and other donor agencies. This is because of the lack of satisfactory reference hospitals in Lualaba Sub-Region--whether under state, Protestant, or Roman Catholic administration--at the beginning of the SANRU project with the exception of Samuteb Memorial Hospital at Kapanga. Nonetheless, the United Methodist Rural Dispensaries follow very much the model of the Rural Health Center in the SANRU design. Record-keeping and operational style are being harmonized with the SANRU proposal. The Kolwezi Medical Depot furnishes the administrative and supply functions of a reference hospital. The medical reference function is filled as best possible by Samuteb Memorial Hospital at Kapanga along with the various Roman Catholic and Garenganze «mini-hospitals». Where there is not duplication, a few of the older and more established dispensaries are themselves developing into Secondary Reference Medical Centers (Kafakumba Lac, Dilolo Gare, Mwajinga). All dispensaries meet government standards for recognition (minimum population of 2,000 and minimum distance from closest recognized facility of 15 kilometers in rural areas). The Dilolo and Kasaji dispensaries are less than 15 kilometers from hospitals but are in administrative areas that far exceed the minimum population. Even the proposed dispensary at Sambembe, not currently recommended for funding assistance under the Shaba Refugee Health Project because of its proximity to the Katoka Medical Center, would appear to satisfy the population criterion.

It is to be hoped that with improvements to Mwangeji Hospital at Kolwezi (Sub-Project 5), it will be possible for the Mutshatsha and rural Kolwezi areas to satisfy standards for the SANRU program. There is also a possibility that the Franciscan fathers of the Kasaji Roman Catholic mission may supply a doctor to work with the Kasaji-Chisengama hospital in 1985; this ecumenical relationship could well develop into a possible SANRU reference hospital as well.

Dispensaries existing or in the process of opening in August 1984 include:

- Mutshatsha District:
- a. Mutshatsha Gare
 - b. Chala
 - c. Lufupa
 - d. Musokantanda
 - e. Kawewe (new 1984)
 - f. Kayembe (new 1984)
 - g. Yava (new 1984)
- Kasaji District:
- h. Kasaji Gare
 - i. Mungalunga
 - j. Kazembe
 - k. Kisenge
 - l. Malonda

Dilolo District:

- m. Kawayongo
- n. Chimbayeka (functioning already without building)
- o. Kakopa (new 1984)
- p. Kambalala (new 1984)
- q. Dilolo Gare
- r. Divuma
- s. Muyeye
- t. Mafunda-Kasai (new 1984)
- u. Sambembe (new 1984; site accepted by church because of large population but not recommended for immediate funding in this project because of proximity to Katoka Medical Center)
- v. Lundu (former FBI dispensary building; proposed 1984)
- w. Kalombo (former FBI dispensary building with large refugee concentrations; proposed 1984)
- x. Malumona (proposed 1984; bricks already burned)

Sandoa District:

- y. Mwajinga (with Maternity)
- z. Mwachisenge
- aa. Chirungil
- bb. Siyav
- cc. Ruband (Lubanda) (former dispensary, restarted 1984)
- dd. Chibamb (former FBI dispensary; new in United Methodist system 1984)
- ee. Mwin Ndjung (new 1984)
- ff. Kangamb (proposed 1984)
- gg. Chiwalwa (former FBI dispensary building; proposed 1984)

Kafakumba District:

- hh. Kafakumba Lac (with Maternity and Wards)
- ii. Sakundundu
- jj. Kayemb Mukur (with proposed Maternity and Wards)
- kk. Ndjimi (Sapindji) (new 1984)
- ll. Diyamb (new 1984)
- mm. Sapesa (new 1984)

Operating Statistics:

Complete and comparable statistics have not been available on short notice for all the dispensaries, given the lack of direct radio communications, administrative decentralization, and lack of time to visit all of them during the field study. The following statistics are given as examples:

Kasaji District Dispensaries (6 units):	12,420 patients during April-June 1984 (overall average of 25/day per dispensary)
Kafakumba Lac Dispensary:	50-55 patients per day, 7-15 births per month, receipts of Z6000-Z7000 per month
Sakundundu Dispensary:	40-45 patients per day; receipts of Z5000-Z6000 per month
Kayemb Mukur Dispensary:	30-35 patients per day; receipts of Z3000-Z4000 per month
Dilolo Gare Dispensary:	70-80 patients per day; receipts of Z3500-Z5000 per month
Mwajinga Dispensary/Maternity:	10 patients per day; 85 prenatal examinations per month; 10-15 births per month (water supply problems at dispensary at the moment)

Building Improvements:

Older church dispensaries (Mwajinga, Kafakumba Lac, Kayemb Mukur) have existing buildings in permanent materials. Other dispensaries are using buildings built by the Fonds du Bien-être Indigène during the colonial period, formerly used by government dispensaries but abandoned for lack of supplies. These buildings are all in remarkably good condition, even those which have stood abandoned, and require only minor repairs and improvements.

The vast majority of dispensaries are housed temporarily in rented facilities or in buildings in non-durable materials. These require new construction, leaving the newest dispensaries toward the end of the program in order to prove their financial viability. A standard plan is proposed, based on previous experience in other parts of Shaba Region, except where construction has already begun with a different plan (Muyeye, Dilolo).

Specialized construction is required at Kafakumba (additional ward space) Mwajinga (maternity building to replace makeshift maternity in chapel), and at Kayemb Mukur (ward space).

Equipment:

Dispensaries are currently woefully inadequately equipped. A standard equipment list is proposed; those dispensaries already having more of the items in the list tend to be larger dispensaries with multiple staff and thus duplication is not a problem.

General Dispensary Equipment List: (x 40 dispensaries)

- 1 Insulated box (for vaccine transport)
- 2 Sphygmomanometers
- 4 Stethoscopes
- 1 Binocular microscope
- 6000 Microscope slides
- 6000 Microscope slide cover slips
- 1 Baby scale (pan type rather than suspended sling; must be in metric units)
- 1 Adult scale (must be in metric units)
- 2 Bandage scissors
- 12 Hemostats
- 36 #10 scalpel blades with 1 #3 handle
- 12 Mayo scissors (6 1/4 inch)
- 1 Grinding stone
- 3 Vaginal speculum (small, medium, large sizes)
- 12 Thermometers (must be metric units)
- 1 reflex hammer
- 1 Sahli hemoglobinometer kit with spare tubes
- 1 Examining table (simple but with several drawers)
- 1 Stainless steel cannister for dressings
- 1 Lockable steel cabinet for storage
- 2 Covered stainless steel instrument trays
- 1 Large covered pan to boil instruments (wood or charcoal fire)
- 1 Kerosene stove (1 burner) (220V 50Hz hot plate at Dilolo, Kisenge, Mutshatsha)
- 2 Stainless steel emesis basins
- 1 Solar panel plus battery with 1 15W fluorescent fixture and 2 8W fluorescent fixtures (except at Mutshatsha and Kisenge with 24 hr 220V)
- 1 Kerosene lamp
- 1 Hand-operated centrifuge
- 1 Bicycle
- 1 Kitchen timer
- 1 Oscope (must use ordinary expendable batteries)
- 100 Glass syringes with assorted needle sizes

- 6 Crile forceps
- 1 Halsted forceps
- 1 Set of 5 health education flip-charts by Courtejoie (worms, tuberculosis, alcoholism, malnutrition, malaria)
- 2 Steel beds
- 2 Plastic-covered foam mattresses
- 2 Blankets
- Material sufficient for 8 sheets (brown)

For Kafakumba Lac., Mwajinga, and Kayemb Mukur Maternities only:

- 30 Steel beds
- 30 Plastic-covered foam mattresses
- 30 Blankets
- Material sufficient for 120 adult sheets and 84 baby sheets
- Additional solar power:
 - 1 40W 12V fluorescent fixture
 - 5 15W 12V fluorescent fixtures
- Sufficient additional solar panel and battery capacity
- 1 Runabout (stand on wheels with bowl) with 4 spare bowls
- Material sufficient for 40 towels
- 5 Vomit bowls
- 10 Bedpans with 20 covers
- 10 Fluid measures (graduated cylinders)
- 2 Trolley tables
- 2 Lockable steel cupboards
- 1 Delivery table
- 2 Stethoscopes
- 2 Pinard's stethoscopes
- 1 Sphygmomanometer
- 2 Oxygen cylinders with masks and nasal catheters
- Solar water heater
- 2 Scrubbing brushes
- 5 Stainless steel emesis basins
- 1 Double basin-rack
- 6 IV stands
- 4 Syringe dishes
- 2 Syringe forceps
- 100 Glass syringes and needles of assorted size
- 2 Stainless steel trays
- 8 Gallipots
- 3 Artery forceps (14 inch)
- 2 Sponge-holding forceps
- 1 Episiotomy scissors
- 2 Blunt-nosed forceps
- 2 Toothed forceps
- 2 Cord scissors
- 2 Measuring jugs (stainless steel graduated measuring cups)
- 30 Baby mucus extractors (glass)
- 2 Stitch holders
- 1 Resuscitation table for baby
- 1 Baby scales (pan type; must be in metric units)
- 20 Baby cots
- 20 Baby mattresses (plastic-covered foam)
- 40 Baby blankets
- 20 Thermometers of each: high range, low range, rectal (must be metric units)
- 4 Cheatles forceps
- 2 Dishes for Cheatles forceps
- 1 Large pressure cooker for sterilization

For Kafakumba Lac, Dilolo Gare, and Kayemb Mukulu Ward Units only:

- 30 Single steel beds
- 30 Plastic-covered foam mattresses
- 30 Blankets
- Sufficient material (brown) for 120 sheets
- 1 Lockable steel cabinet for supplies

For Mwajinga and Dilolo Gare Dispensaries:

- 1 Toyota Landcruiser (model chosen for standardization)

For Mutshatsha Gare, Kasaji, Kafakumba, Kayembe Mukulu Dispensaries:

- 1 Honda Trail 110 motorcycle (model chosen for standardization)

For Mwajinga, Kasaji, Kafakumba, Kayembe Mukulu Dispensaries:

- 1 12V DC refrigerator (3-6 cu.ft. capacity)
- Sufficient panel and battery storage capacity

For Dilolo Gare, Kisenge, Mutshatsha Dispensaries (220V 50Hz power available 24 hours at Kisenge and Mutshatsha; limited service at Dilolo)

- 1 220V 50Hz Refrigerator (10-15 cu.ft. capacity)
- 6 40W fluorescent fixtures
- 6 Wall switches
- 12 Wall outlets
- 40 meters plastic conduit
- 18 Junction boxes for mounting in masonry
- 1 Main fuse box
- 200 meters #14 wire
- Tie-in to SNEL (public utility) power lines

Kolwezi Central Medical Depot

Due to the growth in the dispensary system, stock losses during the 1978 war, and sudden loss of capital investment with the 500% devaluation of September 1983, the drug stock is far inadequate for the needs of the dispensary system. Drugs are generally purchased through the Impass Foundation of the Netherlands at prices below normal wholesale cost and are shipped by air with the cooperation of the Belgian government which handles customs formalities in Zaire. The perilously low stocks are illustrated by what has happened in mid-1984; impoundment of an April shipment as part of an Air Zaire airport landing fee dispute left the medical depot with absolutely no stock for a two month period.

Equipment Requests:

- 1 Mercedes 1113 truck for dispensary construction work
- 1 Isuzu K2 diesel pickup for supervisory work in urban area

Drug capital stock request (approximately 1 year's supply):

- 100,000 Aspirin 300mg
- 100,000 Aspirin 500mg
- 100,000 Chloroquine 100mg
- 100,000 Chloroquine 250mg
- 1000 l. Chloroquine mixture
- 100,000 Chloroquine injectable
- 100,000 Penicillin injectable
- 30,000 Tetracycline
- 50,000 Mebendazol (worm treatment)
- 100,000 l. Saxter's Glucose solution
- 100,000 Multivitamins
- 100,000 B-Complex vitamins
- 100,000 Iron tablets

- 10,000 pkg Band-aids
- 1,000 rolls Adhesive tape
- 100kg Antiseptic cream
- 30,000 Chloramphenicol
- 1000 l. Mercurochrome
- 5,000 Papaverin
- 3,000 Noscapine syrup
- 100,000 Ampicillin
- 50,000 Diazepam 5mg
- 5000 l. Multivitamin syrup
- 1000 bottles Eye drops
- 1000 bottles Ear drops
- 1000 bottles nose drops

Building Improvements:

Remodeling of storefront where medical depot currently housed. Present medical depot in rear room to become pharmacy lab. Former store area currently used for Maternal/Child Health Clinic will become medical depot, allowing more adequate space for storing drug shipments while unpacking and putting on shelves and for packing dispensary orders. A new wall, 8m x 5m high, with a double steel door will separate the medical depot proper from the front two meters of the store front which will be a combination reception/office area. The former glass storewindows (largely broken out during the 1978 war) will be bricked up with small windows for ventilation. A sink with running water will be installed in the pharmacy lab.

Equipment:

- Pharmaceutical balance (5g-50g)
- Pharmaceutical balance (10g-50kg)
- 2 2kg Formulation bowls
- 2 5kg Formulation bowls
- 2 10kg Formulation bowls
- 2 20kg Formulation bowls
- 10 20 l Jars
- 1 Water sterilizer/purifier (for producing injectable fluids) (220V 50Hz)
- 2 200°C. Thermometers
- 1 Steel desk with lockable drawers
- 1 Wide-carriage manual typewriter (may be French Canadian or French keyboard)
- 1 Industrial refrigerator (220V 50Hz)

SUB-PROJECT 3: UNITED METHODIST RURAL DISPENSARIES (LUALABA PORTION OF SOUTHERN SECTOR)

COST ESTIMATES AND IMPLEMENTATION SCHEDULE:

1985: Building Improvements:

1. Renovation of Chirungil Dispensary (Sandoa District):

2 m ²	Window glass @1600Z	3,200 Z
30 kg	Latex interior paint @72Z	2,160 Z
20 l	Semi-gloss enamel paint @175Z	3,500 Z
20 kg	Window putty @110Z	2,200 Z
	Labor	3,000 Z
	Transport	4,000 Z
	TOTAL	18,060 Z

2. Construction of Dilolo Large Dispensary:

As Kalamb Large Dispensary (Sub-Project 2)	489,567 Z	\$ 1,769
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3. Construction of Dilolo Ward Unit:

As Kalamb Ward Unit (Sub-Project 2)	569,707 Z	\$ 2,093
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4. Renovation of Kafakumba Lac Dispensary and Ward Units:

19 pcs	Masonite (2.4m x 1.2m) @600Z	11,400 Z
3 pcs	Steel doors (std) @8909Z	26,727 Z
14 pcs	Steel door frames @2432Z	34,048 Z
2 pcs	Door hinges @70Z	140 Z
50 m	7/7 for ceiling framing @35Z	1,750 Z
50 m	Lath for ceiling @12Z	600 Z
3 kg	Nails (6cm) @90Z	270 Z
2 kg	Nails (5cm) @90Z	180 Z
1 kg	Nails (3cm) @90Z	90 Z
1 pc	Solar water heater	20,000 Z
1 pc	Stainless steel sink with drain-board and accessories	3,500 Z
10 scks	Cement @250Z	2,500 Z
	Labor	20,000 Z
	Transport	35,000 Z
	TOTAL	156,205 Z

5. Renovation of Kolwezi Central Medical Depot:

92 sks	Cement for masonry, plaster @250	22,500 Z
2 pcs	Double steel doors with hardware @14,400Z	29,000 Z
4 pcs	Large padlocks @350Z	1,400 Z
4 pcs	Steel windows with burglar bars (1.0m x 1.0m) @4600Z	18,400 Z
8 m ²	Window glass @865Z	6,920 Z
10 kg	Window putty @110Z	1,100 Z
1 pc	Two-basin kitchen counter sink (stainless steel)	4,000 Z
7500 pcs	Bricks @22Z	165,000 Z
	Transport	10,000 Z
	Labor	20,000 Z
	Electrical renovations	5,000 Z
	Total	269,320 Z

6. Completion of Muyeye Dispensary (see enclosed plan)

Foundations and exterior walls only completed
by the community

88 pcs	Steel corrugated roofing @\$13 (3.0m x 0.70m)		\$ 1,144
13 m	Roof ridge capping @\$6.20		81
120 m	7/7 for roof trusses @35Z	4,200 Z	
280 m	4/11 for roof trusses @38.5Z	10,780 Z	
44 m	Roof trim boards @40Z	1,760 Z	
8 kg	Nails (12cm) @90Z	720 Z	
5 kg	Roofing nails @120Z	600 Z	
5 kg	Nails (8cm) @90Z	450 Z	
77 pcs	Bolts (15cm) @20Z	1,540 Z	
77 pcs	Bolts (11cm) @20Z	1,540 Z	
140 m	7/7 for ceiling framing @35Z	4,900 Z	
195 m	Lath for ceiling @12Z	2,340 Z	
30 pcs	Masonite @600Z	18,000 Z	
10 kg	Nails (6cm) @90Z	900 Z	
5 kg	Nails (4cm) @90Z	360 Z	
1 kg	Nails (3cm) @90Z	90 Z	
2 pcs	Steel doors (standard) @8909Z	17,818 Z	
4 pcs	Wooden doors (standard) @1850Z	7,400 Z	
6 pcs	Steel door frames (std) @2432Z	14,592 Z	
10 pcs	Steel windows (1,2m x 1,0m) @5000	50,000 Z	
230 sks	Cement @ 250Z	57,500 Z	
1 pc	Stainless steel sink with drainboard	3,500 Z	
1 crt	Window glass @34,500Z	34,500 Z	
90 kg	Window putty @110Z	9,900 Z	
	Labor	60,000 Z	
	Transport	120,000 Z	
	TOTAL	419,890 Z	\$ 1,225

7. Renovation of Mwachisenge Dispensary:

54 pcs	Steel corrugated roofing (3.0m x 0.70m) @\$13		\$ 702
11 m	Roof ridge capping @ (Truss repair as needed after existing roof is removed for replacement; maximum amounts listed)		\$ 68
212 m	4/11 for roof trusses	8,162 Z	
64 m	7/7 for roof trusses	2,240 Z	
36 m	Roof trim boards @40Z	1,440 Z	
6 kg	Nails (12cm) @90Z	540 Z	
4 kg	Nails (8cm) @90Z	360 Z	
40 pcs	Bolts (15cm) @20Z	800 Z	
40 pcs	Bolts (11cm) @20Z	800 Z	
5 kg	Roofing nails @120Z	600 Z	
5 pcs	Masonite (2.4m x 1.2m) @600Z	3,000 Z	
1 pc	Stainless steel sink with drain- board and accessories.	3,500 Z	
30 scks	Cement @250Z	7,500 Z	
2 m ²	Window glass @1600Z	3,200 Z	
20 kg	Window putty @110Z	2,200 Z	
	Labor	8,500 Z	
	Transport	17,000 Z	
	TOTAL	59,842 Z	\$ 770

8. Construction of M'wajinga Maternity Unit (standard plan):

As Chitazu Maternity (Sub-Project 2) 671,451 Z \$ 2,093

9. Construction of Sakundundu Large Dispensary (standard plan):

As Kalamb Large Dispensary (Sub-Project 2) 489,567 Z \$ 1,769

10. Construction of Siyav Large Dispensary (standard plan):

As Kalamb Large Dispensary (Sub-Project 2) 489,567 Z \$ 1,769

Combined Dispensary Equipment List (all improvements requested for 1985):

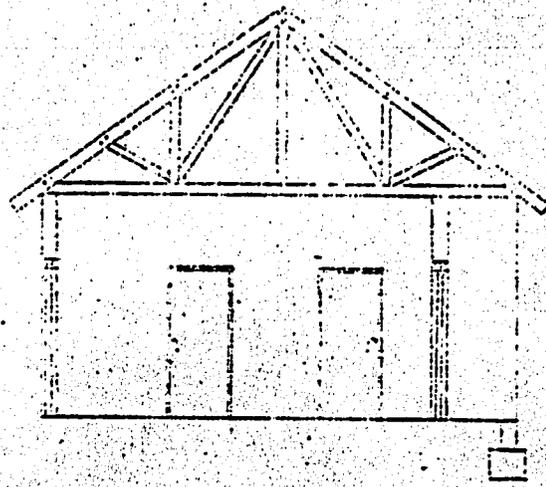
40 pcs	Insulated box (for vaccine transport)		
83 pcs	Sphygmomanometer @\$41.07		\$ 3,409
166 pcs	Stethoscopes @\$7.26		\$ 1,205
40 pcs	Binocular microscopes @\$700		\$ 28,000
240,000 pcs	Microscope slides @\$19.88/1000		\$ 4,771
240,000 pcs	Microscope slide cover plates @\$7.72/1000		\$ 1,853
43 pcs	Baby scales (pan rather than sling type; must be metric units) @\$59.45		\$ 2,556
40 pcs	Adult scales (must be metric units) @\$48.83		\$ 1,953
80 pcs	Bandage scissors @\$3.45		\$ 276
480 pcs	Hemostats @\$6.22		\$ 2,986
40 pcs	Scalpel handles (#3) @\$2.85		\$ 114
1,440 pcs	Scalpel blades (#10) @\$9.17/100		\$ 1,320
480 pcs	Mayo scissors (6 1/4 inch) @\$9		\$ 4,560
40 pcs	Whetstones @\$2		\$ 80
40 pcs	Vaginal specula (large) @\$3.50		\$ 140
40 pcs	Vaginal specula (medium) @\$3.50		\$ 140
40 pcs	Vaginal specula (small) @\$3.50		\$ 140
540 pcs	Thermometers (high range; must be metric units) @\$0.77		\$ 416
60 pcs	Thermometers (low range; must be metric units) @\$0.77		\$ 50
60 pcs	Thermometers (rectal; must be metric units) @\$0.77		\$ 50
40 pcs	Reflex hammers @\$4		\$ 160
40 pcs	Sahli's hemoglobinometers with spare tubes @\$17		\$ 680
40 pcs	Examining tables @11,070Z	442,800 Z	
40 pcs	Stainless steel canister for dressings @\$40		\$ 1,600
46 pcs	Lockable steel cupboards @17,649Z	705,960 Z	
86 pcs	Stainless steel covered instrument trays @\$3.00		\$ 258
43 pcs	Large pressure cookers for sterilization @\$85		\$ 3,655
40 pcs	Kerosene stove (1 burner) @\$20		\$ 800
3 pcs	Electric hotplate (220V; 1 burner) @\$60		\$ 60
95 pcs	Stainless steel emesis basins @\$10 average		\$ 950
43 pcs	Kerosene lamps @145Z	6,235 Z	
40 pcs	Hand-operated centrifuge @\$44.93		\$ 1,797
44 pcs	Bicycles @\$190		\$ 8,360
40 pcs	Kitchen timer @\$10		\$ 400
40 pcs	Otoscope (must use ordinary expendable batteries) @\$24		\$ 960
4,300 pcs	Glass syringes and needles (various sizes) @\$2.50		\$ 10,750

34 sets	Solar Installations:		
	3 Fluorescent fixtures (15W 12VDC)		
	1 Controller-regulator		
	1 Battery		
	1 Solar panel with mounting apparatus		
	15m Stranded #12 bi-conductor wiring		
1 set	Solar installations (Dilolo)		
	7 Fluorescent fixtures (15W 12VDC)		
	1 Refrigerator (12V DC; 3-5 cu.ft.)		
	1 Controller-regulator		
	Sufficient battery capacity		
	Sufficient solar panel capacity with mounting apparatus		
	40m Stranded #12 bi-conductor wire		
1 set	Solar installations (Kayemb Mukur)		
	1 Fluorescent fixture (40W 12VDC)		
	7 Fluorescent fixtures (15W 12VDC)		
	1 Refrigerator (12V DC; 3-5 cu.ft.)		
	1 Controller-regulator		
	Sufficient battery capacity		
	Sufficient solar panel capacity with mounting apparatus		
	40m Stranded #12 bi-conductor wire		
1 set	Solar installations (Mwajinga)		
	1 Fluorescent fixture (40W 12VDC)		
	14 Fluorescent fixtures (15W 12VDC)		
	1 Refrigerator (12V DC; 3-5 cu.ft.)		
	1 Controller-regulator		
	Sufficient battery capacity		
	Sufficient solar panel capacity with mounting apparatus		
	100m Stranded #12 bi-conductor wire		
1 set	Solar installations (Kasaji)		
	3 Fluorescent fixtures (15W 12VDC)		
	1 Refrigerator (12VDC; 3-5 cu.ft.)		
	1 Controller-regulator		
	Sufficient battery capacity		
	Sufficient solar panel capacity with mounting apparatus		
	20m Stranded #12 bi-conductor wire		
240 pcs	Crile forceps @\$13		\$ 3,120
240 pcs	Halsted forceps @\$10		\$ 2,400
10 sets	Courtejoie health education flip-charts (worms, tuberculosis, malnutrition, malaria, alcoholism)	6,840 Z	
200 pcs	Steel beds @3000Z	600,000 Z	
200 pcs	Plastic-covered foam mattresses @227CZ	454,000 Z	
200 pcs	Blankets @\$3.18		\$ 636
1568 m	Sheeting material (brown; 1.7m wide)		\$ 8,625
15 m	Terrycloth towel material (1m wide)	1,200 Z	
15 pcs	Vomit bowls (stainless steel) @\$8.50		\$ 128
30 pcs	Bedpans with covers @\$9.50		\$ 285
30 pcs	Fluid measures (1 l. graduated cylinder) @92		\$ 50
6 pcs	Trolley tables @\$30		\$ 180
3 pcs	Delivery tables @24,936Z	74,808 Z	

3 pcs	Runabout (wheeled stand with bowl) with four extra bowls @\$23		\$	69
6 pcs	Pinard's stethoscopes @\$4		\$	24
3 pcs	Oxygen cylinders @\$100??		\$	300
	Masks and nasal catheters for oxygen (various)		\$	10
3 pcs	Solar water heaters @20,000Z	50,000 Z	\$	
6 pcs	Scrubbing brushes @6CZ	360 Z	\$	
3 pcs	Double basin rack on wheels @\$16		\$	48
12 pcs	IV stands @1,219Z	7,314 Z	\$	
6 pcs	Syringe dishes @\$9.50		\$	57
6 pcs	Syringe forceps @\$4		\$	24
8 pcs	Gallipots (plastic) @\$0.05		\$	40
2 pcs	Stainless steel bowls @\$4		\$	8
12 pcs	Artery forceps (14 inch) @\$7.40		\$	89
6 pcs	Sponge-holding forceps @\$4.98		\$	30
3 pcs	Episiotomy scissors @\$11		\$	33
6 pcs	Blunt-nosed forceps @\$4.60		\$	28
6 pcs	Toothed forceps @\$2.59		\$	16
6 pcs	Corc scissors @\$15		\$	90
6 pcs	Measuring jugs (stainless steel pitchers) @\$3		\$	18
90 pcs	Baby mucus extractors (glass) @\$2		\$	180
6 pcs	Stitch holders @\$8.82		\$	53
3 pcs	Resuscitation table for baby @4000Z	12,000 Z		
60 pcs	Baby cots @\$2500	150,000 Z		
60 pcs	Plastic-covered foam mattresses @883Z	26,580 Z		
120 pcs	Baby blankets @115Z	13,800 Z		
12 pcs	Cheatles forceps @\$19		\$	228
6 pcs	Dishes for Cheatles forceps @\$9.50		\$	57
2 pcs	Toyota Landcruiser @\$22,000		\$	44,000
4 pcs	Honda Trail 110 motorcycles @			
	220V 50HZ electrical installations: (Kisenge and Mutshatsha with 24- hour service from Shaba hydro- electric grid; Dilolo with limited service from local SNEL diesel generators at this time)			
3	Installation of service @30,000Z	90,000 Z		
3 pcs	Refrigerator (220V 50Hz; 10-15 cu.ft.)		\$	2,505
18 pcs	Fluorescent fixtures (220V 50Hz; 40W)	13,500 Z		
18 pcs	Wall switches @90Z	1,620 Z		
36 pcs	Wall outlets @195Z	7,020 Z		
120 m	Plastic conduit @18Z	2,160 Z		
54 pcs	Plastic junction boxes for masonry	1,350 Z		
3 pcs	Main fuse box @11,000	33,000 Z		
600 m	#14 wire (2.5mm ²) @5.5Z	3,300 Z		
		2,713,847 Z	\$	147,751

Kolwezi Central Medical Depot Drug Inventory:

100,000	tblt Aspirin 300mg @\$1.91/1000		\$	191
100,000	tblt Aspirin 500mg @\$2.54/1000		\$	254
100,000	tblt Chloroquine 100mg @\$6.47/1000		\$	647
100,000	tblt Chloroquine 250mg @\$16/1000		\$	1,600
100,000	dose Chloroquine injectable @\$5.42/100		\$	542
1,000 l.	Chloroquine mixture @\$1.98/l		\$	1,980
100,000	dose Penicillin injectable @\$13.55/100		\$	13,550
80,000	caps Tetracycline @\$12.21/1000		\$	977
50,000	caps Mebendazole (worm treatment) @\$10.42/1000		\$	521
100,000 l.	Baxter's Glucose (IV) @\$0.93/l.		\$	93,000
100,000	tblt Multivitamins @\$1.65/1000		\$	165
100,000	tblt B-Complex vitamins @\$1.63/1000		\$	163
100,000	tblt Iron tablets @\$1.35/1000		\$	135



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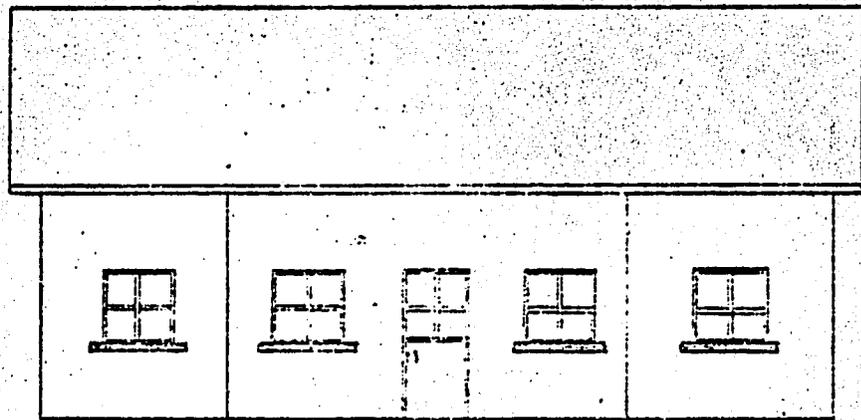
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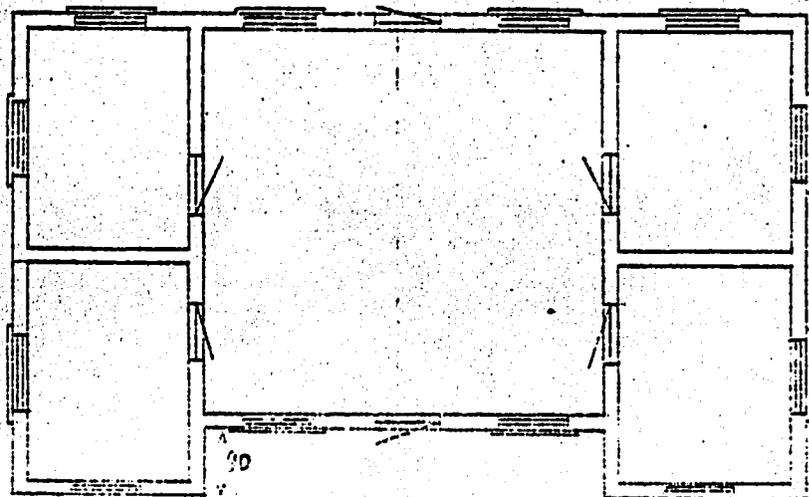
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Muveve Dispensary (exterior walls erected)

10,000	pkg	Adhesive bandages @	\$	2,000
1,000	roll	Adhesive tape 2.5cm x 5m @\$42.21/100	\$	422
100	kg	Antiseptic cream (cetrimide + chlorhexidine)	\$	263
30,000	caps	Chloramphenicol @\$16.93/1000	\$	508
1,000	l.	Mercurochrome @\$20 to constitute 100 l.	\$	300
5,000	amp	Papaverin injectable @\$3.97/100	\$	199
3,000	l.	Noscapine syrup @\$2.62	\$	7,860
100,000	caps	Ampicillin @\$32.20/1000	\$	3,220
50,000	tblt	Diazepam 5mg @\$2.22/1000	\$	111
5,000	l.	Multivitamin syrup @\$2.51/l.	\$	12,550
1,000	btl	Chloramphenicol 0.5% eye drops @\$41.80	\$	41,800
1,000	btl	Ear drops @\$8.58	\$	8,580
1,000	btl	Xylomethazoline 1mg/ml nose drops @\$37.67	\$	37,670
1,000	amp	Syntometrine (oxytocin + ergometrine) @\$3.67/10	\$	367
2,000	amp	Ergometrine @\$48.11/1000	\$	96
100	amp	Lynocaine 50mg 1% @\$16.52/100	\$	17
50	amp	Lynocaine 50mg 5% @\$5.99	\$	3
1,000		Pethidine @\$3/10	\$	300
100		Morphine @\$3/10	\$	30
1,000	amp	Vitamin K @\$4.31/100	\$	43
250		Adrenaline @\$4.11/100	\$	10

TOTAL

\$230,073

Kolwezi Central Medical Depot Equipment:

1	pc	Mercedes 1113 truck for dispensary construction transportation	\$	35,000
1	pc	Isuzu KB diesel pickup for urban supervisory work	\$	15,000
1	pc	Pharmaceutical balance (5g-50g range)	}	\$ 900
1	pc	Pharmaceutical balance (10g-50kg range)		
2	pcs	Formulation bowls (2kg capacity)		
2	pcs	Formulation bowls (5kg capacity)		
2	pcs	Formulation bowls (10kg capacity)		
2	pcs	Formulation bowls (20kg capacity)		
10	pcs	Jars (20 l. capacity)		
1	pc	Water sterilizer/purifier (for preparing injectable fluids; 220V 50Hz)		
2	pcs	Thermometers (200° C. range)		
1	pc	Steel desk with lockable drawers	25,635	Z
1	pc	Typewriter (wide-carriage, manual, French keyboard)	\$	500
1	pc	Industrial refrigerator (220V 50Hz)	\$	1,500
			25,635	Z
			\$	53,500

1986: Building Improvements:1. Construction of Divuma Large Dispensary (standard plan):

As Kalamb Large Dispensary (Sub-Project 2 above) 489,567 Z \$ 1,769

2. Construction of Kawayongo Large Dispensary (standard plan):

As Kalamb Large Dispensary (Sub-Project 2 above) 489,567 Z \$ 1,769

3. Construction of Kazembe Large Dispensary (standard plan):

As Kalamb Large Dispensary (Sub-Project 2 above) 489,567 Z \$ 1,769

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4. Construction of Kisenge Large Dispensary (standard plan):			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
5. Construction of Kisenge Large Dispensary (standard plan):			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
6. Construction of Malonga Large Dispensary (standard plan):			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
7. Construction of Mungalunga Large Dispensary (standard plan):			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
8. Construction of Mutshatsha Gare Large Dispensary (standard plan):			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769

1987: Building Improvements:

1. Construction of Chala (Koiwezi rural) Large Dispensary (standard plan)			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
2. Renovation of Chibamb Dispensary: *			
10 m ² Window glass @1600Z	16,000 Z		
75 kg Latex paint @72Z	5,400 Z		
50 l. Semi-gloss enamel paint @175Z	8,750 Z		
100 kg Window putty @110Z	11,000 Z		
5 pcs Faucets (3/4 inch) @185Z	925 Z		
5 sets Door handles with locks @1350Z	6,750 Z		
Labor	10,000 Z		
Transport	20,000 Z		
	TOTAL		72,750 Z
3. Construction of Diyamb Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
4. Completion of Kayemb Mukur Dispensary:			
240 m. 7/7 for ceiling framing @35Z	8,400 Z		
270 m Lath for ceiling @12Z	3,240 Z		
58 pcs Masonite (1.2m x 2.4m) @600Z	34,800 Z		
9 kg Nails (6cm) @90Z	810 Z		
6 kg Nails (4cm) @90Z	540 Z		
1 kg Nails (3cm) @90Z	90 Z		
1 pc. Stainless steel sink with drain-board and accessories	3,500 Z		
1 crte Window glass @34,500Z	34,500 Z		
100 kg Window putty @110Z	11,000 Z		
Labor	24,000 Z		
Transport	20,000 Z		
	TOTAL		140,380 Z

5. Construction of Kayemb Mukur Maternity (standard plan)			
As Chitazu Maternity (Sub-Project 2 above)	671,451 Z	\$	2,093
6. Construction of Lufupa Large Dispensary (standard plan):			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
7. Construction of Mafunda-Kasai Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
8. Construction of Muscantanda Large Dispensary (standard plan):			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
9. Construction of Mwin Ndjung Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
10. Construction of Ruband Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769

-1988: Building Improvements:

1. Construction of Chimbayeke Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
2. Construction of Kakopa Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
3. Construction of Kambalala Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
4. Construction of Kawewe Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
5. Construction of Kayembe Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
6. Construction of Ndjimi (Sapindji) Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769
7. Construction of Sapesa Large Dispensary (standard plan): *			
As Kalamb Large Dispensary (Sub-Project 2 above)	489,567 Z	\$	1,769

8. Construction of Yava Large Dispensary (standard plan):

As Kalamb Large Dispensary (Sub- Project 2)	489,567 Z	\$ 1,769
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1989: Building Improvements:

1. Renovation of Chiwalwa Dispensary: **

6 pcs	Masonite (1.2m x 2.4m) @600Z	3,600 Z	
30 kg	Latex paint @72Z	2,160 Z	
20 l.	Semi-gloss enamel paint @175Z	3,500 Z	
	Labor	2,000 Z	
	Transport	5,000 Z	
	TOTAL	16,260 Z	

2. Renovation of Kalombo Dispensary: **

Not visited; budget provision:	50,000 Z
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3. Construction of Kangamb Small Dispensary: **

As Samaband Small Dispensary (Sub- Project 2)	348,599 Z	\$ 842
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4. Renovation of Lundu Dispensary: **

Not visited; budget provision:	50,000 Z
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5. Construction of Malumona Large Dispensary: **

As Kalamb Large Dispensary (Sub- Project 2)	489,567 Z	\$ 1,769
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6-7. Construction of two additional large
dispensaries at sites to be opened in
1985: **

As Kalamb Large Dispensary (Sub- Project 2)	979,134 Z	\$ 3,538
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Notes: * Dispensaries opened in temporary facilities in 1984; awaiting proof of economic viability

** Dispensaries proposed for 1985 (re)opening. In most cases, existing buildings erected by the F.B.I. are available with some equipment; pending arrangements with local authorities for building use and church approval in 1985. Repairs and construction conditional on demonstration of economic viability

SUB-PROJECT 4: KOLWEZI MEDICAL CENTER (UNITED METHODIST)

The Kolwezi Medical Center began as an ordinary United Methodist dispensary in one room of a commercial building across the street from the original mission property. Due to the lack of medical alternatives for Kolwezi residents not enjoying access to the Gecamines hospital for mine personnel, it has grown to include the entire ground floor of the original building, a modern building to the south which formerly housed three stores, and now a large former hotel to the north which is undergoing conversion to a maternity center. At the present time the Medical Center has no bed-care facilities and is completely oriented toward out-patient and public health programs.

The dispensary staff is all-Zairian and headed by an A1 (university-level) nurse with a Masters in Public Health from the Université Libre de Bruxelles and a Diploma in Tropical Medicine from the Institut de Médecine Tropicale in Antwerp. One A2 (diplômé) and three A3 (infirmier auxiliaire) graduate nurses complete the current medical staff; an expatriate university-level nurse worked with the public health and nutrition programs until forced to leave Kolwezi for medical reasons in mid-1984. A woman handles the feeding program for malnourished children.

The dispensary currently handles 100-150 patients per day, with 1000 consultations monthly in the adjoining Maternal/Child Health Clinic, with total receipts of approximately Z45,000 per month. Despite the lack of any transportation belonging to the Medical Center itself, regular weekly vaccination campaigns are carried out in urban townships or outlying villages so long as a church vehicle is available for lease.

The former Bonne Auberge Hotel is currently undergoing conversion to a maternity unit. Planning for the conversion was done by a Danish United Methodist team, including two doctors with experience as missionary doctors in Zaire. The drainage system has already been renovated. Volunteer personnel has been made available by the United Methodist Churches of Denmark and Switzerland for the installation of electrical and medical equipment once supplies are on hand. Work has been temporarily suspended in 1984 due to the departure for medical reasons of the project supervisor, but his replacement is awaited in September 1984.

Dispensary Building Improvements:

Minor improvements to existing buildings will facilitate the operations of the current dispensary complex.

Passageway between Secretariat/Waiting Room of dispensary building and the Laboratory building (ac rear of former Antipas store complex): 2 steel doors, 1 meter of roof, 1 meter sidewalk

Construction of four permanent walls within dispensary (total of 46,5 m² of wall surface less door openings) to subdivide rooms or replace existing temporary partitions, 4 steel doors, minor changes in placement of lighting fixtures, installation of additional electrical outlets

Installation of ceiling in one annex used for injections and IV administration: 2.4m x 5m.

Installation of two toilets (Western-type) and two sinks

Dispensary Equipment:

- 2 Insulated Boxes (for vaccine transport)
- 4 Sphygmomanometers
- 8 Stethoscopes
- 2 Binocular microscopes
- 6,000 Microscope slides
- 6,000 Cover slips
- 2 Baby scales (pan rather than sling type; must be in metric units; one each for use in Dispensary and in Maternal/Child Health Clinic)
- 2 Adult scales (must be in metric units)
- 2 Medical douche
- 25 packets Red litmus paper
- 2 IV stands

- 4 Stainless steel canisters for dressings
- 4 Lockable steel cabinets for storage
- 4 Stainless steel instrument trays (covered)
- 1 Sterilizer with pans and grates for various types of material to be sterilized
- 1 220V Electric range (for malnutrition program and for possible use in sterilization)
- 4 Stainless steel emesis basins
- 1 Electric centrifuge
- 3 Honda Trail 110 motorcycles (for vaccination campaigns in the urban townships and outlying villages)
- 2 Kitchen timer
- 2 Otoscopes (may use 220V 50Hz electric current)
- 100 Glass syringes with assorted needle sizes
- 12 Crile forceps
- 12 Halsted forceps
- 3 Sets of 5 health education flip-charts by Courtejoie (worms, tuberculosis, malnutrition, malaria; available from the Centre de Formation pour la Promotion de la Santé, Kangu-Mayumbe, Bas-Zaïre)
- 1 Set of equipment for sedimentation rate tests
- 1 Medical balance (for drugs)
- 100 Hematocrit tubes
- 5 Test tube racks
- 50 Test tubes
- 3 Alcohol burners for laboratory
- 1 220V 50Hz Refrigerator
- 1 220V 50Hz Hot water heater
- 1 Portable X-Ray machine
- 4 Elevated children's beds for IV administration
- 2 Elevated adult beds for IV administration
- 2 Picnic tables (for malnutrition program)
- 50 Melamine plates
- 50 Spoons
- 50 Melamine cups
- Blood count apparatus for red cells, white cells, cerebro-spinal fluid
- 4 Bandage scissors
- 20 Hemostats
- 48 #10 scalpel blades with 3 #3 handles
- 1 Grinding stone
- 3 Vaginal speculum (small, medium, large sizes)
- 24 Thermometers (metric units)
- 2 Reflex hammers
- 2 Sahli hemoglobinometer kits with spare tubes
- 2 Examining tables (simple but with several drawers)

Maternity Equipment:

- 34 Steel beds
- 34 Infant beds
- 40 Plastic-covered foam mattresses (adult)
- 40 Plastic-covered foam mattresses (infant)
- Material sufficient for 136 normal sheets and 136 infant sheets
- 80 Blankets
- 30 Infant blankets
- 5 Obstetric beds
- 1 Obstetric suction apparatus
- 1 Table for newborn
- 30 Chairs
- 17 Benches (for persons)
- 15 Bedside tables
- 5 Office tables

2 Wheeled stretchers

Labor room equipment:

- 5 IV stands
- 9 Rubber sheets
- 18 Undersheets
- 10 Oversheets
- 25 Drawsheets
- 3 Runabouts with 4 spare bowls
- 2 Lockable steel cabinets
- 9 Chartboards
- 12 Towels
- 6 Vomit bowls
- 3 Fluid measure (metric)
- 6 Bedpans with 12 covers
- 6 Blankets
- 30 gowns
- 2 trolley tables

Delivery room equipment:

- 4 IV stands
- 6 Rubber sheets
- 12 Undersheets
- 12 Oversheets
- 24 Drawsheets
- 2 Runabouts (with 4 spare bowls)
- 2 Chartboards
- 2 Stethoscopes
- 2 Pinard's stethoscopes
- 1 Sphygmomanometer
- 2 Oxygen cylinders with variety of masks and nasal catheters
- 3 Trolley tables
- 2 Stainless steel brush dishes
- 4 Bedpans with 12 covers
- 12 Stainless steel emesis basins (large)
- 10 Stainless steel emesis basins (varied sizes)
- 20 Bowls (varied sizes)
- 1 Double basin-rack
- 2 Basins and two spares
- 200 Urine drainage bags and hangers
- 2 Syringe dishes
- 100 Glasses syringes of various sizes with various size needles
- 10 Ampoule files
- 3 Syringe forceps
- 2 Forcep dishes
- 4 Stainless steel trays
- Material sufficient for 50 Large drapes, 80 medium drapes, 60 small drapes
- 20 Pairs leggings
- 20 Caps
- 20 Masks
- 20 Rubber boots
- 50 Rubber gloves
- Material sufficient for 40 towels
- 20 Gallipots
- 6 Bowls for delivery pack
- 12 Kidney bowls (emesis basins)
- 12 Artery forceps (14 inch)
- 2 Sponge-holding forceps
- 2 Episiotomy scissors
- 5 Blunt-nosed forceps
- 6 Cord scissors
- 6 Measuring jugs (metric units)
- Foley catheters (1 box)

- 200 Glass baby mucus extractors
- 2 Boxes cord tie
- 2 Cord-scissors (for cord pack)
- 2 Gallipots (for cord pack)
- 4 Suturing pack:
 - 2 Blunt forceps
 - 2 Toothed forceps
 - 3 Gallipots
 - 3 Bowls
 - 3 Kidney dishes (emesis basins)
 - 2 Syringes
 - 2 Vaginal retractors
- Resuscitation area:
 - 1 Water manometer
 - 1 Baby laryngoscope with airways
 - Oesophago-tracheal tubes (14 and 16 FG)
 - 1 Baby scales (pan rather than sling type; must be in metric units)
 - Apparatus for testing for pH, acetone
- 50 Scrubbing brushes
- 100 Low-range thermometers (must be metric units)
- 100 High-range thermometers (must be metric units)
- 100 Rectal thermometers (must be metric units)
- 1 Symphiotomy knife
- 1 Vacuum extractor and spare parts
- Obstetric forceps (various)
- 2 Amniotomy forceps
- 12 Cheatles forceps
- 2 Dishes for cheatles forceps

Maternity Drug Supply (Initial):

- 5001 Obstetric cream
- 10001 Savlon (or similar) disinfecting solution
- 10001 Hibitane (or similar) disinfecting solution
- 1 box Bandages
- 500kg Cotton wool
- 500kg Gauze
- 1000 Syntometrine
- 250 Syntocinon
- 2000 Ergometrine
- 100 Lincaine (50mg ampoules 1%)
- 50 Lincaine (50mg ampoules 5%)
- 100 Morphine
- 50 Sparine
- 250 Valium
- 1000 Vitamin K
- 1000 BCG vaccine
- 50 nalorphine
- 50 levallorphan
- 250 adrenaline
- 100 hydrocortisone

Maternity Building Improvements:

See enclosed plan and full description in appendix.

SUB-PROJECT 4: KOLWEZI MEDICAL CENTER (UNITED METHODIST)

COST ESTIMATES:

1985:

Building Repairs:

1. Dispensary building improvements:

6000 pcs	Bricks @22Z	132,000 Z	
78 sks	Cement for masonry, plaster, passageway	18,500 Z	
4 pcs	Wooden doors (standard @1850Z	7,400 Z	
6 pcs	Steel door frames @2432Z	14,582 Z	
4 pcs	40W 220V fluorescent fixtures @500Z	2,000 Z	
4 pcs	Wall switches @90Z (Continental style)	360 Z	
12 pcs	Wall outlets 220V (Continental style)	2,220 Z	
2 pcs	Steel doors (standard) @8909Z	17,818 Z	
3 shts	Steel corrugated roofing @\$13		\$ 39
2 pcs	Toilets (European-style) @5800Z	11,600 Z	
1 pcs	Sink (stainless steel double)	4,000 Z	
1 pc	Water-heater (220V 50Hz; large capacity)	25,000 Z	
5 pcs	Masonite @600Z	3,000 Z	
35 m	7/7 for ceiling framing, passageway	1,225 Z	
32 m	Lath for ceiling @12Z	384 Z	
	Labor	26,000 Z	
	Transport	60,000 Z	
	Total	328,569 Z	

2. Maternity building renovation:

27 pcs	Door locks & handles @1350Z	36,450 Z
15 pcs	Wooden doors with hardware @1850Z	27,750 Z
13 pcs	Lavatory sinks @4000Z	52,000 Z
5 pcs	Water heaters (220V 50Hz) @25,000Z	125,000 Z
11 pcs	Toilets (European style) @5800Z	63,800 Z
30 pcs	Faucets @185Z	5,550 Z
10 pcs	Mirrors @500Z	5,000 Z
33 pcs	Fluorescent fixture (220V, 40W with tubes) @760Z	25,080 Z
17 pcs	Wall switches @90Z (Continental-style)	1,530 Z
2 pcs	Main fuse box @11,000Z	22,000 Z
35 pcs	Fluorescent fixtures (220V, 20W) with tubes @650Z	22,750 Z
500 m	Electrical wiring (2.5mm ² @ 5.5Z)	2,750 Z
50 sks	Cement @250Z	12,500 Z
11 pcs	Showers (faucets, head, floor) @150Z	1,650 Z
12,000 pcs	Bricks @22Z	264,000 Z
	Windowscreening	60,000 Z
	Paint	60,000 Z
	Miscellaneous	120,000 Z
	Labor	150,000 Z
	Transport	300,000 Z
	Total	1,357,750 Z

Consolidated Equipment List (Dispensary and Maternity):

2 Insulated boxes (vaccine transport) (free from Programme Elargi de Vaccination)		
5 Sphygmomanometers @\$41.07		\$ 205
10 Stethoscopes @\$7.26		\$ 73
2 Binocular microscopes @\$700		\$ 1,400
10,000 Microscope slides @\$19.88/1000		\$ 199
10,000 Microscope slide cover slips @\$7.72/1000		\$ 77
3 Baby scales (pan rather than sling type; must be in metric units) @\$59.45		\$ 179
2 Adult scales (must be in metric units) @\$48.83		\$ 98
2 Medical douches @\$19		\$ 38
25 Packets Red litmus paper @\$2		\$ 50
11 IV stands @1219Z	13,409 Z	
4 Stainless steel canisters for dressings @\$40		\$ 160
8 Stainless steel covered instrument trays @\$3		\$ 24
1 Sterilizer (220V 50Hz; vertical pressure-type with spare drums) @\$1000		\$ 1,000
1 Sterilizer (pressure-type for external heat source; with spare drums) @\$250		\$ 250
1 Electric range (for use with above sterilizer and for malnutrition program kitchen; 220V 50Hz) @\$825		\$ 825
19 Stainless steel emesis basins (large) @\$15		\$ 285
10 Stainless steel emesis basins (various) @\$8		\$ 80
1 Electric centrifuge @\$807.38		\$ 807
3 Honda Trail 110 motorcycles @\$1350		\$ 4,050
2 Kitchen timers @\$10		\$ 20
2 Otcoscope (using ordinary expendable batteries) @\$24		\$ 48
200 Glass syringes (various sizes, various size needles) @\$2.50 average		\$ 500
12 Crile forceps @\$13		\$ 156
12 Halsted forceps @\$10		\$ 120
3 Sets Courtejoie health education flip-charts (worms, tuberculosis, malnutrition, malaria) @684Z	2,052 Z	
1 Westergren apparatus (sedimentation) + 100 tubes		\$ 19
1 Medical balance (for drug measurements)		\$ 75
100 Hematocrit tubes @\$4/100		\$ 4
5 Test tube racks @\$1.50		\$ 8
50 Test tubes @\$0.75		\$ 38
3 Alcohol burners @\$5		\$ 15
2 Refrigerators (220V 50Hz; 10-15 cu.ft.) @\$835		\$ 2,505
3 Water heaters (220V 50Hz) @25,000Z	75,000 Z	
1 Portable X-ray machine @\$2000		\$ 2,000
2 Elevated adult beds for IV administration @15,496Z	30,992 Z	
4 Elevated child beds for IV administration @10,000Z	40,000 Z	
2 Picnic tables @8000	16,000 Z	
50 Aluminum plates (malnutrition feeding program)	2,250 Z	
50 Spoons @11Z	550 Z	
50 Cups (plastic) @20Z	1,000 Z	
10 Counting chamber (hematocytometer) @\$1		\$ 10
4 Bandage scissors @\$3.45		\$ 14
20 Hemostats @\$6.22		\$ 124
3 Scalpel handles (#3) @\$2.85		\$ 9
48 Scalpel blades (#10) @\$9.17/100		\$ 5
1 Whetstone @\$2		\$ 2
3 Vaginal specula (large, medium, small) @\$3.50		\$ 11

2 Reflex hammers @\$4		\$	4
120 High-range thermometers (metric) @\$0.77		\$	92
100 Low-range thermometers (metric) @\$0.77		\$	77
100 Rectal thermometers (metric) @\$0.77		\$	77
2 Sahli's hemoglobinometer with spare tubes @\$13		\$	26
2 Examining tables @11,070Z	22,140 Z		
34 Steel adult beds @3000Z	102,000 Z		
34 Baby beds @2500Z	85,000 Z		
40 Plastic-covered foam mattresses @2270Z	90,800 Z		
40 Plastic-covered foam baby mattresses @883Z	35,320 Z		
86 Blankets @\$3.18		\$	273
80 Baby blankets @110Z	8,800 Z		
5 Obstetric tables @24,506Z	124,680 Z		
1 Obstetric suction apparatus @\$245		\$	245
1 Newborn table @4000Z	4,000 Z		
30 Chairs @1000Z	30,000 Z		
17 Benches (for 3 persons) @2000Z	34,000 Z		
5 Office tables @2500Z	12,500 Z		
2 Wheeled stretchers @\$700		\$	1,400
15 Rubber sheets @\$95/roll		\$	95
5 Runabouts (with 8 spare bowls) @\$23		\$	115
3 Lockable steel cabinets @17,649Z	52,947 Z		
11 Chartboards @\$1		\$	11
6 Vomit bowls (stainless steel) @\$8.50		\$	51
3 Fluid measures (graduated cylinders, 1 l.) @\$2		\$	6
10 Bedpans and covers @\$9.50		\$	95
5 Trolley tables @\$30		\$	50
2 Pinard's stethoscopes @\$4		\$	8
2 Oxygen cylinders		\$	5
Masks and nasal catheters for oxygen (various)		\$	4
2 Stainless steel brush dishes @\$2		\$	78
26 Stainless steel bowls (various sizes) @\$3		\$	16
1 Double basin-rack with 4 basins @\$16		\$	200
200 Urine drainage bags and hangers @\$1		\$	19
2 Syringe dishes @\$9.50		\$	19
10 Ampoule files (donation with orders)		\$	12
3 Syringe forceps @\$4		\$	19
2 Forcep dishes @\$9.50		\$	165
20 pairs Leggings (30% green polyester-cotton @\$5.5/m)		\$	60
20 Caps @\$3		\$	360
20 Rubber boots (pairs) @\$18		\$	24
50 Rubber gloves @\$0.48/pair		\$	1
23 Gallipots (plastic) @\$5/100		\$	92
12 Artery forceps (14 inch) @\$7.70		\$	10
2 Sponge-holding forceps @\$4.98		\$	22
2 Episiotomy scissors @\$11		\$	120
8 Cord scissors @\$15		\$	12
6 Measuring jugs (metric stainless steel pitchers) @\$2		\$	19
1 Box Foley catheters @\$19		\$	400
200 Glass baby mucus extractors @\$2		\$	8
2 Boxes cord tie @\$4		\$	17
8 Blunt forceps @\$2.09		\$	5
2 Toothed forceps @\$2.59		\$	38
2 Vaginal retractors @\$19		\$	11
1 Water manometer @\$11		\$	28
1 Baby laryngoscope with airways @\$28		\$	38
Gesophago-tracheal tubes (14 and 16FG) @\$30		\$	600
100 Reagent sticks for pH and for acetone @\$6		\$	
50 Scrubbing brushes @60Z	3,000 Z		

1 Symphesiotomy knife	\$	10
Obstetric forceps (various)	\$	57
2 Kielland's forceps		
1 Axis traction forceps)---	\$	190
12 Cheatles forceps @\$19	\$	228
2 Dishes for Cheatles forceps @\$9.50	\$	19
TOTAL		
	786,440 Z	\$12,573

1986:

Maternity Drug Inventory:

500 l.	Obstetric cream (chlorhexidine + cetrimide) @\$2.63	\$	1,315
1000 l.	Chlorhexidine + cetrimide solution @\$4.01	\$	4,010
25 l.	Chlorhexidine solution @\$17.68	\$	442
100 roll	Crepe bandages (3cm x 4m) @\$86.68/100	\$	87
100 roll	Conforming (cling) bandages @\$100/100	\$	100
500 kg	Cotton wool @\$3.63	\$	1,815
80 roll	Gauze (40m x 80cm non-sterile) @\$83.49/5	\$	1,416
2500 pcs	Gauze (10cm x 10cm) @\$5.04/100	\$	126
1000 amp	Syntometrine (oxytocin + ergometrine) @\$3.67/10	\$	367
125 amp	Oxytocine 5 IU, 1ml @\$6.29/100	\$	8
125 amp	Oxytocine 10 IU, 1 ml @\$6.74/100	\$	8
2000 tblt	Ergometrine @\$48.11/1000	\$	96
100 amp	Lignocaine (50mg, 1%) @\$16.52/100	\$	17
50 amp	Lignocaine (50mg, 5%) @\$5.99/100	\$	3
100 amp	Morphine @\$3/10	\$	30
50 tblt	Sparine (promazine) @\$3.70/250	\$	1
125 amp	Diazepam @\$4.93/100	\$	6
125 tblt	Diazepam @\$2.37/1000	\$	1
1000 amp	Vitamin K @\$4.31/100	\$	43
1000 dose	BCG vaccine @\$2.36/10 (should be available at no cost from Programme Elargi de Vaccination)	\$	236
50 amp	Lethadrone neonatal @\$2.80/10	\$	14
50 amp	Levallorphan @\$4/10	\$	20
250 amp	Adrenaline @\$4.11/100	\$	10
100 vial	Hydrocortisone @\$42.79/100	\$	43
TOTAL		\$	10,214

SUB-PROJECT 5: MWANGEJI HOSPITAL (UNITED METHODIST ADMINISTERED)

Mwangeji Hospital, formerly Mama Mobutu Hospital, was the state-operated hospital on the eastern outskirts of Kolwezi. Built in 1958 to serve the portion of the population not directly tied to the mining company and thus not served by the mines hospital, the state hospital began to suffer from serious mismanagement during the 1960s and more especially during the 1970s. No new investment was made in modernizing medical equipment, then routine renewal in kind of equipment and supplies dwindled, and theft became more and more a way of life for poorly paid and motivated staff and clients. The 1978 war in Kolwezi and the ensuing military occupation of the hospital were the final blow. By 1980 the hospital infrequently had any drugs of any kind, had almost no medical equipment in proper minimal condition for operations, and was largely deserted by the public. It was commonly called a place to go to die rather than to be healed.

In July 1984, at the request of the governor of Shaba, a renewable five-year management contract was signed between the government and the United Methodist Church for the hospital. Initially the church supplied two medical doctors, one expatriate and one Zairian, from its own medical system to act as medical director and assistant medical director. The staff also numbers five civilian Zairian medical doctors and two military physicians, plus the normal range of nurses and technicians. Space exists for at least 200 beds though few exist now.

The hospital complex consists of eight large pavilions, an office building (built as a convent for the nursing nuns), and various auxiliary structures. Most of the buildings are structurally in reasonable condition, despite what appear to have been insufficient foundations for the sandy soil and the underground mining activity in the area. One building in particular has badly cracked walls from uneven subsidence, but the damage is easily reparable in the short to medium term. Another building has been seriously damaged when a tall eucalyptus tree was felled and allowed to fall towards the building. Except for one building already reroofed in corrugated metal, the original fibro-cement roofing is in various states of disintegration and requires replacement.

The ward buildings in general require straight-forward repair: new steel doors and hardware, replacement of glass and screening, new sanitary facilities and renovation of sewers and septic tanks. The two central buildings, housing the operating rooms, laboratory, and doctors' offices, will require extensive remodeling after careful architectural study. For this reason, these renovations, along with other equipment already on order, will be financed through United Methodist Church funding and are not included in the present Sub-Project.

The first priority in building improvements is to assure basic security for new equipment and drugs: repair of roofs, windows, and doors to prevent water damage and to provide lockable doors. A second priority is providing minimal sanitary facilities for patients and the general public.

Building Improvements:

- Reroofing of 7 pavilions (including occasional repair of roof trusses)
- Repair of ceilings where water-damaged
- Replacement of missing windows
- Replacement of 100 steel doors and associated hardware
- Replacement of screening on windows and in fascia
- Installation of 20 new toilets (squat-type) with shower heads and flushing mechanism

Equipment:

- Autoclave (large) with electric steam generator (220V 50Hz)
- 2 Refrigerators (220V 50Hz)
- 3 Newborn incubators (220V 50Hz)
- 3 Orthopedic beds with overhead frame (adult)
- 2 Orthopedic beds with overhead frame (child)
- 100 Steel beds
- 400 Blankets

- Sufficient material (brown) for 800 sheets
- 1 Photocopier (Mita DC-132 for standardization; 220V 50Hz)
- 2 Adding machines
- 2 Electric typewriters (long carriage; French keyboard; IBM or Hermes preferred for maintenance)
- 2 Manual typewriters (long carriage; French keyboard; Hermes or Olym preferred for maintenance)
- 6 Four-drawer file cabinets
- 6 Steel desks with lockable drawers
- 20 Lockable steel cupboards
- Citizens band radio system:
 - 1 Master station
 - 6 Remote stations
- 2 Sewing machines (Singer preferred for maintenance; 220V 50Hz; should be only a very basic machine)
- Completely equipped basic hospital laboratory
- Completely equipped basic hospital operating room
- Completely equipped basic labor and delivery rooms
- X-Ray unit and laboratory (Balto or Pickering preferred for maintenance)
- 1 Mercedes 1113 truck (model chosen for standardization)
- 2 Toyota Landcruisers (model chosen for standardization)
- 4 Personal vehicles (Volkswagen Golf diesel or Peugeot 305 diesel recommended)
- 1 Isuzu KB (2 wheel drive) pickup (model chosen for standardization)
- 100 Bedside tables
- 200 Plastic-covered foam mattresses
- Complete food-service equipment
- 100 Steel beds

SUB-PROJECT 5: MWANGEJI HOSPITAL (UNITED METHODIST ADMINISTERED)

COST ESTIMATES:

Building Improvements:

1. Reroofing 7 pavilions 14m x 41m and 1 pavilion 14m x 32m:

3829 pcs	Steel corrugated roofing @\$13		\$ 49,777
600 m	Roof ridge capping @\$6.20		\$ 3,720
11289 m	4/11 for roof trusses (maximum replacement needs depending on condition of trusses when old roof removed) @38.5Z	404,146 Z	
5146 m	7/7 for roof trusses (maximum) @35Z	188,110 Z	
4200 pcs	Bolts for roof trusses (max.) @20Z	84,000 Z	
360 kg	Nails (12cm) @90Z	32,400 Z	
140 kg	Nails (8cm) @90Z	12,600 Z	
120 kg	Nails (6cm) @90Z	10,800 Z	
204 kg	Roofing nails @120Z	24,480 Z	
100 pcs	Steel doors (std) with hardware @8909Z	890,900 Z	
200 pcs	Masonite for ceiling repair @600Z	120,000 Z	
10 roll	Window screen (25m) @5000Z	50,000 Z	
10 crt	Window glass @34,500Z	34,000 Z	
20 pcs	Squat toilet slabs @1100Z	22,000 Z	
	Plumbing and septic tank renovation	100,000 Z	
	Labor	500,000 Z	
	Transport	100,000 Z	
	Total	2,551,436 Z	\$ 53,497

2. Equipment

1 pc	Autoclave		\$ 5,000
2 pc	Refrigerators (220V 50Hz)		\$ 700
8 pc	Newborn incubators (220V 50Hz)		\$ 4,000
3 pc	Adult orthopedic beds @20,000Z	60,000 Z	
2 pc	Child orthopedic beds @15,000Z	30,000 Z	
400 pc	Blankets @\$3.18		\$ 1,272
	Material for 1600 sheets (brown) @\$8.24		\$ 13,824
1 pc	Photocopier (Mita DC-132 recommended)		\$ 3,000
1 pc	Duplicating machine (Gestetner recommended)		\$ 1,200
2 pc	Adding machines		\$ 240
2 pc	Electric typewriters (IBM or Hermes; preferred for maintenance; French keyboard; long carriage)		\$ 2,000
2 pc	Manual typewriters (Hermes or Olympia; preferred for maintenance; French keyboard; long carriage)		\$ 1,000
6 pc	Four-drawer file cabinets @23,449Z	140,694 Z	
6 pc	Steel desks (lockable) @25,635Z	153,810 Z	
20 pc	Lockable steel cabinets @17,649	352,980 Z	
1 pc	Citizens' Band master radio unit		\$ 200
6 pc	Citizens' Band remote radio units		\$ 300
2 pc	Sewing machines (simple Singer models preferred)		\$ 600
	Basic hospital laboratory (complete)		\$ 15,000
	Basic hospital operating room (complete)		\$ 15,000
	Basic hospital X-ray system (Balto or Pickering)		\$ 35,000
1 pc	Mercedes 1113 truck		\$ 35,000
2 pc	Toyota Landcruisers @\$22,000		\$ 44,000
4 pc	Personal vehicles		\$ 36,000

1 Isuzu KB (2WD) pickup		\$ 11,500
100 Bedside tables @6000Z	600,000 Z	
200 Plastic-covered foam mattresses @2270Z	454,000 Z	
100 Steel beds @3000Z	300,000 Z	
TOTAL	<u>2,091,484 Z</u>	<u>\$ 224,335</u>

IMPLEMENTATION SCHEDULE

- 1985: Building improvements to ward units, roof repair to all units
All equipment included in this project unless otherwise noted
- 1986: Complete laboratory
Complete operating room
- 1987: Complete X-Ray

SUB-PROJECT 6: KASAJI-CHISENGAMA HOSPITAL (GARENGANEE)

Medical work started at Kakwata toward the present Angolan border as an outgrowth of original Plymouth Brethren missionary hospital founded at Kalona Hill in what is now Zambia in the 1880s. After the completion of the Benguela railroad in the 1930s, the mission was moved to a site adjoining the village of chief Chisengama (recognized chefferie, now collectivité) in 1942.

The hospital includes outpatient dispensary, maternity unit, normal wards for men, women, and children, operating facilities, tuberculosis wards, and a leprosarium. The hospital shares the mission site with primary and secondary schools. Since 1992 there have been no resident missionaries at Kasaji, with the hospital operating under Zairian management with 5 infirmier auxiliaire (A3) nurses, 5 nurse's aides without formal qualifications, and 5 andwiers aides. A military doctor has been in residence at the hospital since the 1977 war and cooperates with the hospital administration. There is also a possibility of the Roman Catholic mission receiving a medical doctor from the Franciscan order in 1985 who would be able to use the operating facilities at the Kasaji-Chisengama hospital. The maternity currently delivers 700-800 babies per year.

Water project improvements are included in the Shaba Refugee Water Project to repair windmills, wells, and rams damaged during the 1977 war.

Building Improvements:

- 10 tons cement for masonry repairs
- 50 sheets 3-ply plywood for ceiling repairs
- 10 kg Roofing putty for repairs
- 20 sheets roofing (3.0m x 0.70m)

Solar Power:

- 5 Installations (separated buildings)
 - 5 Battery arrays (150A-h each minimum)
 - 5 Controller-regulators with ammeter and voltmeter
 - 4 Fluorescent fixtures (40W 12V DC; 2 each in surgery and maternity)
 - 25 Fluorescent fixtures (15W 12V DC)
- 1 Inverter (12V DC to 220V 50Hz; recommend Best Model M12-1000, distributed by Communications Associates--see Sub-Project 9 for address)
- 1 Sterilizer (12V DC or with additional inverter) for instruments and bowls
- 1 Autoclave (12V DC if possible) for surgical wards
- 1 Refrigerator (12V DC; 5 cu.ft. minimum, 10 cu.ft. optimum)
- 1 Water purifier (12V DC; recommend Clean Water Systems CWS-4)
- Sufficient solar panels and additional battery capacity for the above
- 300 meters Stranded #12 bi-conductor wire

Heavy Equipment:

- 1 Tractor for agricultural work and grass-cutting (including airstrip maintenance) (Massey-Ferguson 265 diesel tractor recommended for maintenance and standardization)
- 1 Ripping plow
- 1 Rotary mower

Hand Tools:

- 20 Shovels
- 5 Picks
- 5 Wood saws
- 5 Hacksaws plus 200 blades
- 10 Hammers
- 20 Screwdrivers (assorted)
- 100 Hoes
- 150 Paint brushes
- 100 Steel buckets
- 50 Plastic buckets

Paint:

500kg White latex paint
 500kg Pale green latex paint
 500kg Blue latex paint
 500kg Cream latex paint
 500kg Pink latex paint
 500kg White semi-gloss enamel
 500kg Green semi-gloss enamel
 500kg Blue semi-gloss enamel
 500kg Cream semi-gloss enamel

Drug Stocks to Replenish 1977 War Losses:

100,000 Aspirin 500mg
 100,000 Chloroquine 250mg
 50,000 Tetracycline
 50,000 Chloramphenicol
 50,000 Mabendazol
 50,000 Decaris
 5,000 Penicillin 4 megaUnits
 5,000 Streptomycine 5g ampoule
 100,000 INH
 50,000 Diatebene
 20,000 Rifampicen
 50,000 Ethambutol
 100,000 Multivitamins
 1,000 Vitamin B12 ampoules
 1,000 Vitamin B complex ampoules
 1,000 Dextran (ampoules)
 20,000 Ephedrine
 20,000 Aminophyline
 50,000 Aldomet
 100 Ketarar
 2,000 Calcium injectable
 200 Insulin
 20,000 Rastinon/Diabenese
 5,000 Gauze bandages
 1,000 Elastic bandages
 10,000 Adhesive tape (7cm)
 Blood typing reagents
 Giemsa solution
 Fuchsine pheniqué
 Isopropyl alcohol 70%
 Oil for microscope slides
 Nitric acid
 Acetic acid
 Fehling's solutions A and B
 1 Sahl's hemoglobinometer with spare tubes
 200 IV packs: physiological solution
 200 IV packs: glucose solution
 200 IV packs: dextrin-saline solution
 6000 Microscope slides and cover plates

Linens and blankets:

1000m Material (brown) for sheets
 1000m Material for hospital gowns/blouses
 100 Steel beds
 100 Plastic-covered foam mattresses
 100 Blankets
 200m Green material for operating room gowns, drapes, etc.
 100 Baby layettes for maternity

Dairy Herd:

Until the 1977 war the hospital maintained its own dairy herd which supplied milk for the hospital. The herdsman are still at the hospital, and a veterinary doctor is also employed at the mission in the secondary school.

30 Brahma-Afrikander cross cattle
 300 l. Non-arsenical cattle dip
 Vaccines
 150kg Vitamin-fortified salt licks
 10kg Anti-helthelminthique (Coopane)
 2 Sprayers for dip
 5000m Barbed wire
 100kg 3cm Nails for fencing
 30kg 10cm Nails for fencing

Training a Shoemaker for Leprosarium Camp:

Funds are requested to send a hospital staff member for six months to the Institut Médical Evangélique at Kimpese, Bas-Zaire, for training in creating the specially-fitted shoes necessary to prevent further damage to the feet of lepers. Many of the materials need are locally available in Zaire, but small quantities of others must be imported. (Samuteb Memorial Hospital at Kapanga has had two staff persons trained in this at I.M.E.-Kimpese at an earlier time.)

SUB-PROJECT 6: KASAJI-CHISENGAMA HOSPITAL (GARENGANZE)

COST ESTIMATES AND IMPLEMENTATION SCHEDULE:

1985: Building improvements

10 tons Cement @ 5000Z	50,000 Z	
50 shts 3-Ply plywood @700Z	35,000 Z	
10 kg Roof putty @30Z	800 Z	
20 shts Steel corrugated roofing @\$13		\$ 250
TOTAL	85,800 Z	\$ 260

Solar Power:

Batteries		
5 pcs	Controller-regulators with ammeters and voltmeters	
4 pcs	40W 12V DC fluorescent fixtures	
25 pcs	15W 12V DC fluorescent fixtures	
1 pc	Inverter (recommend Best Model M12-1000)	\$ 1,660
1 pc	Sterilizer (12V DC or with extra inverter)	
1 pc	Autoclave (12V DC)	
1 pc	Refrigerator (12V DC; 5 cu.ft. minimum, 10 cu.ft. optimum)	
1 pc	Water purifier (12 V; recommend Clean Water Systems CWS-4)	\$ 425
	Solar panels (sufficient for above)	
300 m	Stranded #12 bi-conductor wire	

Paint:

2500 kg	Latex paint @Z72	180,000 Z
1400 l.	Semi-gloss enamel paint @175Z	245,000 Z
		425,000 Z

Drug Inventory

100,000	tblt Aspirin 500mg @\$2.54/1000	\$ 254
100,000	tblt Chloroquine 250mg @\$16/1000	\$ 1,600
50,000	caps Tetracycline @\$12.21/1000	\$ 611
50,000	caps Chloramphenicol @\$16.93/1000	\$ 847
50,000	tblt Mabendazol @\$10.42	\$ 521
50,000	tblt Levamisole 50mg @\$9.82/1000	\$ 491
5,000	vial Penicillin 4 M IU @\$299.30/1000	\$ 1,497
5,000	amp Streptomycine 5g @\$38.58/100	\$ 1,929
100,000	tblt Isoniazide 100mg @\$2.75/1000	\$ 275
50,000	tblt Isoniazide 300mg/thiacetazone 150mg @10.34	\$ 517
20,000	Rifampicen @\$10.57/1000	\$ 211
50,000	Ethambutol @\$30.18/1000	\$ 1,509
100,000	tblt Multivitamins @\$1.65/1000	\$ 165
1,000	amp Vitamin B12 @\$4.93/100	\$ 49
1,000	amp Vitamin B-complex @\$4.88/100	\$ 49
1,000	amp Dextran @\$8.94/100	\$ 89
20,000	tblt Ephedrine @\$3.90/1000	\$ 78
20,000	tblt Aminophylline 100mg @\$4.63/1000	\$ 93
50,000	tblt Methyl dopa 250mg @\$38.24/1000	\$ 1,912
50	amp Ketamine 50mg/ml @\$5.76	\$ 576
50	amp Ketamine 10mg/ml @\$2	\$ 100
2,000	amp Calcium gluconate 10% 10ml @\$7.49/100	\$ 150
200	vial Insulin @\$2.00	\$ 400
20,000	tblt Tolbutamide 500mg @\$11.53/1000	\$ 231
5,000	pcs Gauze 5cm x 5cm @\$2.27/1000	\$ 11
500	pcs Elastic bandages 4m x 8cm @\$29.98/100	\$ 150

500 pcs	Elastic bandages 4m x 12cm @\$43.03/100		\$	215
10,000 roll	Adhesive tape 5cm x 5m @\$99.84/100		\$	9,984
	Blood typing reagents		\$	28
200 g.	Giensa stain powder @\$12/25g		\$	96
1 bttl	Carbolfuchsine stain @\$10		\$	10
20 l.	Isopropyl alcohol (absolute) @\$10		\$	200
2 bttl	Immersion oil @\$4.20		\$	8
1 l.	Nitric acid (concentrated) @\$10		\$	10
1 l.	Acetic acid (concentrated) @\$15		\$	15
1 bttl	Fenling's solutions (each A and B) @\$23		\$	23
2 bttl	Field's stain (each A and B) @\$30		\$	60
1 pc	Sahli's hemoglobinometer with spare tubes		\$	13
200 l.	Glucose IV solution @\$0.93		\$	186
200 l.	Saline IV solution @\$0.84		\$	168
200 l.	Dextro-saline IV solution @\$3.61		\$	722
6,000 pcs	Microscope slides @\$19.88/1000		\$	119
6,000 pcs	Cover slips @\$7.72/1000		\$	46
TOTAL				\$ 26,318

Linens and Blankets:

1,000 m	Sheeting \$5.50		\$	5,500
1,000 m	Cloth for gowns, blouses @\$5.50		\$	5,500
100 pcs	Steel beds @3000Z	300,000 Z		
100 pcs	Plastic-covered foam mattresses @2270Z	227,000 Z		
100 pcs	Blankets @\$3.18		\$	318
200 m	Material for operating room gowns, etc. @\$5.50		\$	1,100
100 pcs	Baby layettes for maternity		\$	12,418

1936: Heavy equipment:

Tractor, plow, mower \$ 25,000

Hand tools:

72,575 Z

Dairy Herd Replacement:

30 hd	Brahma-Afrikander cross cattle			
300 l	Non arsenical dip			
150 kg	Vitamin-enriched salt licks			
10 kg	Anti-helthelminthique (Coopane)			
2 pc	Sprayers for dip			
5000 m	Barbed wire @\$85/450m		\$	944
100 kg	Nails (3cm) @90Z	9,000 Z		
30 kg	Nails (10cm) @90Z	2,700 Z		
	Vaccines		\$	500

Leprosarium Shoe Project:

1 pc	Airfare plus surface transport	20,000 Z		
	6 months maintenance @2000Z	12,000 Z		
	Initial shoemaking supplies	20,000 Z	\$	500

SUB-PROJECT 7: KATOKA MEDICAL CENTER (GARENGANZE)

Plymouth Brethren missionary activity in the Dilolo area started in 1928 at Kanduke and spread to the Dilolo Gare and Dilolo Post areas. The Katoka mission was established in 1938 as a base for medical and school programs. The medical program was recognized by the colonial government and subsidized from 1950-51. Several of the current facilities date from that time: the dispensary built in 1951, the Maternity from 1952, and the water supply system from 1952 as a gift from the Fonds du Bien-Etre Indigène. An ante-natal ward was built in 1980, a new tuberculosis dispensary and wards in 1981, and several small houses in permanent materials have been added to the hospital camp.

The medical center is directed by an expatriate nurse-midwife with diplomas in tropical medicine; a second expatriate nurse is currently in specialized study for public health work in the United Kingdom. The remainder of the staff is composed of four midwife's aides, several infirmier auxiliaire (A3) qualified nurses, and a number of nurse's aides. The Maternity handles approximately 550 deliveries per year.

Renewal of water supply piping and rebuilding of the ram are included in the Shaba Refugee Water Project.

Replacement of the radio lost during the 1977 war is included in Sub-Project 19, «Communications Improvements».

At the present time, Katoka has no airstrip of its own, the nearest airport being the government strip at Dilolo post or that at Kisenge. A site had been selected for an airstrip in the 1970s but it was not cleared before the war. If government approval is received, creation of an airstrip for medical evacuations can be included in the program funded under Sub-Program 20, «Air Transportation Improvements».

Solar Energy:

4 Solar lighting applications

4 Solar panel arrays with sufficient capacity

4 Batteries

4 Controller-regulators with ammeter and voltmeter

20 Fluorescent fixtures (15W 12V DC)

1 Fluorescent fixture (40W 12V DC)

1 Inverter (12V DC to 220V 50Hz; recommend Best Model M12-1000, distributed by Communications Associates--see Sub-Project 9 for full address)

1 Water purifier (12V DC; recommend Clean Water Systems CWS-4, distributed by Communications Associates as above)

1 Refrigerator (12V DC; 5 cu.ft. minimum, 10 cu.ft. optimum)

Sufficient additional solar panels and battery storage for this equipment

Building Improvements:

New roof for Maternity Unit and outpatient clinic (265 sheets)

Rebuilding of women's ward which collapsed in 1982 and for construction of a men's ward

35 tons Cement

100 lengths 6mm reinforcing rod

500 sheets Roofing

100 lengths 8mm reinforcing rod

100 kg Common nails

20 kg Screws (assorted)

100 kg Roofing nails

Conventional Electrical System:

A mobile X-Ray unit was gifted to the Katoka Medical Center in 1979 but is not yet functional for lack of an adequate power supply.

1 5kVA Lister diesel generator set (model chosen for maintenance and standardization)

2 Main switch boards with fuse box and voltmeters

2000m 4 x 4mm Armored cable

200m Appliance cord wire (côte à côte)

60X

Equipment for Medical Center:

2 Trolley tables for instruments and drugs

Heavy Equipment (to replace equipment lost in 1977 war)

- 1 Diesel tractor (recommend Massey-Ferguson 265 for standardization and maintenance)
- 1 Hedgecutter
- 1 Ripping plow
- 1 Rotary mower
- 1 Front-end loader (diesel)

Hand tools:

- 20 Shovels
- 20 Picks
- 5 Crowbars
- 5 Wood saws
- 5 Hacksaws plus 200 spare blades
- 4 Hammers (5kg)
- 10 Hammers (ordinary)
- 20 Philips screwdrivers
- 20 Conventional screwdrivers
- 1 Pipe cutter for 1/2 - 1 inch pipe
- 2 Pipe wrenches (large)
- 1 Pipe threading tool for 1/2-3 inch pipe
- Files (Assortment of flat and round)
- 2 Brick presses
- 10 Wheelbarrows
- 2 Two-wheeled hand trucks

Paint:

- 500kg White latex paint
- 500kg Pale green latex paint
- 500kg Blue latex paint
- 500kg Cream latex paint
- 500kg Pink latex paint
- 500kg White semi-gloss enamel paint
- 500kg Green semi-gloss enamel paint
- 500kg Blue semi-gloss enamel paint
- 500kg Cream semi-gloss enamel paint
- 200kg Roof paint
- 100kg Anti-rust paint for water tower
- 500kg Exterior masonry paint
- 150 Paint brushes

Linens for Medical Center:

- 1000m Material for sheets (brown)
- 500m Material for bed spreads
- 1000m Material for clothes, gowns, and blouses
- 100 Steel beds
- 100 Plastic-covered foam mattresses
- 100 Blankets

Replacement Drug Stock:

- 100,000 Aspirin 500mg
- 100,000 Chloroquine
- 50,000 Tetracycline
- 50,000 Chloramphenicol
- 50,000 Mebendazol
- 5,000 Penicillin 4 megaunits
- 5,000 Streptomycine (5g ampoule)
- 100,000 INH
- 50,000 Diatebene

20,000 Refampicin
 50,000 Ethambutol
 100,000 Vitamin B-Complex
 1,000 Vitamin B12 (ampoule)
 1,000 Vitamin B-Complex (ampoule)
 1,000 Dextran (ampoule)
 20,000 Ephedrine
 20,000 Aminophyline
 50,000 Aldomet
 100 Ketalar
 50,000 Decaris
 2,000 Calcium injectable
 200 Insulin
 20,000 Rastinon/Diabinese
 5,000 Cotton bandages
 1,000 Stretch bandages
 10,000 Adhesive tape 7cm

Dairy Herd:

Replacement for a herd of 50 dairy cattle managed by William Rue which supplied milk to orphans, tuberculosis patients, and critically ill patients. The herd was slaughtered during the 1977 war.

50 Cattle (preferably brahman/afrikander cross)
 400 l. Non-arsenical dip
 Vaccines
 200kg Vitamin-fortified salt licks
 20kg Anti-helthelminthique vermifuge (Coopane)
 3 Spray-vaporizers for dip
 20,000m Barbed wire
 200m Woven fencing
 200kg 3cm nails
 50kg 10cm nails
 1 Bloodless castrator (Burdizo)
 1 Butter churn
 1 Cattle ear-tagging machine with tags

SUB-PROJECT 7: KATOKA MEDICAL CENTER (GARENGANZE)

COST ESTIMATES AND IMPLEMENTATION SCHEDULE:

1985: Solar Energy:

4 Battery arrays		
4 Controller-regulators with ammeter and voltmeter		
4 Solar panel arrays with sufficient capacity		
20 Fluorescent fixtures (15W 12VDC)		
1 Fluorescent fixture (40W 12V DC)		
1 Inverter (12V DC to 220V 50Hz; recommend Best Model M12-1000 with circuit protection, distributed by Communications Associates; see Sub-Project 9 for complete address)		\$ 1,660
1 Water purifier (12V DC; recommend Clean Water Systems CNS-4, distributed by Communications Associates as above)		\$ 425
1 Refrigerator (12V DC; 5 cu.ft. minimum, 10 cu. ft. optimum)		
Sufficient additional solar panels and battery storage for this equipment		

Conventional Electrical System:

1 5kVA Lister diesel generator set		
2 Main switch boards with fuse box and voltmeters)---		\$ 10,000
2000 m 4x4mm Armored cable @80Z	160,000 Z	
200 m Appliance cord wire @8Z	1,600 Z	
40 40W Fluorescent fixtures @760Z	30,400 Z	
40 Switches @90Z	3,600 Z	
	TOTAL	\$ 10,000
<u>Hospital equipment:</u>		
2 Trolley tables @\$30		\$ 60
		\$ 60

Paint:

2500kg Latex paint @72Z	180,000 Z	
1400l Semi-gloss enamel paint @175Z	245,000 Z	
140l Roof paint @143Z/1.	20,020 Z	
200kg Anti-rust paint for watertower @360	72,000 Z	
500kg Exterior masonry paint @110Z	55,000 Z	
150 Paint brushes @100Z average	15,000 Z	
	TOTAL	587,020 Z

Linens and beds:

100 Steel beds @3000	300,000 Z	
100 Plastic-covered foam mattresses @2270Z	227,000 Z	
100 Blankets @\$3.18		\$ 318
1000m Material (brown) for sheets (from IMPAS Fndtn)		\$ 5,500
500m Material for bedspreads		\$ 2,750
1000m Material for gowns, drapes, etc.		\$ 5,500
	TOTAL	\$ 14,068

Drug Inventory

100,000 tblt Aspirin 500mg @\$2.54/1000		\$ 254
100,000 tblt Chloroquine 250mg @\$16/1000		\$ 1,600
50,000 caps Tetracycline @\$12.21/1000		\$ 611
50,000 caps Chloramphenicol @\$16.93/1000		\$ 847
50,000 tblts Mebendazol @\$10.42/1000		\$ 521
5,000 vials Penicillin 4 M IU @\$299.30/1000		\$ 1,497
5,000 amp Streptomycine 5g @\$38.58/100		\$ 1,929
100,000 tblt Isoniazide 100mg @\$2.75/1000		\$ 275
50,000 tblt Isoniazide 300mg/thiacetazone 150mg @\$10.35/1000		\$ 518
20,000 caps Rifampicin 150mg @\$10.57/1000		\$ 211
50,000 tblt Ethambutol 400mg @\$30.18/1000		\$ 1,509

100,000	tblt	Multivitamins @ \$1.65/1000			165
1,000	amp	Vitamin B12 @ \$4.18/100			42
1,000	amp	Vitamin B-complex @ \$4.88/100			49
20,000	tblt	Ephedrine @ \$3.90/1000			78
20,000	tblt	Amnophyline 100mg @ \$4.63/1000			93
50,000	tblt	Methyldopa 250mg @ \$35.90/1000			1,795
100	amp	Ketamine 50mg/ml; 10ml @ \$6.76			676
50,000	tblt	Levamisole 50mg @ \$9.82			491
2,000	amp	Calcium gluconate 10% 10ml @ \$7.49/1000			15
200	vial	Insulin @ \$2.00/vial			400
20,000	tblt	Tolbutamide 500mg @ \$11.53/1000			231
500	rolls	Gauze (40cm x 80cm, non sterile) @ \$17.70			8,850
500	pcs	Elastic bandages 8cm x 4m @ \$29.98/100			150
500	pcs	Elastic bandages 12cm x 4m @ \$43.08/100			215
10,000	roll	Adhesive tape 5cm x 5m @ \$99.84/100			9,984
		TOTAL			<u>\$ 33,006</u>

6: Building Improvements (building men's and women's wards and replace roof on maternity; see standard plan in Sub-Project 2 for Ward Units)

620	m	4x11 for roof trusses @ \$38.5Z	23,870 Z	
484	m	7x7 for roof trusses @ \$35Z	16,940 Z	
252	pc	Bolts for roof trusses @ \$20Z	5,040 Z	
500	sh	Steel corrugated roofing @ \$13		\$ 6,500
46	m	Roof ridge capping @ \$6.20		\$ 286
136	m	Roof trim boards @ \$40Z	5,440 Z	
140	pc	Masonite @ \$600Z	84,000 Z	
772	m	7x7 for ceiling framing @ \$35Z	23,320 Z	
8	pc	Steel doors (standard) @ \$8909Z	71,272 Z	
8	pc	Steel door frames (std) @ \$2432Z	19,384 Z	
24	pc	Steel window frames @ \$5000Z	120,000 Z	
2	ct	Window glass @ \$34,500Z	69,000 Z	
240	kg	Window putty @ \$110Z	26,400 Z	
40	kg	Nails (12cm) @ \$90Z	3,600 Z	
20	kg	Nails (8cm) @ \$90Z	1,800 Z	
20	kg	Nails (6cm) @ \$90Z	1,800 Z	
20	kg	Nails (5cm) @ \$90Z	1,800 Z	
100	kg	Roofing nails @ \$120Z	12,000 Z	
100	pcs	Reinforcing rod (8mm x 12m) @ \$208Z	20,800 Z	
100	pcs	Reinforcing rod (6mm x 12m) @ \$208Z	20,800 Z	
20	kg	Screws (assorted) @ \$250	5,000 Z	
698	sks	Cement @ \$250Z	174,500 Z	
		Labor	175,000 Z	
		Transport	200,000 Z	
		TOTAL	<u>1,081,766 Z</u>	<u>\$ 6,786</u>

Heavy Equipment (replacing equipment lost in 1977 war):

1	Massey-Ferguson 265 diesel tractor with ripping plow, rotary mower, hedgecutter	\$ 25,000
1	Front-end loader (diesel)	\$ 15,000
		<u>\$ 40,000</u>

Hand tools:

	Assorted hand-tools for local purchase	34,050 Z	
1	Pipe-cutter for 1/2 - 1 inch pipe	990 Z	
1	Pipe-threading tool for 1/2 - 3 inch pipe		\$ 50
2	Brick presses		\$ 35
10	Wheelbarrows	2,340 Z	
2	Two-wheeled hand trucks		\$ 40

Dairy Herd Replacement:

50 hd	Cattle (preferably brahman/afrikander cross)		
200 l	Non-arsenical dip		
200 kg	Vitamin-fortified salt licks		
20 kg	Anti-helminthic vermifuge (Coopane)		
3 pc	Spray-vaporizers for dip		
20,000 m	Barbed wire @\$85/450m		\$ 3,778
200 m	Woven fencing @\$90/50m		\$ 360
200 kg	Nails (3cm) @90Z	18,000 Z	
50 kg	Nails (10cm) @90Z	4,500 Z	
1 pc	Bloodless castrator		
1 pc	Manual butter churn		
1 pc	Cattle ear-tagging machine with tags		

SUB-PROJECT 8: MUTSHATSHA MISSION DISPENSARY (GARENGANZE)

Medical and educational work began at the Mutshatsha mission in 1924. No missionaries have been resident at Mutshatsha since the 1977 war. The dispensary is now jointly subsidized by the Katoka and Kasaji missions.

Building Improvements:

Paint:

- 125kg White latex paint
- 125kg Cream latex paint
- 125kg Pale green latex paint
- 125kg Blue latex paint
- 100kg White semi-gloss enamel paint
- 100kg Green semi-gloss enamel paint
- 100kg Blue semi-gloss enamel paint
- 100 Paint brushes (assorted)

Solar Energy:

- 2 Installations (Dispensary and Maternity)
 - 2 Batteries (150 A-h)
 - 2 Regulator-controllers with voltmeter and ammeter
- 6 15W 12V DC fluorescent fixture
- 1 40W 12V DC fluorescent fixture

Tools:

- 5 Shovels
- 20 Hoes
- 2 Hammers
- 6 Screwdrivers (assorted)
- 50kg Common nails (assorted)
- 5kg Screws (assorted)
- 50 Galvanized steel buckets
- 20 Plastic buckets

Hospital equipment and linens:

- 300m Material (brown) for sheets
- 150m Material for bedspreads
- 200m Material for gowns
- 20 Steel beds
- 20 Plastic-covered foam mattresses
- 50 Blankets

Drug Inventory to Replace That Lost in 1977 War:

- 50,000 Multivitamin
- 20,000 Aspirin 500mg
- 50,000 Chloroquine 250mg
- 1,000 Penicillin 4 megaUnits
- 10,000 Tetracycline
- 10,000 Mebendazol
- 1,000 Streptomycin 5g (ampoule)
- 10,000 INH
- 5,000 Rifampicin
- 10,000 Ethambutol
- 2,000 Gauze bandages
- 500 Elastic bandages
- 5,000 Adhesive tape 7cm

SUB-PROJECT 8: MUTSHATSHA MISSION DISPENSARY (GARENGANZE)

COST ANALYSIS AND IMPLEMENTATION SCHEDULE:

All supplies are requested for 1985

Paint:

500 kg Latex paint @72Z	36,000 Z
200 l. Semi-gloss enamel paint @175Z	35,000 Z
50 pc Paint brushes (assorted) @100Z average	5,000 Z
TOTAL	<u>76,000 Z</u>

Solar Energy:

2 pcs Batteries (150A-h)
2 pcs Regulator-controllers with voltmeter and ammeter
6 pcs 15W 12V DC fluorescent fixtures
1 pcs 40W 12V DC fluorescent fixture
7 pcs Solar panels sufficient for two systems

Hand tools:

5 pcs Shovels @320Z	1,600 Z
20 pcs Hoes @145Z	2,900 Z
2 pcs Hammers @300Z	600 Z
6 pcs Screwdrivers (assorted) @45Z	270 Z
50 kg Nails (assorted) @90Z	4,500 Z
5 kg Screws (assorted) @250Z	1,250 Z
50 pcs Galvanized buckets @175Z	8,750 Z
20 pcs Plastic buckets @120Z	2,400 Z
TOTAL	<u>13,520 Z</u>

Hospital equipment and linens:

300 m Material (brown) for bed sheets (from IMPAS)	\$	1,650
150 m Material for bedspreads	\$	825
200 m Material for gowns, robes, etc.	\$	1,100
20 pcs Steel beds @3000Z	60,000 Z	
20 pcs Plastic-covered foam mattresses @2270Z	55,400 Z	
50 pcs Blankets @\$3.18	\$	159
	<u>115,400 Z</u>	<u>\$ 3,734</u>

Drug Inventory:

50,000 tblt Multivitamins @\$1.65/1000	\$	83
20,000 tblt Aspirin 500mg @\$2.54/1000	\$	51
50,000 tblt Chloroquine 250mg @\$16/1000	\$	800
1,000 vials Penicillin 4 M IU @\$299.30/1000	\$	299
10,000 caps Tetracycline @\$12.21/1000	\$	122
10,000 tblt Mebendazol @\$10.42/1000	\$	104
1,000 amp Streptomycine 5g @\$38.58/100	\$	386
10,000 tblt Isoniazide 100mg @\$2.75/1000	\$	28
5,000 caps Rifampicine 150mg @\$10.57/1000	\$	53
10,000 tblt Ethambutol 400mg @\$30.18/1000	\$	302
2,000 pcs Gauze bandages 5cm x 5cm @\$2.27/100	\$	45
250 pcs Elastic bandages 8cm x 4m @\$29.98/100	\$	75
250 pcs Elastic bandages 12cm x 1m @\$43.03/100	\$	108
5,000 roll Adhesive tape 5cm x 5m @\$99.84/100	\$	4,992
	<u>\$</u>	<u>7,448</u>

SUB-PROJECT 9: KASAJI-LUEO MEDICAL CENTER (ROMAN CATHOLIC)

The Hospital Sisters of Liège operate a dispensary at the Kasaji Catholic Mission with a 50-bed maternity, a 76-bed tuberculosis ward, and a small number of general medicine beds. The staff consists of four expatriate nuns with nursing/midwifery training and three nurses' aides without formal qualifications; arrangements have been made to hire an A2 (diplômé) nursing graduate from the Chisambu Medical Technical Institute of Kapanga in mid 1984. Approximately 600 deliveries are made per year in the maternity section.

Installation of a water-system for the medical center is included in the Shaba Refugee Water Project.

Solar Power:

- 1 12V DC Refrigerator (5 cu.ft. minimum; 10 cu.ft. optimal)
- 1 12V DC Microscope light
- 1 12V DC Sterilizer (for instruments, syringes, etc.)
- 1 12V DC Ultraviolet water purifier (Recommend Model CWS-4 made by Clean Water Systems; distributed by Communications Associates, 305 N. Republic Ave., Joliet, IL 60434-2399)

Sufficient Solar panels and battery capacity for above equipment

- 22 40W Solar panels with mounting brackets for lighting in various buildings
- 14 13W Fluorescent fixtures 12V DC
- 1 40W Fluorescent fixture 12V DC
- 59 0.10A 12V Incandescent bulbs and sockets
- 4 Switches for use with 12V lighting system
- 3000 ft. Stranded #12, 2-conductor wire
- 4 Controllers and regulators with ammeter and voltmeter
- 6 200A-h Batteries with acid
- 1 Inverter (12V DC to 220V 50Hz; recommend Model M12-1000 manufactured by Best)

Medical equipment:

Basic laboratory equipment for examining blood, urine, and stool specimens.
(All electrical equipment must be for 12V DC operation or with an additional inverter added.)

SUB-PROJECT 9: KASAJI-LUEO MEDICAL CENTER (ROMAN CATHOLIC)

COST ANALYSIS AND IMPLEMENTATION SCHEDULE

All equipment is requested for 1985

Solar Power:

1 pc	Refrigerator (12V DC) (5 cu.ft. min., 10 opt.)	\$	
1 pc	Microscope light (12V DC)		
1 pc	Sterilizer (for instruments, syringes, etc.)		
1 pc	Ultraviolet water purifier (recommend Model CWS-4 of Clean Water Systems; distributed by Communications Associations, 305 N. Republic Ave., Joliet, IL 60434-2399)	\$	425
?	Solar panels sufficient for above equipment and lab below		
22 pcs	40W Solar panels with mounting brackets		
14 pcs	13W Fluorescent fixtures 12V DC		
1 pc	40W Fluorescent fixture 12V DC		
59 pcs	0.10A 12V incandescent sockets with bulbs		
4 pcs	Switches for use with 12V system		
1000 m	Stranded #12, bi-conductor wire		
4 pcs	Controller-regulators with ammeter and voltmeter		
6 pcs	Batteries (200A-h) (with acid)		
1 pc	Inverter (12V DC to 220V 50Hz; recommend Best Model M12-1000 with circuit protection, distributed by Communications Associates at above address)	\$	1660

Medical Equipment:

2 pcs	Wash bottle @\$2	\$	\$	4
2 pcs	Funnel @\$2	\$	\$	4
2 pcs	Measuring pitchers (stainless steel) @\$2.50	\$	\$	5
2 pkt	Filter paper @\$1	\$	\$	1
1 pc	Drying rack @\$2	\$	\$	2
6 pcs	Stirring rods @\$0.40	\$	\$	2
1 pc	Alcohol burner @\$5	\$	\$	5
2000 pcs	Microscope slides @\$17.24/1000	\$	\$	34
1000 pcs	Cover slips @\$7.71/1000	\$	\$	8
4 pcs	Counting chambers (hematocytometer) @\$2	\$	\$	8
1 pc	Westergren apparatus (sedimentation rates) with spare tubes	\$	\$	13
20 pcs	Petri dishes with covers @\$0.57	\$	\$	11
100 pcs	Test tubes @\$0.75	\$	\$	8
2 pcs	Test tube racks @\$1.50	\$	\$	3
1 pc	Hand-operated centrifuge @\$44.93	\$	\$	45
100 pcs	Stylets @\$2.50/100	\$	\$	3
1 pc	Pasteur pipette @\$0.25	\$	\$	-
1 pc	Graduated pipette @\$2	\$	\$	2
20 l.	Methylated spirit @\$1.50/1.	\$	\$	30
5 l.	Formol saline solution \$2/1.	\$	\$	10
1 pc	Graduated cylinder @\$4	\$	\$	4
6 pc	Eyedroppers @\$0.50	\$	\$	3
250 g	Field's solutions (A & B each) @\$16	\$	\$	16
50 g	Giemsa's stain (powder) @\$12/25g	\$	\$	24
2 l.	Lieschmann's stain @\$4	\$	\$	8
1 l.	Carbol'fuschine stain @\$10	\$	\$	10
1 bt1	Immersion oil @\$4.20	\$	\$	4
500 ml	Methylene blue @\$1	\$	\$	1
2 l.	Benedict's solution @\$1	\$	\$	2
5 bt1	Clinitest stix @\$3.50	\$	\$	18
1 bt1	Dextrose stix @\$2.50	\$	\$	3
5 bt1	Multilab stix @\$7.	\$	\$	35

TOTAL

SUB-PROJECT 10: DILOLO POST DISPENSARY AND MEDICAL CENTER (ROMAN CATHOLIC)

The Franciscan Sisters at the Roman Catholic mission outside Dilolo Post («Old Dilolo») operate a large medical center consisting of a dispensary, a maternity handling approximately 50 births per month, a baby-fold for orphans, a large tuberculosis ward, and general wards for men, women, and children. In principle the medical center disposes of 200 beds, but it currently houses between 300 and 1200 people in August 1984 due to the influx of Angolan refugees, particularly kimbundu speakers from west-central Angola, who are in poor physical condition at their arrival. The staff consists of one expatriate and one Zairian qualified nurse plus a variable number of locally-trained nurse's aides and maintenance staff.

Installation of a new hydraulic ram, already on hand, is included in the Shaba Refugee Water Project.

Improvements in radio communications are included in Sub-Project 19, «Communications Improvements».

Requests for improvements at the Dilolo Post Medical Center include:

Building Improvements:

- 17 sheets Timberlite for ceiling repairs
- 20 sheets Roofing to reinstall roof on building used for babyfold
- 10 kg Roof putty for minor leaks
- 3 rolls Window screening
- 10 sacks Cement

Solar Power:

- 1 pc Refrigerator (12VDC) (5 cu.ft. minimum, 10 cu.ft. preferred)
- 1 pc 40W 12VDC fluorescent fixture (with bulb)
- 22 pc 13W 12VDC fluorescent fixtures (with bulbs)
- 1 pc Inverter (12VDC to 220V 50Hz) (Recommend Best Model M12-1000 with circuit protection; distributed by Communications Associates--see address in Sub-Project 9)
- 1 pc Regulator-controller with ammeter and voltmeter
- Solar panels sufficient for load
- Battery storage sufficient for load
- 1000 m Stranded #12 wire, biconductor

Equipment:

- 1 Examining table for prenatal clinic
- 1 Bathroom scale (spring-type for rapid readouts)
- 200 Plastic-covered foam mattresses
- 100 Bedside tables
- 32 Metal beds
- 1 Toyota Landcruiser (model chosen for standardization)
- 2 Equipment carts on wheels
- 2 Intravenous stands

106X

SUB-PROJECT 10: DILOLO POST DISPENSARY AND MEDICAL CENTER

COST ANALYSIS AND IMPLEMENTATION SCHEDULE

All improvements are requested for 1985:

Building Improvements:

17 shts	Masonite for ceiling repairs (2.4m x 1.2m) @600Z	10,200 Z	
20 shts	Steel corrugated roofing (3.0m x 0.7m) @\$13		\$ 260
10 kg	Roof putty @80Z	800 Z	
10 sacks	Cement @250Z	2,500 Z	
3 rolls	Window screening (25m) @5000Z	15,000 Z	
	Labor	7,000 Z	
	Transport	14,000 Z	
	TOTAL	49,500 Z	\$ 260

Solar Energy:

1 pc	Refrigerator (12VDC) (5cu.ft. min., 10 pref.)		
1 pc	40W Fluorescent fixture (12V DC)		
22 pcs	13W Fluorescent fixtures (12V DC)		
1 pc	Inverter (12V DC to 220V 50Hz) (Recommend Best Model M12-1000 with circuit pro- tection; distributed by Communications Associates--see address in Sub-Project 9)		\$ 1,660
1 pc	Regulator-controller with ammeter and voltmeter Solar panels sufficient for load Battery storage sufficient for load		
1000 m	Stranded #12, bi-conductor wire		

Equipment:

1 pc	Examining table for ante-natal clinic	11,070 Z	
1 pc	Bathroom scale (spring type)		\$ 20
200 pcs	Plastic-covered foam mattresses @2270Z	454,000 Z	
100 pcs	Bedside tables @6000Z	600,000 Z	
32 pcs	Steel beds @3000Z	96,000 Z	
1 pc	Toyota Landcruiser		\$22,000
2 pcs	Equipment dolly carts @\$30		\$ 60
2 pcs	IV stands @1219Z		
		2,438 Z	
		1,163,508 Z	\$22,080

SUB-PROJECT 11: KAFAKUMBA-KIMPUKI DISPENSARY AND MEDICAL CENTER

The Sisters of the Purity of Mary operate a large medical program at the Roman Catholic mission located 15 kilometers west of Kafakumba Post. The center consists of a dispensary, a maternity handling 700-800 births per year, and 96 beds divided among maternity, men's, women's, and pediatric wards. The staff consists of three expatriate sisters who are qualified nurses and 3 locally-trained nurse's aides and two midwife's aides without legal qualifications. For two years (1984-1986) a Spanish volunteer surgeon is working at the medical center, but there is no certainty that she will be followed by another doctor in residence.

Improvements to the water supply system (new hydraulic ram, renewal of piping, addition of filter to prevent future siltation of piping) are included in the Shaba Refugee Water Project.

Improvements in radio communications are included in Sub-Project 19, «Communications Improvements». Improvements in the airstrip at Kafakumba Lac, which also serves the Roman Catholic mission when needed, are included in Sub-Project 20, «Air Transportation Improvements».

Specific requests for improvements at the Kafakumba-Kimpuki Medical Center include:

Building Improvements:

- Construction of a second maternity ward
- Installation of ceilings in existing maternity ward and women's ward
- 500 meters Barbed wire and steel posts to keep livestock out of Medical Center grounds
- 500 l. White latex paint
- 750 kg White semi-gloss enamel paint
- 750 kg White masonry paint

Solar Power:

- 3 Fluorescent fixtures (40W 12V DC) with tubes for surgery and maternity
- 14 Fluorescent fixtures (13W 12V DC) with tubes for wards, dispensary, laboratory
- 1 Sterilizer for instruments, equipment, drapes (12V DC or with inverter)
- 1 Refrigerator (12V DC; 5 cu.ft. minimum, 10 cu.ft. optimal)
- 1 Inverter (12V DC to 220V 50Hz; recommend Best Model M12-1000 with circuit protection, distributed by Communications Associates--see Sub-Project 9 for complete address)
- 1 Water purifier (12V DC; recommend Clean Water Systems Model CWS-4, distributed by Communications Associates as above)
- 1000 meters Stranded #12 bi-conductor wire
- 1 Controller-regulator with ammeter and voltmeter
- Sufficient solar panel and battery storage capacity for above and spare

Equipment:

- 1 Instrument kit for inguinal hernia repair
- 1 Set of equipment for spinal anesthesia
- 1 Surgical suction machine (12V or with converter)
- 1 Obstetric suction machine (may be manually operated or 12V)
- 1 Electric scalpel
- 3 Post-operative supporters (for hydrocele surgery)

Laboratory Supplies:

Blood-typing reagents
Giemsa solutions
Carbolfuschine stain
Hydrochloric acid
Methylene blue stain
Acetone
Nitric acid
Glucose solution

Fencing the Medical Center Grounds:

1500 m Barbed wire
250 pcs Steel fence posts
250 pcs Intermediate stakes (1 1/2 m reinforcing rod)

SUB-PROJECT 11: KAFARUMBA-KIMPUNGI DISPENSARY AND MEDICAL CENTER (ROMAN CATHOLIC)

COST ESTIMATE AND IMPLEMENTATION SCHEDULE:

All improvements are requested for 1985:

Building Improvements:

1. Construction of second maternity ward (see enclosed plan):

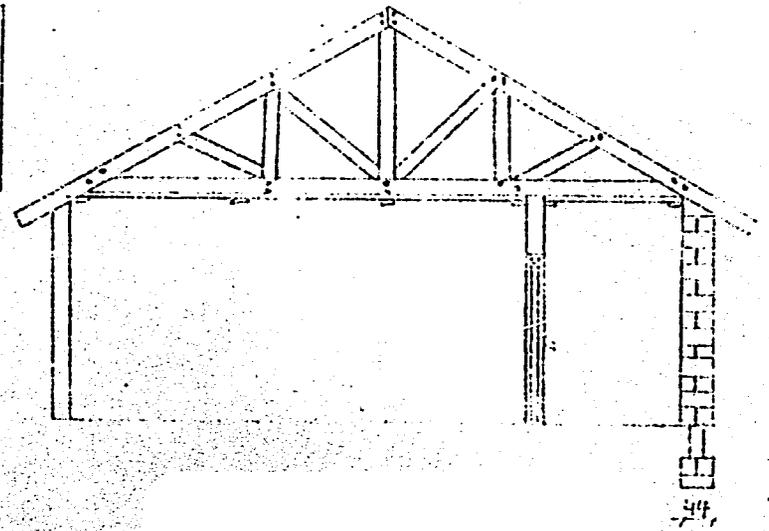
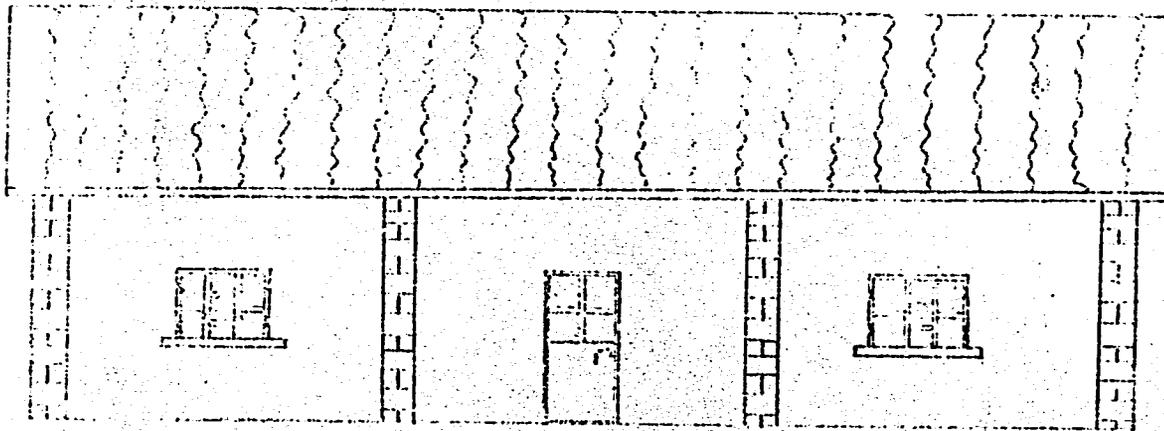
116 shts	Steel corrugated roofing @\$13 (3.0m x 0.70m)		\$ 1,508
480 m	4/11 for trusses @38.5Z	18,480 Z	
132 m	7/7 for trusses @35Z	4,620 Z	
60 m	Roof trim boards @40Z	2,400 Z	
111 pcs	Bolts (15cm) @20Z	2,220 Z	
111 pcs	Bolts (11cm) @20Z	2,220 Z	
15 m	Roof ridge capping @\$6.20		\$ 93
10 kg	Nails (12cm) @90Z	900 Z	
6 kg	Nails (8cm) @90Z	540 Z	
6 kg	Roofing nails @120Z	720 Z	
228 m	7/7 for ceiling framing	7,980 Z	
56 pcs	Masonite (2.4m x 1.2m) @600Z	33,600 Z	
270 m	Lath for ceiling @12Z	3,240 Z	
9 kg	Nails (6cm) @90Z	810 Z	
6 kg	Nails (4cm) @90Z	540 Z	
1 kg	Nails (3cm) @90Z	90 Z	
3 pcs	Steel door frames @2432Z	7,296 Z	
3 pcs	Wood doors with hardware (std) @1850Z	5,550 Z	
4 pcs	Steel windows (1.2m x 1.0m) @5000Z	20,000 Z	
290 scks	Cement	725,000 Z	
3 pcs	Reinforcing rod (8mm x 12m) @208Z	624 Z	
1 crt	Window glass @34,500Z	34,500 Z	
40 kg	Window putty @110Z	4,400 Z	
29,500 pcs	Bricks	649,000 Z	
	Labor	220,000 Z	
	Transport	440,000 Z	
	TOTAL	2,184,735 Z	\$ 1,601

2. Installation of ceilings in existing Maternity Ward:

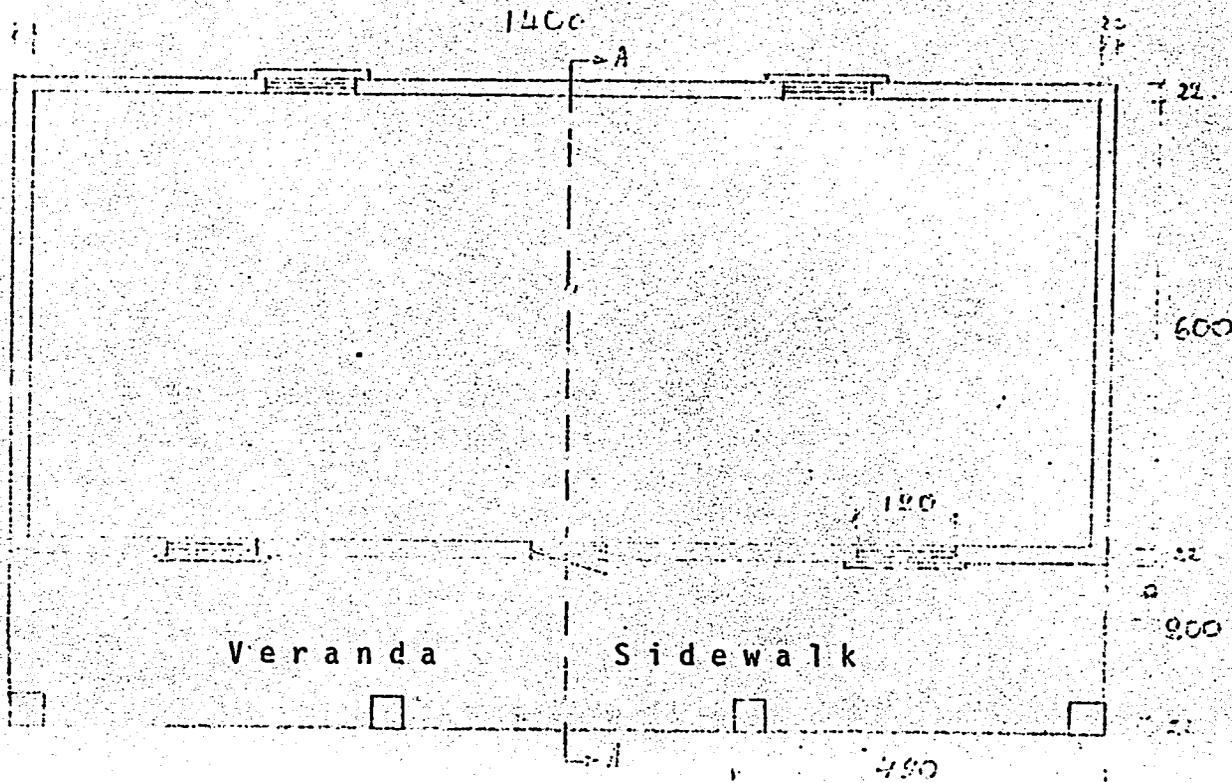
160 m	7/7 for ceiling framing @35Z	5,600 Z	
30 pcs	Masonite (2.4m x 1.2m) @600Z	18,000 Z	
180 m	Lath for ceiling @12Z	2,100 Z	
8 kg	Nails (6cm) @90Z	720 Z	
5 kg	Nails (5cm) @90Z	450 Z	
1 kg	Nails (3cm) @90Z	90 Z	
5 scks	Cement @250Z	1,250 Z	
	Labor	7,000 Z	
	Transport	14,000 Z	
	TOTAL	49,270 Z	

3. Installation of ceilings in existing Women's Ward:

176 m	7/7 for ceiling framing @35Z	6,160 Z	
32 pcs	Masonite (2.4m x 1.2m) @600Z	19,200 Z	
183 m	Lath for ceiling @12Z	2,196 Z	
8 kg	Nails (6cm) @90Z	720 Z	
5 kg	Nails (3cm) @90Z	450 Z	
1 kg	Nails (3cm) @90Z	90 Z	
5 scks	Cement @250Z	1,250 Z	
	Labor	7,000 Z	
	Transport	15,000 Z	
	TOTAL	52,066 Z	



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11-2

Additional Maternity Ward
 Kafakumba-Kimpuki (Mission Catholique)

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4. Paint:

750 kg White latex paint @72Z	54,000 Z
500 l White enamel paint @175Z	87,500 Z
750 kg White masonry paint @110Z	82,500 Z
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	224,000 Z

Solar Power:

TOTAL

3 pc Fluorescent fixtures (40W 12V DC) with tubes	
14 pc Fluorescent fixtures (13W 12V DC) with tubes	
1 pc Sterilizer for instruments, equipment, drapes (12V DC)	
1 pc Refrigerator (12V DC; 5 cu.ft. minimum, 10 cu.ft. optimum)	
1 pc Inverter (12V DC to 220V 50Hz; recommend Best Model M12-1000 with circuit protection, distributed by Communications Associates--see Sub-Project 9 for complete address)	\$ 1,660
1 pc Water purifier (12V DC; recommend Clean Water Systems CWS-4, distributed by Communications Associates as above)	\$ 425
1000 m Stranded #12 bi-conductor wire	
Sufficient solar panel and battery storage capacity for above with spare for other small electrical equipment with inverter	
1 pc Controller-regulator with ammeter and voltmeter	

Equipment:

1 set Instrument kit for inguinal hernia repair: 2 dissecting forceps, 4 tissue forceps, 6 artery forceps, 2 toothed forceps, 2 non-toothed forceps, 2 #3 scalpel handles, 1 #4 scalpel handle, 100 #11 scalpel blades, 100 #15 scalpel blades, 100 #22 scalpel blades, 100 #23 scalpel blades, 2 straight stitch scissors, 1 curved stitch scissors, 1 stitch holding forceps, cutting needles, semi-circular needles, atraumatic needles, catgut, dexion sutures, mersilk sutures, nylon sutures	\$ 125
1 set Instrument kit for spinal anesthesia 10 spinal needles (assorted sizes), 1 2ml glass syringe, 1 5ml glass syringe, 2 sponge-holding forceps	\$ 15
1 pc Surgical suction machine (foot-pedal operation) with spare O-rings, 100 spare catheters	\$ 26
1 pc Obstetric suction machine (12V DC or with an inverter)	\$ 245
1 pc Electric bistouri	\$ 50
3 pcs Suspensory bandages for hydrocele surgery @\$2	\$ 6
	<hr/>
TOTAL	\$ 467

Laboratory supplies:

1 btl	Blood type reagents (1 each) @\$28	\$	28
200 g	Giemsa stain @\$12/25g	\$	96
1 l.	Carbolfuschine stain @\$10	\$	10
1 l.	Hydrochloric acid (concentrated) @\$19	\$	19
2 l.	Methylene blue stain @\$2/l.	\$	4
10 l.	Acetone @\$19	\$	190
1 l.	Nitric acid (concentrated) @\$10	\$	10
10 l.	Glucose solution (for laboratory) @\$5.70	\$	57
	TOTAL	\$	414

Fencing Medical Center Grounds:

1500 m	Barbed wire @\$74.48/450m	\$	248
250 pcs	Fence posts @\$3.50	\$	1,744
250 pcs	Intermediate posts (1 1/2 m reinforcing rod) @208Z/6m		
	TOTAL	13,000 Z	\$ 1,992

SUB-PROJECT 12: SANDOA LEPROSARIUM DISPENSARY (ROMAN CATHOLIC)

The Franciscan sisters in Sandoa Town, besides working in the state hospital which is not covered in this project, operate a leprosarium under their own control on the west edge of Sandoa. The leprosarium dispensary also handles a larger population.

At the present time, the sisters must go to the Roman Catholic mission east of Sandoa for radio communications. In the event of medical emergencies, they must go to the United Methodist mission at Mwajinga 17 kilometers southeast of Sandoa to request an airplane to evacuate emergencies from the Sandoa hospital to Kapanga. Sub-Project 19, «Communications Improvements», includes a radio installation at the convent in Sandoa Town to allow more rapid emergency medical communications.

Building Improvements:

250 kg White latex paint.

Medical Equipment:

6 Wheelchairs for badly crippled lepers

Solar Power:

3 Fluorescent fixtures (12V DC 13W) with tubes
1 Sterilizer (12V DC) for instruments, syringes, etc.
1 Controller-regulator with ammeter and voltmeter
20 meters Stranded #12 bi-conductor wire
Sufficient solar panels and battery capacity

Drug Inventory:

50,000 Rifampicine 300mg
60,000 Ethambutol 400mg
30,000 Pyrazinamide 500mg

SUB-PROJECT 12: SANDOA LEPROSARIUM DISPENSARY (ROMAN CATHOLIC)

COST ANALYSIS AND IMPLEMENTATION SCHEDULE

All improvements requested for 1985

Building Improvements:

250 kg White latex paint @72Z 18,000 Z

Medical Equipment:

6 pcs Wheelchairs for crippled lepers @\$200 \$ 1,200

Solar Power:

3 pc Fluorescent fixtures (12V DC 13W) with lamps \$

1 pc Sterilizer (12V DC) for instruments, syringes, etc. \$

1 pc Controller-regulator with ammeter and voltmeter \$

20 m Stranded #12 bi-conductor wire \$

Drug Inventory:

50,000 Rifampicine 300mg @\$19.92/100 caps \$ 9,960

60,000 Ethambutol 400mg @30.18/1000 \$ 1,811

30,000 Pyrazinamide 500mg @10.87/100 \$ 3,261

\$ 16,232

SUB-PROJECT 13: NtIT DISPENSARY AND MEDICAL CENTER (ROMAN CATHOLIC)

The Salvatorian nuns operate a large dispensary, maternity, and 250 beds at the Catholic mission at Ntit near Kapanga. In 1983 there were 1448 persons hospitalized for 35,592 bed-days (an average of 97.5 beds occupied per day), 37,753 out-patient visits, 420 births, and 40 lepers under treatment. Staff consists of one sister who is a qualified nurse, 3 nurse's aides without legal qualifications, 1 qualified midwife, one midwife's aide, and three other staff including a nun caring for the facilities and overseeing the babyfold. All cases requiring laboratory or surgical facilities are transferred to Samuteb Memorial Hospital with which good cooperation exists. The Ntit Medical Center has particularly important work with maternity, orphan care, tuberculosis patients, and geriatrics.

Improvements to the water supply are included in the Shaba Refugee Water Project.

Specific requests for improvements to the Ntit Dispensary and Maternity include:

Building Improvements:

- Replacement of leaking tile roof of one ward (former girls' dormitory; 32m x 6m)
- Replacement of 30 square meters of timberlite in same building
- Installation of ceiling in two wards (former girls' dormitory; 27m x 4m)
- Replacement of 10 sheets of plastic roofing with metal roofing (old pharmacy)
- Installation of ceiling in old pharmacy (16m x 6m)
- 500 l. White semi-gloss enamel paint
- 500 kg White latex paint

Solar Power:

- 1 Fluorescent fixture (40W 12V DC) with tube for Maternity
- 16 Fluorescent fixtures (13W 12V DC) with tubes
- 1 Sterilizer (12V DC) for instruments, syringes, drapes, etc.
- 1 Refrigerator (12V DC; 5 cu.ft. minimum, 10 cu.ft. optimum)
- 1 Inverter (12V DC to 220V 50Hz; recommend Best Model M12-1000 with circuit protection; see Sub-Project 9 for address)
- 2 Controller-regulators with ammeter and voltmeter
- 200 m Stranded #12 bi-conductor wire
- Sufficient panels and battery storage capacity

Equipment:

- 40 Metal beds
- 1 Wheelchair
- 3 Sphygmomanometers
- 2 Westergren apparatus (for sedimentation rates) with extra tubes
- 1 Otoscope (must use ordinary expendable batteries)
- 5 Stethoscopes
- 250 Plastic-covered foam mattresses
- Sufficient cloth (brown) to make 500 sheets
- 250 Blankets

SUB-PROJECT 13: NTIT MEDICAL CENTER (ROMAN CATHOLIC)

COST ESTIMATES AND IMPLEMENTATION SCHEDULE:

All Improvements are requested for 1985

Building Improvements:

1. Replacement of roof of ward in former girls' dormitory

180 shts	Steel corrugated roofing @\$13 (3.0m x 0.70m)		\$ 2,340
	Roof trusses to replace as needed after examination when old roof removed; maximum needs given below:		
256 m	7/7 for roof trusses @35Z	8,960 Z	
364 m	4/11 for roof trusses @38.5Z	14,014 Z	
91 pcs	Bolts (15cm) @20Z	1,820 Z	
91 pcs	Bolts (11cm) @20Z	1,820 Z	
20 kg	Nails (12cm) @90Z	1,800 Z	
12 kg	Nails (8cm) @90Z	1,080 Z	
10 kg	Roofing nails @120Z	1,200 Z	
33 m	Roof ridge capping @\$6.20		\$ 205
15 shts	Masonite (2.4m x 1.2m) @600Z	9,000 Z	
20 m	Lath for ceiling @12Z	240 Z	
1 kg	Nails (6cm) @90Z	90 Z	
1 kg	Nails (5cm) @90Z	90 Z	
1 kg	Nails (3cm) @90Z	90 Z	
5 scks	Cement @250Z	1,250 Z	
	Labor	12,500 Z	
	Transport	20,000 Z	
	TOTAL	73,954 Z	\$ 2,545

2. Installation of ceilings in two tuberculosis wards

48 shts	Masonite (2.4m x 1.2m) @600Z	28,800 Z	
200 m	7/7 for ceiling @35Z	7,000 Z	
230 m	Lath for ceiling @12Z	2,760 Z	
8 kg	Nails (6cm) @90Z	720 Z	
6 kg	Nails (5cm) @90Z	540 Z	
1 kg	Nails (3cm) @90Z	90 Z	
5 scks	Cement @250Z	1,250 Z	
	Labor	10,000 Z	
	Transport	20,000 Z	
	TOTAL	71,160 Z	-----

3. Repair of roof and installation of ceiling in pharmacy

10 shts	Steel corrugated roofing @\$13 (3.0m x 0.70m)		\$ 130
56 shts	Masonite (2.4m x 1.2m) @600Z	33,600 Z	
288 m	7/7 for ceiling framing @35Z	7,980 Z	
241 m	Lath for ceiling @12Z	2,772 Z	
6 kg	Nails (6cm) @90Z	540 Z	
5 kg	Nails (5cm) @90Z	250 Z	
1 kg	Nails (3cm) @90Z	90 Z	
5 scks	Cement @250Z	1,250 Z	
	Labor	11,500 Z	
	Transport	23,000 Z	
	TOTAL	80,982 Z	\$ 130

4. Paint

500 l. White semi-gloss enamel paint @175Z	87,500 Z
500 kg White latex paint @72Z	36,000 Z
	<hr/> 123,000 Z

Solar Power:

1 Fluorescent fixture (40W 12VDC) with tube	
16 Fluorescent fixtures (13W 12VDC) with tubes	
1 Sterilizer (12V DC) for instruments, syringes...	
1 Refrigerator (12V DC; 5 cu.ft. minimum, 10 cu.ft. optimum)	
1 Inverter (12V DC to 220V 50Hz; recommend Best Model M12-1000 with circuit protection; see Sub-Project 9 for address)	\$ 1,660
2 Controller-regulators with ammeter and voltmeter	
200m Stranded #12 bi-conductor wire	
Sufficient solar panels and battery capacity	

Equipment:

40 Steel beds @3000Z	120,000 Z	
1 Wheelchair @\$200		\$ 200
3 Sphygmomanometers @\$41.07		\$ 123
2 Westergren apparatus (sedimentation rates) & spare tubes		\$ 19
1 Otoscope (must use ordinary expendable batteries) @\$25		\$ 25
5 Stethoscopes @\$7.26		\$ 36
250 Plastic-covered foam mattresses @2270Z	562,500 Z	
Sufficient cloth (brown) to make 500 sheets @\$8.24		\$ 4,120
250 Blankets @\$3		\$ 750
	<hr/> 682,500 Z	\$ 4,523

SUB-PROJECT 14: KALAMB DISPENSARY AND MATERNITY (ROMAN CATHOLIC)

The Salvatorian sisters at the Kalamb Catholic mission east of Kapanga operate a dispensary and maternity. The staff consists of one sister who is a medical doctor (general practitioner) and one sister who is a qualified midwife; other staff members are Zairians without formal qualifications. The dispensary is a small building in permanent materials; the maternity is currently a traditional adobe house with thatched roof.

The first priority of the medical staff is improved transportation by air to bring in medications and other supplies. Improvements to the Kalamb airstrip to allow flights under full load by all types of aircraft in the United Methodist fleet are included under Sub-Project 20, «Air Transportation Improvements».

Improvements in water supply are included in the Shaba Refugee Water Project.

Specific requests for the Roman Catholic dispensary and maternity at Kalamb include:

Building Improvements:

Construction of a new maternity building (1985 or later)

Solar Power:

- 1 pc Fluorescent fixture (40W 12V DC) with tube for maternity
- 6 pc Fluorescent fixture (13W 12V DC) with tubes
- 1 pc Inverter (12V DC to 220V 50Hz; recommend Best model M12-1000 with low-voltage circuit protection; see Sub-Project 9 for address)
- 40 m Stranded #12 bi-conductor wire
- 1 pc Controller-regulator with ammeter and voltmeter
- Sufficient solar panel and battery storage capacity

Equipment:

- 1 Motorcycle (Honda Trail 110 for standardization)
- 12 Steel beds for the maternity building
- 12 Plastic-covered foam mattresses

SUB-PROJECT 14: KALAMB DISPENSARY AND MATERNITY (ROMAN CATHOLIC)

COST ANALYSIS AND IMPLEMENTATION SCHEDULE:

1985:

Solar Power:

1 pc	Fluorescent fixture (40W 12V DC) with tubes	
6 pc	Fluorescent fixtures (13W 12V DC) with tubes	
1 pc	Inverter (12V DC to 220V 50Hz; recommend Best model M12-1000 with low-voltage circuit protection; see Sub-Project 9)	\$ 1,660
1 pc	Controller-regulator with ammeter and voltmeter	
40 m	Stranded #12 bi-conductor wire	
	TOTAL	

Equipment:

1 pc	Motorcycle (Honda Trail 90) @\$1350	\$ 1,350
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1986:

Building Improvements:

Construction of a new maternity building (See Sub-Plan 2 for Maternity Standard Plan and detailed cost estimates)	651,453 Z	\$ 2,093
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Equipment:

12 pcs	Steel beds @3000Z	36,000 Z
12 pcs	Plastic-covered foam mattresses @2270Z	27,240 Z
	TOTAL	<u>63,240 Z</u>

SUB-PROJECT 15: CHISAMBU MEDICAL TECHNICAL INSTITUTE

Chisambu Medical Technical Institute is a state-recognized nursing school at the A2 (diplômé) level. Samuteb Memorial Hospital has a long history in training Zairian staff, and formal nursing courses have existed at several periods of its history. The present school was organized shortly after Belgium granted independence to the Congo in order to increase the number of qualified medical personnel who would be willing to serve in rural situations. (The other longstanding school in Shaba which operates at the A2 level is in Lubumbashi; a new United Methodist A2 nursing school has been founded at Kamina in Haut-Lomami Sub-Region outside the zone of the current project.) The school operated at the A3 level (two years, requiring a minimum of third year of secondary school for admittance) until the mid 1970s. It is now a four-year program, requiring completion of the fourth year of secondary school as a prerequisite. Students are selected without regard to religious affiliation or birthplace after a competitive written examination given throughout Shaba Region, followed up by an oral examination given to selected candidates in their home areas by the school director before they come to Kapanga.

Technical education is always a relatively expensive form of teaching, and Chisambu Medical Technical Institute is no exception. The United Methodist Church decided many years ago to put a major part of its health funding into medical education to promote qualified Zairian medical practitioners with programs adapted to the needs of the general population. Graduates of Chisambu Medical Technical Institute have been very highly praised throughout the region, serving with the Gecamines hospitals, the University hospital in Lubumbashi, the railroad hospitals and clinics, and in state institutions. Chisambu Medical Technical Institute continues to cooperate with these medical centers in organizing the internship program which occupies most of the fourth year of studies. However, it has also made a significant contribution to its goal of forming Zairian nurses in a rural environment who would be apt to serve in rural areas. During the field study by the local design team, we found that every qualified nurse in non-United Methodist as well as in United Methodist institutions in Lualaba Sub-Region had been trained at Kapanga.

Building Improvements:

An additional classroom building remains to be completed as part of the program from the 1970s to accommodate the four-year A2 program. Construction was programmed for 1977 but delayed because of the war. Foundations and walls were built in 1980, but other critical financial problems have prevented the building from being roofed and put into service.

Roofing: 8.5m x 25m building
13 Steel window frames 1.2m x 1m
100 sacks Cement
1 case Window Glass
Wood, nails, etc. for roof trusses
Steel doors and miscellaneous hardware

Equipment:

Duplicating machine (Gestetner required for standardization and maintenance)
Long-carriage manual typewriter (French keyboard)
Electronic stencil machine (for Gestetner stencils)
Photocopy machine (Mita DC-132 required for standardization)
150 Steel chairs for classrooms and study hall
32 Tables (long folding «church-basement» tables)
2 Four-drawer filing cabinets
French-language textbooks (\$10,000 estimate for purchase in Quebec and Europe plus transport)

Solar Power:

- 40 8W Fluorescent fixtures (12V DC)
- 4 40W Fluorescent fixtures (12V DC)
- Sufficient solar panels and battery storage capacity
- Controller-regulator with voltmeter and ammeter
- 2 Inverters (12V DC to 220V 50Hz)
- 300m Wire (#12 stranded, bi-conductor)

SUB-PROJECT 15: CHISAMBU MEDICAL TECHNICAL INSTITUTE (UNITED METHODIST)

COST ANALYSIS AND IMPLEMENTATION SCHEDULE:

All improvements are requested for 1985:

Building Improvements:

176 shts	Steel corrugated roofing (3.0m x 0.7m)			\$ 2,288
	@\$13			\$ 167
27 m	Roof ridge capping @\$6.20			
425 m	4/11 for roof trusses @38.5Z	16,363 Z		
300 m	7/7 for roof trusses @35Z	10,500 Z		
99 pcs	Bolts (15cm) @20Z	1,980 Z		
99 pcs	Bolts (11cm) @20Z	1,980 Z		
380 m	7/7 for ceiling framing	13,300 Z		
320 m	Lath for ceiling @12Z	4,680 Z		
8 kg	Nails (12cm) @90 Z	720 Z		
8 kg	Roofing nails @120Z	960 Z		
6 kg	Nails (8cm) @90Z	540 Z		
5 kg	Nails (6cm) @90Z	450 Z		
1 kg	Nails (3cm) @90Z	90 Z		
90 shts	Masonite (2.4m x 1.2m) @600Z	54,000 Z		
13 pcs	Steel windows (1.2m x 1.0m) @5000Z	65,000 Z		
7 pcs	Steel door frames (standard) @2432Z	17,024 Z		
5 pcs	Steel doors (standard) with hardware @8909	44,545 Z		
2 pcs	Wooden doors (standard) with hardware @1850	3,700 Z		
1 crte	Window glass @34,500Z	34,500 Z		
100 scks	Cement @250Z	25,000 Z		
	Labor	75,000 Z		
	Transport	150,000 Z		
	TOTAL	520,332 Z		\$ 2,455

Equipment:

1 pc	Duplicating machine (Gestetner recommended)		\$ 1,200
1 pc	Typewriter (manual, long-carriage, french keyboard)		\$ 500
1 pc	Electronic stencil machine (for Gestetner stencils)		\$ 1,500
1 pc	Photocopier (MITA DC-132 suggested for standardization)		\$ 2,500
150 pcs	Steel chairs for classrooms and study hall @\$18		\$ 2,700
32 pcs	Steel and masonite tables (long folding «church basement» tables recommended)		\$ 3,200
2 pcs	Four-drawer filing cabinets	46,898 Z	
	French-language medical textbooks (including transport from Quebec and Europe)		\$ 10,000
		46,898 Z	\$ 21,600

Solar Power:

40 pcs	Fluorescent fixtures (15W 12V DC) & tubes		
4 pcs	Fluorescent fixtures (40W 12V DC) & tubes		
2 pcs	Inverters (12VDC to 220V 50Hz; recommend Best model M12-1000 with low-voltage circuit protection; see Sub-Project 9 for details)		\$ 1,660
300 m	Stranded #12 bi-conductor wire		
1 pc	Controller-regulator with ammeter and voltmeter		
	Sufficient solar panels and battery storage capacity		

SUB-PROJECT 16: KAPANGA PUBLIC HEALTH PROGRAM

Samuteb Memorial Hospital has long had an active public health outreach. This is shown partly through the emphasis on satellite rural dispensaries rather than central hospital bed care. It is also manifested in preventative medical care through popularizing improved sanitation, vaccination, etc. The present medical director of the hospital, Dr. Pauline Chambers, has obtained a graduate degree in public health since coming to Kapanga in 1965.

The 1984 vaccination program encompassed eight rural village centers plus Musumb. The proposed 1985 schedule lists fourteen other villages. The separate Kapanga Rural Dispensary Sub-Project includes equipment to increase and decentralize the vaccination program through provision of solar refrigerators at three outlying major dispensaries to act as vaccine dispersal points, with other dispensaries having insulated boxes and bicycles to transport vaccines for immediate use in their villages.

The Kapanga Rural Dispensary Sub-Project has also included purchase of teaching aids, specifically the series of flip-charts prepared by Dr. Courtejoie in Bas-Zaïre, for each of the 19 dispensaries and 12 health posts in Kapanga Zone.

The Chisambu Medical Technical Institute, attached to Samuteb Memorial Hospital, has long been known for its graduate nurses who make up almost the entire number of formally-trained medical personnel in Lualaba Sub-Region. As part of the change from a two-year «A3» program to a four-year «A2» diploma during the 1970s, a very large emphasis has been placed on public health work in the new curriculum. Sub-Project 15 is designed to improve the teaching facilities of this school, given the serious shortage of qualified Zairian medical personnel in the Sub-Region, especially in the otherwise efficiently-operating Roman Catholic medical centers.

A final, and newer, aspect of public health work in Kapanga Zone is the recent creation of Rural Health Centers with trained A2 diplomé nurses who are freed from curative medicine responsibilities to devote full time to public health promotion. The first such center is in operation at Kalamb, sharing space with the United Methodist dispensary. The first sphere of activity is in Maternal/Child Health: preschool examinations, antenatal examinations, nutritional and sanitary propaganda, family planning, and vaccination campaigns. The second sphere is in Community Health: medical censuses, identification of potential problems, environmental improvements (insect control, sanitary and water improvements). The Rural Health Center at Kalamb is responsible for 42 villages bounded on the south by Kamwang, on the west by Mwant Itaj, on the east by Chiyng, and on the north by Mwandj, Ruumbu, and Malemba; the population is estimated at 14,391 for this area. July 1984 activities included 1260 children weighed, no vaccinations administered (no vaccine available), 15 high-risk pregnancies identified for referral to Samuteb Memorial Hospital (of 135 pregnant women examined), 15 cases of ganglionic tuberculosis and 20 of pulmonary tuberculosis diagnosed, and 25 cases of leprosy treated. Four wells were dug. In principle all villages should have been visited; in fact, with only bicycle transport 22 received visits.

Additional Rural Health Centers are planned in the immediate future for Chibab in the western part of Kapanga Zone and at Musumb.

Equipment Needs for Public Health Programs (Not Listed Elsewhere)

- 5 Motorcycles (Honda Trail 110 for standardization)
- 8 Lockable steel cabinets for equipment and records
- 3 Desks
- 12 Chairs
- 5 Sets of Courtejoie flip-charts
- 1 Toyota Landcruiser for supervision and village visits from hospital
- 1 roll newsprint for teaching purposes (100-250 meters)

Training Program for Village Health Agents

Triennial courses at Chisambu Medical Technical Institute during nursing

Training Program for Traditional Birth Attendants:

A program during the 1986 nursing school dry season vacation is planned to improve the skills of village midwives, including methods to ensure more sterile deliveries, family planning, etc. Related programs have been operated at other times to train midwives for hospital or dispensary maternities and for traditional birth attendants who have had experience but no previous theoretical medical training.

Refresher courses for Hospital/Major Dispensary Nurses:

A third training program during alternative years with those for midwives and village health agents has been refresher courses for nurses working in a hospital situation, including major dispensaries with multiple staff and specialized departments. Most of these nurses had received the former A3 nurse's training program with little if any emphasis on public health; another component is obviously updating of the nurses' knowledge of current techniques and treatments.

SUB-PROJECT 17: KASAJI RURAL DEVELOPMENT PLAN HEALTH COMPONENT (ROMAN CATHOLIC)

The Franciscan priests of the Kasaji Roman Catholic mission are creating an integrated village-based development scheme. Village parish committees oversee agricultural projects, health projects, and catechism instruction within their boundaries.

The health component of the rural development plan will train village representatives (similar to the Rural Health Agents in the program already operating in Kapanga Zone under United Methodist supervision) and equip them with basic external and oral medications for use in their villages. They are also to act as referral agents to dispensaries trained by qualified nurses or to a central medical center or hospital. Note: The syringes are for use only by the supervising nurses at their central offices or during village visits; these will be qualified nurses.

Communications improvements (purchase of diodes, variable capacitors, resistors, and loading coils for existing mobile radios) are included in Sub-Project 19, «Communications Improvements».

Initial Drug and Equipment Inventory:

100,000	Aspirin 500mg
32,000	Amodiaquine 200mg
1,000	Chloramphenicol ophthalmic ointment 1%, 5g
100,000	Chloroquine 100mg
50 l.	Dettol (chloroxyleneol 49mg/ml)
60,000	Jodchlornhydroxychinoline 250mg
100,000	Mebendazol 100mg
150,000	Multivitamins
90,000	Noscapine 15mg
500 l.	Noscapine syrup 15mg/5ml
150,000	Iron sulphate 200mg
1,100	Tetracycline ophthalmic ointment 1%, 5g
400,000	Vitamin B-complex
70kg	Cotton-wool
10,000	Adhesive tape, 2.5cm x 5m
10,000	Adhesive tape, 5cm x 5m
50 l.	Chloroquine phosphate syrup 50mg/5ml
10kg	Ichtyollé 10% cream
50 l.	Multivitamin syrup
10,000	Compact gauze, 5cm x 5cm, 8 ply
5,000	Compact gauze, 10cm x 10cm, 8 ply
2,000	Compact gauze, 20cm x 20cm, 8 ply
10,000	Adhesive tape, 1.25cm x 5m
504	Syringe needles (reusable); Luer 23G
504	Syringe needles (reusable), Luer 25G
20	Syringes (reusable), 2cc Luer
20	Syringes (reusable), 5cc Luer
10	Syringes (reusable), 10cc Luer
2	Sphygmomanometers
2	Stethoscopes
100	Celsius thermometers with plastic cases
30,000	Sulphadoxine/primethamine 500/25mg
40,000	Vitamine B1 100mg
5,000	Xylomethazoline 0.1% (nose drops)
20	Syringes (reusable), 1cc Luer (for BCG vaccination)
20kg	Bicarbonate of soda
20 l.	Isopropyl Rubbing Alcohol 70%
	Sterilizing solution (for syringes and needles)
	Plastic boxes for sterilized needles and syringes
	Anusol

Equipment:

- 1 Refrigerator (12V DC; 3-5 cu.ft.)
- 1 Ultraviolet water purifier (12V DC) (Recommend Model CWS-4 of Clean Water Systems, distributed by Communications Associates--see Sub-Project 9 for full address)
- Sufficient solar panels and battery capacity
- Controller-regulator with voltmeter and ammeter
- 20 meters stranded #12 bi-conductor wire

SUB-PROJECT 17: KASAJI RURAL DEVELOPMENT PLAN HEALTH COMPONENT (ROMAN CATHOLIC)

COST ANALYSIS AND IMPLEMENTATION SCHEDULE:

All investment is requested for 1985.

Drug and Equipment Inventory: (IMPAS prices, delivered Lubumbashi)

100,000	tblt Aspirin 500mg @\$2.54/1000	\$	254
32,000	tblt Amodiaquine 200mg @\$22.60/1000	\$	723
1,000	tube Chloramphenicol ophthalmic ointment 1%, 5g @\$19.29/100	\$	193
100,000	tblt Chloroquine phosphate 100mg @\$6.47/1000	\$	647
50	l. Dettol (chloroxyleneol 49mg/ml) @\$2.75/l.	\$	138
60,000	tblt Jodchlorhydroxyquinoline 250mg @\$10.46/1000	\$	628
100,000	tblt Mebendazole 100mg @\$10.42/1000	\$	1,042
150,000	tblt Multivitamins @\$1.55/1000	\$	165
90,000	tblt Noscapine 15mg @\$5.65/1000	\$	509
500	l. Noscapine syrup 15mg/5ml @\$2.62/l.	\$	1,310
150,000	tblt Iron sulphate 200mg @\$1.35/1000	\$	203
1,100	tube Tetracycline ophthalmic ointment 1%, 5g @\$17.65/100	\$	194
400,000	tblt Vitamin B-complex @\$1.62/1000	\$	648
70	kg Cotton wool @\$3.63/kg	\$	254
10,000	roll Adhesive tape 2.5cm x 5m @\$42.21/100	\$	4,221
10,000	roll Adhesive tape 5cm x 5m @\$99.84/100	\$	9,984
50	l. Chloroquine phosphate syrup 50mg/5ml @\$1.98/l	\$	99
10	kg Ichtyollé 10% cream	\$	50
50	l. Multivitamin syrup @\$2.51/l.	\$	126
10,000	pcs Compact gauze, 5cm x 5cm, 8 ply @\$2.27/100	\$	227
5,000	pcs Compact gauze, 10cm x 10cm, 8 ply @\$6.35/100	\$	318
2,000	pcs Compact gauze, 20cm x 20cm, 8 ply @\$20.88/100	\$	418
10,000	roll Adhesive tape 1.25cm x 5m @\$35.58/100	\$	3,558
504	pcs Syringe needles, Luer 23G @\$1.47/12	\$	62
504	pcs Syringe needles, Luer 25G @\$1.47/12	\$	62
20	pcs Syringes, 2cc Luer @\$1.67/pc	\$	33
20	pcs Syringes, 5cc Luer @\$2.02/pc	\$	40
10	pcs Syringes, 10cc Luer @\$2.54/pc	\$	25
2	pcs Sphygmomanometers @\$41.07/pc	\$	82
2	pcs Stethoscopes @\$7.26/pc	\$	15
100	pcs Thermometers (high range; metric) @\$0.77/pc	\$	77
30,000	tblt Sulphadoxine/primethamine 500/25mg @\$24.37/1000	\$	743
40,000	tblt Vitamin B12 100mg @\$4.18/100	\$	1,672
5,000	bttl Xylomethazoline 0.1% nose drops @\$37.67/100	\$	1,879
20	pcs Syringes, 1cc @\$1.50	\$	30
20	kg Sodium bicarbonate @\$1.93/kg	\$	39
20	l. Isopropyl alcohol 70% @120Z	\$	
1	l. Sterilizing solution (chlorhexidine) @17.68	\$	18
	Plastic boxes for sterilized needles & syringes	\$	1
100	pcs Anusol @\$4.81/100 (anti-hemorrhoid)	\$	5
	TOTAL		2,400 Z
			\$ 30,692

Equipment:

1	pc Refrigerator (12V DC; 3-5 cu.ft.)		
1	pc Ultraviolet water purifier (12V DC; recommend Clean Water Systems model CWS-4)	\$	425
	Sufficient solar panels with mounting brackets		
	Sufficient battery capacity		
1	pc Controller-regulator with ammeter and voltmeter		
20	m Stranded #12 bi-conductor wire		

SUB-PROJECT 18: KATOKA PUBLIC HEALTH PILOT PROGRAM

The Garenganze mission proposes a third model of public health outreach into the rural villages. Finding itself blessed with several expatriate medical workers with previous experience and specialized training in public health, it proposes a careful study and pilot program operating in the western portion of Dilolo Zone. While anchored on the Katoka mission as a logistical base, this scheme differs from the Kapanga dispensary/nurse program and even from the Kasaji village health representative model in its effort to deemphasize strongly its connection with curative medicine.

The proposal is based on a study done in Mwinilunga District of Zambia (directly south of Mutshatsna and thus a geographical and ethnic area very similar to parts of Lualaba Sub-Region) by Mrs. Gillian Raymond in conjunction with the World Health Organization and the Zambian National Health Service. The scheme is designed to use villagers themselves to make environmental changes in their villages which will lessen disease risks: destroying mosquito habitat, balancing nutritional needs through agricultural progress, better sanitation and water supplies, etc.

At the pilot stage, the scheme would involve an area of approximately 10,000 people only. Village representatives would be solicited for training in doing a medical census and continuing to record data, in the basic elements of good health and nutrition and of promotional techniques to diffuse this information in the villages, and in acting as referral agents for those villagers needing more specialized care. Village representatives would be invited to an initial training course in a local vernacular language, followed by periodic refresher courses as the program evolves. Twelve to fifteen of these Primary Health Care Officers would be selected during the pilot stage of the program; they would be unpaid volunteers during the program with the exception of having their expenses paid during training. Several individuals would be trained as itinerant or Secondary Health Care Officers for oversight. These in turn would be supervised by the area supervisors for medical and for agricultural programs. (Missionaries at Katoka at this time are well adapted to these two roles.) The Secondary Health Care Officers would have a more substantial medical training and thus more than the simple first-aid kit of the village representatives.

The scheme requires funding at several levels, despite the emphasis on voluntary self-help. First, training courses will initially have to be paid solely from exterior sources. Secondly, even the modest first-aid kits of the Primary Health Care Officers and the more sophisticated equipment of the Secondary Health Care officers will require initial purchase. Third, the emphasis on field study in this scheme indicates use of a simple personal computer (using a 12V DC power supply) for data collection and analysis at the level of the area supervisory based in Katoka. Bicycles for the primary-level officers and a motorcycle for the area supervisor will require purchasing. Seeds and other initial agricultural inputs are needed to launch the campaign for better nutrition. Some materials and equipment must be purchased for water supply and sanitation improvements in the villages.

Equipment:

- 1 Personal computer for data storage at Katoka base, complete with printer and 12V DC power supply (battery and inverter)
- 15 Bicycles
 - 1 Honda Trail 110 motorcycle (model chosen for standardization)
- 15 Basic first aid kits (razor blades, anti-malarials, aspirin, rehydration salts, disinfectant, cotton wool, gauze, adhesive bandages, etc. to be supplied from Katoka stocks; estimated at \$50 in national currency)
- 4 Secondary Health Officer's medical kits (thermometer, sphygmomanometer, stethoscope, pulseometer, anthelmintics, etc. to be supplied from Katoka stocks; not to exceed \$250 per kit in national currency)
- Tools for latrine and well construction (hoes, machetes, picks, buckets; not to exceed \$1000 total in national currency)

- Seeds and other agricultural inputs (not to exceed \$5000 in national currency)
- Record-keeping materials (computer supplies, record books for Primary and Secondary Health Officers, notebooks for use in training programs; not to exceed \$7500 in national currency)
- Initial supplies of anti-mosquito spray (to be used with initial brush-clearing operations but should not be necessary later; estimated at \$2000 in national currency)
- Initial medicine stocks (presumably referrals will increase considerably in initial phase before preventative aspects of program begin to produce their effects; estimated at \$3500 in U.S. currency)

Training Programs:

- Initial training for 15 Primary Health Care Officers (estimated at \$2000 in national currency per person including materials)
- Initial training for 4 Secondary Health Care Officers (\$2000 in national currency per person including materials)
- Annual reassessment and refresher courses (\$20,000 per year in national currency for four years)

The Katoka Public Health Pilot Program still requires a great deal of work in the initial areas of need assessment and review. However, the overwhelming need for a combined agricultural-health plan in areas impacted severely by war and the refugee situation is obvious to all observers, and it should be possible with initial aid to produce a self-perpetuating project based not only on a one-for-one replacement basis (user fees for items consumed) but also by convincing communities as health standards improve of their economic interest in supporting themselves the field workers whom they themselves will have chosen to help them improve health and living standards.

The present preliminary proposal is an attempt, given very limited time, to design a program on the basis of the possibility of financing at this time and a uniquely favorable conjuncture of personnel with specialized training in public health and with experience in adjoining areas of Zambia. The Garenganze Mission would be able to provide expatriate personnel with linguistic competence in the local vernaculars for the agricultural, public health supervision, clinical referral center, and training and assessment functions. The program would begin with a thorough village-to-village medical census in the pilot area in 1985 before completing design of the initial training programs to be conducted in late 1985 or 1986.

SUB-PROJECT 18: KATOKA PUBLIC HEALTH PILOT PROGRAM (GARENGANZE)

COST ANALYSIS AND IMPLEMENTATION SCHEDULE:

1985: Equipment

1 Personal computer		\$ 2,000
1 Printer for personal computer (letter-quality recommended to avoid special paper requirement)		\$ 2,000
15 Bicycles @\$190		\$ 2,850
1 Motorcycle (Honda Trail 110) @\$1350		\$ 1,350
15 Primary Health Care Officer's first-aid kits @\$50		\$ 750
4 Secondary Health Care Officer's medical kits @\$250		\$ 1,000
Hand tools	37,000 Z	
Seeds and agricultural inputs	185,000 Z	
Record-keeping materials	277,500 Z	
Insecticides for initial use	74,000 Z	
Additional drug stocks for initial referrals		\$ 3,500
SUB-TOTAL	388,685 Z	\$ 13,450
<u>Initial Training for 15 Primary Health Care Officers:</u>	1,110,000 Z	
<u>Initial Training for 4 Secondary Health Care Officers:</u>	296,000 Z	
1986: <u>Reassessment and Refresher Courses:</u>	740,000 Z	
1987: <u>Reassessment and Refresher Courses:</u>	740,000 Z	
1988: <u>Reassessment and Refresher Courses:</u>	740,000 Z	
1989: <u>Reassessment and Refresher Courses:</u>	740,000 Z	

SUB-PROJECT 19: COMMUNICATIONS IMPROVEMENTS

The objective of this sub-project is to improve communications among the medical institutions of the various private voluntary agencies (churches) operating in Lualaba Sub-Region. In general terms, each Roman Catholic mission and United Methodist district have short-wave radio communications at the present time; however, the more-recently established United Methodist districts of Kasaji and Mutshatsha are not yet equipped, nor is the Garenganze center at Katoka. However, the Roman Catholic and United Methodist radio networks are parallel and independent, making communication across denominational lines practically impossible. This has limited the access of Roman Catholic institutions to use of the United Methodist aviation program for evacuation of medical emergencies or delivery of critical supplies.

The program proposes to purchase and install 13 Matrix Herald single-sideband transmitter-receivers with appropriate power supplies for each location. It will also purchase parts needed to adapt three existing radios of the same model in the Roman Catholic network to permit communications with the United Methodist aviation program. The new radios will fill in certain gaps (none of the churches currently has a radio in the Mutshatsha area, for example), replace serviceable radios which cannot accept additional frequencies needed in the Lualaba area, and replace obsolete models which have become difficult to maintain adequately and, in at least two cases, are currently inoperable.

Radio locations and improvements:

Kapanga-Musumb (United Methodist) *	New radio with solar power (obs.)
Kapanga-Ntit (Roman Catholic) ***	No improvement needed (missions less than 5 km apart)
Kalamb (United Methodist) *	New radio with solar power (obs.)
Kalamb (Roman Catholic) ***	New radio with solar power (for aircraft frequencies)
Sandoa Post (Roman Catholic) ***	New radio with solar power (no existing radio with Franciscan Sisters in town)
Sandoa-Mwajinga (United Methodist) *	New radio with solar power (obs.)
Kafakumba-Kimpuki (Roman Catholic) ***	New radio with solar power (inadequate frequencies)
Kafakumba Lac (United Methodist) *	New radio with solar power (obs.)
Dilolo Post (Roman Catholic) ***	New radio with solar power (inadequate frequencies)
Dilolo Gare (United Methodist) *	New radio with 220V battery charger (obsolete radio)
Kasaji Post (United Methodist) */**	New radio with solar power (no existing radio in town; can serve Garenganze hospital at Kasaji-Chisengama as well)
Kasaji-Lueo (Roman Catholic) ***	New crystals, etc. for existing Matrix Herald radios ****
Mutshatsha Gare (United Methodist) *	New radio with solar power (no existing radio; can serve Garenganze dispensary at Mutshatsha mission as well; Roman Catholic mission currently unstaffed)
Katoka (Garenganze) **	New radio with solar power (no existing radio since 1977 war)
Kolwezi-Mwangeji Hospital *	New radio with 220V battery charger (no existing radio)
Kolwezi-Ville (United Methodist) * Medical Center	New radio with 220V battery charger (old radio out of service)
6 Portable installations *	For use with village vaccination programs, refugee relief teams, etc.

- * United Methodist radios to carry frequencies 5775, 7305
- ** Garenganze radios to carry frequencies 5775, 7305, 5440, 3874, 6770
- *** Roman Catholic radios to carry frequencies 6461.5, 5775, 7305
- **** Parts needed for frequency additions to Herald Matrix radios at Kasaji (5775):
 - 3 diodes
 - 3 variable capacitors
 - 3 resistors
 - 3 loading coils

SUB-PROJECT 19: COMMUNICATIONS IMPROVEMENTS

COST ANALYSIS AND IMPLEMENTATION SCHEDULE

All Improvements requested for 1985

14 Matrix Herald single-sideband transmitter-receivers (stationary installation) with wide band dipole antennas (9 with frequencies 5775, 7305) (4 with frequencies 5775, 6461.5, 7305) (1 with frequencies 3874, 5440, 5775, 6770, 7305)	\$ 14,000
6 Matrix Herald single-sideband transmitter-receivers (mobile installation) with antennas; with frequencies 5440, 5775, 6461.5, 7305	\$ 6,000
3 Kits to add frequencies 5775 and 7305 to existing Matrix Herald single-sideband transmitter-receivers 3 sets of crystals 3 sets of loading coils for mobile antennas 3 sets of resistors and diodes	\$ 500
11 Solar power installations for rural radios Solar panels Batteries Controller-regulators with voltmeter and ammeter 10 meters each #12 stranded biconductor wire	\$ 8,000
3 220V 50Hz installations for urban radios Batteries 220V 50Hz battery chargers	\$ 500

SUB-PROJECT 20: AIR TRANSPORTATION IMPROVEMENTS

Because of the distances involved and the road conditions which prevail, emergency medical evacuation and vaccine distribution within Lualaba Sub-Region must necessarily be done by air. Frequently it is the only practical means of transportation for fragile or valuable commodities as well.

The United Methodist Church has developed a strong aviation program within Shaba Region since 1960, based primarily on the needs of rural areas such as Lualaba Sub-Region. At the present time, the fleet consists of five aircraft: two Cessna 206 and two Cessna 210 (both carrying five passengers plus pilot and sharing common engines) plus one AeroCommander 560 (a twin-engine plane with approximately twice the payload). A third Cessna 210 and a second AeroCommander 560 have been purchased, although current plans are to operate only one twin-engine aircraft at any given time. One plane and pilot are based at Kapanga within Lualaba Sub-Region; two others are based at Lwena just outside its borders, and another at Lubumbashi makes most of its flights to Lualaba Sub-Region. The new Cessna 210 will be based at Kamina, again just beyond the east border of Lualaba Sub-Region.

These airplanes have served not only the needs of the United Methodist Church but also those of other denominations and, according to capacity, has been available to aid the Zairian government and private individuals in the area.

The objective of this sub-project is to improve the availability of air transport in Lualaba Sub-Region by, first, increasing aircraft readiness and, secondly, by improving marginal airstrips to permit operation of more fuel-efficient aircraft at full load.

Aircraft Readiness:

Lwena Maintenance Base Improvements:

All significant maintenance is performed at the centrally-located Lwena base.

1. Extension of existing hangar and relocation of shop facilities to accommodate new twin-engine plane and allow storage of twin-engine aircraft (less frequently used) in rear instead of front to permit rapid departure of single-engine planes in response to emergency calls.
2. Purchase of used machine shop tools

Purchase of Spare Engines

A frequent cause of aircraft being out of service for months at a time is the necessity to rebuild engines in the U.S. at the end of their legal serviceable life; this is particularly true for the AeroCommander engines which are no longer manufactured new. Purchase of one new engine for the Cessna 206/210 models and one for the AeroCommander will allow planes to continue service during the remanufacturing period.

Airstrip Improvements:

At the current time, conditions at several airports in Lualaba Sub-Region limit efficient aircraft use. They do not permit flights by the more fuel-efficient twin-engine and retractable-landing-gear 210 aircraft at full rated loads:

- Kasaji: Extension of the strip over the top of the hill (previously cleared of trees and termite hills) to allow abandonment of boggy area at bottom of strip
- Kalamb: Smoothing of the strip to allow fully-loaded planes with retractable landing gear to use the strip
- Kafakumba: Creation of a new runway in line with prevailing winds
- Mutshatsha, Chitazu, Kayembe Mukulu: Reopening of closed strips with lengthening to allow operation by current, larger planes
- Katoka: Creation of a new airstrip
- Kananga: Smoothing airstrip extension cleared in 1974 but not completed.

Airstrip Maintenance Equipment:

- 1 Massey-Ferguson 265 diesel tractor
- 1 Ripping plow
- 1 Blade for grading
- 1 Backhoe

The United Methodist Church currently has a small bulldozer and trucks with which to transport the requested equipment from airport to airport.

SUB-PROJECT 20: AIR TRANSPORTATION IMPROVEMENTS

COST ESTIMATES AND IMPLEMENTATION SCHEDULE:

1985: Lwena Maintenance Base Improvements:

Extension of hangar and relocation of shop
115 sheets steel corrugated roofing 90,000 Z \$ 1,500

Purchase of machine-shop tools (may be
second-hand) \$ 10,000

Purchase of Spare Engines:

1 Remanufactured engine for Cessna 206/210 \$ 12,000

1 Remanufactured engine for AeroCommander 560 \$ 20,000

2 Propellers \$ 5,600

Purchase of Airport Maintenance equipment:

1 Diesel tractor (Massey Ferguson 265 recommended) \$ 22,000
(price of accessories included)

1 Ripping plow

1 Blade for grading

1 Backhoe

Airstrip Improvements:

Kalamb: 15,000 Z

Kapanga: 15,000 Z

Kasaji: 60,000 Z

1986: Airstrip Improvements:

Kafakumba: 70,000 Z

Katoka: 70,000 Z

1987: Airstrip Improvements:

Kayemb Mukur 30,000 Z

Mutshatsha 30,000 Z

Chitazu 30,000 Z

SUB-PROJECT 21: KANZENZE MEDICAL CENTER. (ROMAN CATHOLIC)

The Spanish nuns of the order of the Purity of Mary, who operate the Kafakumba-Kimpuki Medical Center, are reopening the medical work at Kanzenze, a large Catholic mission west of Kolwezi near the junction of the roads to Dilolo and to Kamina. This is a large mission which has been very active in development projects. It was not occupied during the 1977 war, when the anti-government forces halted their advance between Mutshatsha and Kolwezi, but it was on the front lines for Zairian government troops. It was occupied by rebel forces in 1978. Since the wars with their looting, flight of populations served by the medical center, and loss of staff, the dispensary, maternity, and wards did not function until 1984 when small-scale operations are beginning. A great deal of equipment must be replaced, most immediately mattresses and bedding for the wards, and a drug inventory must be rebuilt. The medical center will be served during 1984-1986 on a visiting basis by the day volunteer doctor based at Kafakumba.

Specific requests include:

Equipment:

- 120 pcs Plastic-covered mattresses
Material sufficient for 240 sheets (brown)
- 120 pcs Blankets

Solar Power:

- 1 pc Refrigerator (12V DC; 5 cu.ft. minimum, 10 cu.ft. optimal)
- 1 pc Microscope light (12V DC)
- 1 pc Sterilizer (12V DC)
- 1 pc Ultraviolet water purifier (12V DC) (Recommend Clean Water Systems model CWS-4; distributed by Communications Associates; see Sub-Project 9 for complete address)
- 1 pc Inverter (12V DC to 220V 50Hz; recommend Best model M12-1000 with low-voltage circuit protection; see Sub-Project 9 for address)
- 1 pc 40W Fluorescent fixture (12V DC) with tube
- 10 pcs 13W Fluorescent fixtures (12V DC) with tubes
- 39 pcs Sockets and 0.10A (12V DC) bulbs
- 650 m Stranded #12 bi-conductor wire
Sufficient battery capacity (5 200A batteries?)
Sufficient solar cell capacity (16 40W panels?)
- 3 pcs Controller-Regulator with ammeter and voltmeter

Initial Drug Inventory:

Aspirin
Isopropyl alcohol
Aminophylline
Chloramphenicol
Chloroquine
Disinfectant
Diazepam
Iron sulphate
Folic acid
Penicillin
Quinine
Bicarbonate of soda
Sulfonamide
Tetracycline
Vitamins
Streptomycin
PAS

SUB-PROJECT 21: KANZENZE MEDICAL CENTER (ROMAN CATHOLIC)

COST ANALYSIS AND IMPLEMENTATION SCHEDULE:

All improvements are requested for 1985:

Equipment:

120 pcs Plastic-covered mattresses @2270Z	272,400 Z	
Material sufficient for 240 sheets (brown)		\$ 1,977
@\$8.24		\$ 382
120 pcs Blankets @\$3.18		
	<u>272,400 Z</u>	<u>\$ 2,359</u>

Solar Power:

1 pc Refrigerator (12V DC; 5-10 cu.ft.)		
1 pc Microscope light (12V DC)		
1 pc Sterilizer (12V DC)		
1 pc Ultraviolet water purifier (12V DC; recommend Clean Water Systems model CWS-4, distributed by Communications Associ- ates; see Sub-Project 9 for address)		\$ 425
1 pc Inverter (12V DC to 220V 50Hz; recommend Best model M12-1000 with circuit protection; distributed by Communications Associ- ates as above)		\$ 1,660
1 pc 40W Fluorescent fixture (12V DC) with tube		
10 pcs 13W Fluorescent fixtures (12V DC) with tubes		
39 pcs Sockets and 0.10A (12V DC) bulbs		
650 m Stranded #12 bi-conductor wire		
Sufficient battery capacity (5 200A batteries?)		
Sufficient solar cell capacity (16 40W cells?)		
3 pcs Controller-regulator with ammeter and voltmeter		
		\$

Initial Drug Inventory:

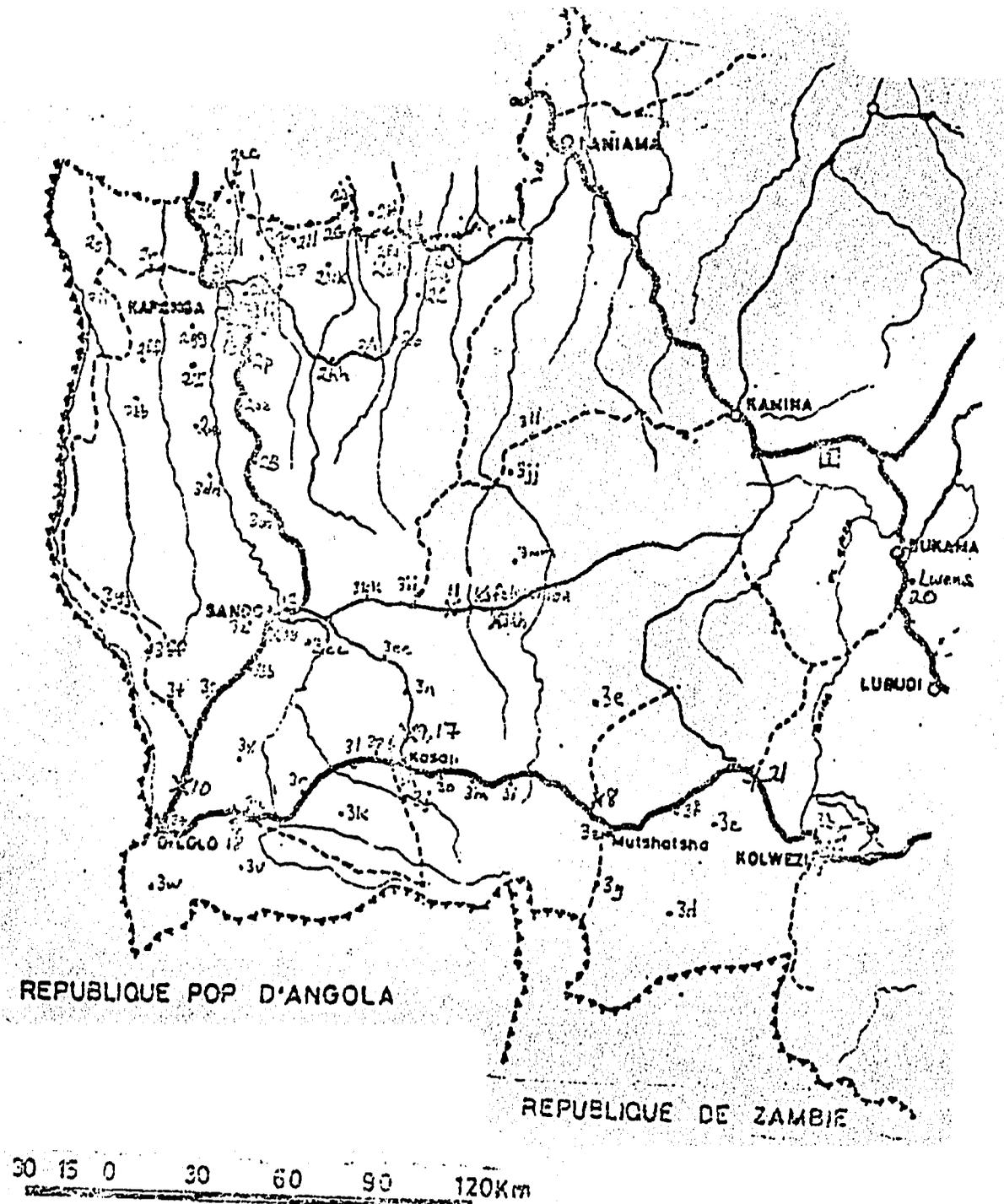
50,000 tblt Aspirin 500mg @\$2.54/1000		\$ 127
20 l. Isopropyl alcohol @120Z	1,200 Z	\$ 37
10,000 tblt Aminophylline 100mg @\$3.68/1000		\$ 238
20,000 tblt Chloramphenicol @\$16.93/1000		\$ 800
50,000 tblt Chloroquine phosphate 250mg @\$16/1000		
500 l. Cetricimide/chlorhexidine sol. 0.5%/0.5% @\$7.26		\$ 3,630
100 amp Diazepam 5mg/ml 2 ml @\$4.63/100		\$ 2
1,000 comp Diazepam 5mg @\$2.22/1000		\$ 2
50,000 comp Iron Sulphate 200mg @\$6.76/1000		\$ 338
50,000 comp Folic acid 5mg @\$8.33/5000		\$ 83
2,000 vial Penicillin 4 M IU @\$299.30/1000		\$ 599
5,000 comp Quinine sulphate 200mg @\$33.49/1000		\$ 167
10 kg Bicarbonate of soda @\$1.93/kg		\$ 19
2,000 comp Ftalylsulfathiazol 500mg @\$9.03/1000		\$ 18
10,000 caps Tetracycline 250mg @\$12.21/1000		\$ 122
50,000 tblt Multivitamins @\$1.65/1000		\$ 83
1,000 amp Streptomycine 5g @\$38.58/1000		\$ 39
50,000 tblt Paraaminosalicylic acid 500mg @\$2.80		\$ 140
	<u>1,200 Z</u>	<u>\$ 6,444</u>

Map 1. SHABA REFUGEE HEALTH PROJECT (Lualaba and Kolwezi Sub-Regions)

KEY

- ⊙ Hospital (complete facilities, medical doctors in residence)
- ✕ Medical Center (specialized facilities but without resident medical doctors)
- Dispensary

Sites are identified by sub-project number; rural dispensaries are further identified by letter code (see lists in Sub-Projects 2 and 3)



ANNEX 6

Economic Analysis

1. Background

On paper, there would seem to be a highly developed formal health care system in Lualaba Sub-Region. Each of the zones (territorial administrative sub-units) has at least one hospital, variously under state, church, or company sponsorship. Several additional "super-dispensaries" exist under the aegis of the various churches, each including specialized wards and services and multiple staffing. Finally, the United Methodist Church operates a system of approximately fifty one-nurse rural dispensaries throughout the Lualaba Sub-Region, a system which has been undergoing expansion during the past twenty-five years. However, at each of these levels there are serious constraints to quality health care delivery.

The church-run institutions are by far the best equipped and efficiently managed rural health institutions in the area. For example, Kapanga has a complete general hospital under United Methodist auspices, with four medical doctors on the staff, a nursing school which has historically furnished a large proportion of nurses for all medical institutions in Shaba, a leprosarium, a chain of satellite rural dispensaries, and an active program of public health outreach through vaccination campaigns, maternal/child health programs, and health education. It has not yet, however, recovered from its losses during the 1977 war when Kapanga was occupied without warning. It has also been in severe financial difficulty since the September 1983 500% currency devaluation, due to depletion of working capital, since all financial transactions had been tied to previous official exchange rates.

Other problems beset the Garenganze hospital at Kasaji, which has been unable to regain its former strength, lacking a doctor since 1977 and qualified staff in general since 1982. Other large centers, under various churches, may have multiple staff and specialized wards (Katoka, Kalamb, the Roman Catholic mission north of Kasaji) but lack resident doctors and complete hospital facilities. Finally, the widespread rural dispensaries have only the most rudimentary equipment. These often lack suitable facilities and are housed in simple mud huts.

2. The Project

The proposed project plans to assist the church-run health care facilities to improve health care and health in the target region, specifically by:

- a. Restoring hospital and dispensary facilities to the level of equipment, technical capacity, and inventory of expendables existing before the 1977 war.
- b. Modernizing the operating components for lighting, sterilizing, refrigeration, and pumping through the use of renewable energy sources (i.e. solar) in place of petroleum-based fuels, thus eliminating a major strain on self-financing through user fees.
- c. Fostering cooperation among health centers in a multiple-tier referral system through improvements to the existing air ambulance system.
- d. Reducing health maintenance costs with improved outreach of public health programs into more remote villages.

3. Economic Feasibility

a. Feasibility of Restoring a Health-Care System

The total costs of the project to USAID are \$1.75 million in US dollars and the equivalent of \$1.874 in zaïres for a total of about \$3.624 million over five years. Ninety-five percent of this assistance (\$3.36 million, roughly) would repair, re-equip, and restore the momentum of growth to a health system that was de-capitalized by exogenous events in the 1970s, mainly the invasions of Shaba from Angola in 1977 and 1978. The principal indicator of the economic feasibility of USAID's assistance is the health system's record of using assets similar to those to be supplied by this project, before they were lost. The quality of management in the system is fundamentally unchanged in its ability to operate assets and supply services.

Continual investment and growth occurred in the health-care system during the period of the 1950s through the 1970s. For example, Samuteb Memorial Hospital built a new hospital complex in 1955, an isolation ward in 1958, a pediatrics unit in 1967, three houses for call nurses in 1969-71, and a director's house and increased storage capacity in 1972. Work on a new maternity wing began in 1977. Investment in equipment from 1967 to 1977 totalled \$500,000. The affiliated nursing school was re-started in the 1960s, and present classroom and dormitory space was built during the years 1968, 1973-75, and 1979-80. As another example, the entire plant of the Kafakumba-Kimpuki Medical Center has been built up since 1967. Furthermore, the entire southern sector of United Methodist dispensaries dates from the early 1960s, and, outside of the Kolwezi, Mwajinga, and Kafakumba mission stations, from the early 1970s.

The expansion in major centers was financed largely by contributions from overseas supporters of the system (church groups), who have demonstrated the value they place on the system's services by their financial and other contributions. This support is expected to continue during the life of this project. In the case of dispensaries and other primary rural health-care centers, expenses such as nurses' salaries are covered mainly by patients' fees, demonstrating the value local people place on the services. Receipts from these sources in 1983 were Z. 4 million or about \$100,000 at present exchange rates. Receipts from these sources in the first year of the project are estimated preliminarily at Z. 4.65 million, not including likely increases resulting from higher fees for items after the devaluation of September 1983. These primary centers continue to expand with little outside funding, though they are under-equipped.

In sum, the health system maintained a growing volume of productive assets in past years, implying that the costs of capital (e.g., depreciation) and the costs of operation were being more than met. This establishes the economic feasibility of the health system in past years. Assuming continued support from its client base locally and overseas, this also establishes the economic feasibility of restoring the system to the approximate level it might have attained without the disruptions related to the refugee problem. Therefore, the bulk of the project that USAID proposes to support already has a historical record demonstrating economic feasibility.

b. The Health System's Overall Economic Feasibility

Although, as stated above, we do not have adequate health data to evaluate the health system's economic feasibility from basic values rather than by economic inference from the system's performance, the demand for and value of medical services in the region can be indicated roughly in order to justify the existence of the system's overall scale, with or without the increase proposed by the project.

The population in the project area is about 730,000. About 120,000 people are served by the mining company's health system in the city of Kolwezi. Of the remaining inhabitants more than three-fourths (about 450,000) live within twenty km of a health-care center, which may be regarded as its service area. The total number of trips to primary health-care centers (e.g., a dispensary with a nurse) in an ideal health-care system that this client base might be expected to take under existing health conditions might be about five per person per year or 11,250,000 trips. Presently, in fact, an average of about two hundred visits per week are paid to each of about sixty health-care centers, or on the order of about 624,000 to those centers. The project would raise the number of centers to seventy and would allow them to supply services to roughly 25% more visitors by increasing the supplies they have.

The typical service rendered for such trips is minor in dollar cost, typically \$0.50 for such things as worm treatment, malaria treatment, antibiotics, and consultation. At \$0.50 for each visitor adequately served, this amounts to an increase in value of services by \$143,000 per year (50 trips per week times 52 weeks per year for each of 60 existing centers times \$0.50, plus the 250 trips each week times 52 weeks per year for each of the ten new centers times \$0.50).

In the eleven secondary centers, some of which are termed hospitals but do not supply physicians' services, there are about 1,800 beds, generally about 75% occupied, amounting to almost 500,000 bed-days per year. These are in-patient facilities for people needing prolonged care for diseases such as

tuberculosis and leprosy, for maternity, and so forth. Services in these facilities are worth about \$7.50 per bed-day on the average, under present conditions.

The outputs of the project for this type of institution would be the improvements in care resulting from replacement of roughly 10% of roofing (some patients are virtually unsheltered), 60% of mattresses (the old ones are infested cotton mattresses which cannot be cleaned), and 35% of beds (many patients do without). These centers usually try to maintain four months' supplies (bandages, medicines, and so forth). However, supplies occasionally run out for one or two months when delivery mechanisms break down. The project will build supplies up to about eight months' worth, virtually eliminating periods without supplies.

In all, the improvement in treatment could be said to touch 25% of the bed-days and to amount to an increment of \$2.50 (from \$7.50 to \$10) in the value of service per bed-day. This yields an annual benefit of \$312,500 for this group of institutions taken all together.

The number of major health-care centers would be increased by the project from one to three, the total number of beds rising from three hundred to nine hundred. This would be accomplished by restoring one non-functioning hospital and by up-grading another facility from a secondary center to a major hospital. Equipment supplied would effectively triple surgical capacity (qualified personnel are on hand but often have nothing to work with), raise the capacity for maternity care by half, and so forth. Beds are 75% occupied and would continue to be so with the new facilities.

Value of services per bed-day at such facilities (estimated from present charges for non-subsidized patients at the mining company's hospital, allowing for differences in facilities) being about \$15 without the project and \$20 with the project, restoring facilities adds \$20 per bed-day supplied (225 per day), upgrading secondary facilities raises their services' value by \$10 (from \$10 to \$20 per each of 225 bed-days per day), and adding new equipment raises the value of the existing hospital's services by \$5 (from \$15 to \$20 for each of 225 bed-days per day). This totals about \$2.8 million worth of increased value of services per year.

c. New Initiatives

The parts of the project supporting improved public-health practices in the villages of the region are basically new. Therefore, their economic feasibility cannot be demonstrated by any past record of survival and growth within this region, although similar programs are underway in Zambia and in other areas in Zaïre (in Bandundu and Haut Zaïre provinces). Nonetheless, these parts of the project are partly cost-saving in nature, so that the type of analysis eventually needed can be indicated.

The project would have villages send one of their members for training in appropriate public-health practices, supplied by the project. These individuals would then transmit what they learn to the households in the village. Undertaking these practices would reduce the incidence of health problems such as malaria (by removing shelter and breeding grounds for mosquitoes) and parasites (by better handling of water and wastes) and thus reduce the amount of curative medical services demanded. The training would also allow the individual to administer very minor treatments. In some areas, this has already enabled authorities to re-assign nurses to areas without service, as they were no longer needed. It is expected that the costs of training and of implementation of public-health measures would be less than the cost of curative services otherwise demanded, besides being obviously more effective in the sense of avoiding disease rather than suffering it until cure is effected.

The present analysis does not have adequate figures on states of health with and without the relevant public-health measures or on the efficacy of the proposed mechanisms in causing such measures to be undertaken, to perform such cost comparisons. It is proposed to regard these components of the project as experiments, which at reasonable cost (\$133,000) would generate the information needed to determine the economic feasibility of this approach to improving public health in rural areas.

d. Calculated Feasibility of Certain Components of the Project

i. Solar Power Generation

The solar-power installations for fifty-six health centers proposed under the project would entail costs of \$450,000 over the life of the project (five years). (These are all capital costs, operating costs being nil because batteries are expected to last the life of the project.) For the fifteen centers that presently have power, fossil-fuel generation costs \$64,000 per year at present prices where solar power installations will have capital costs of \$295,000 and virtually no operating costs (\$1,000 for a new battery after five years), for equipment lasting at least twenty years. Taking a ten-year horizon and a 15% discount rate, the present value of \$64,000 per year is \$370,000. Thus the present value of cost-savings would be at least \$75,000, which figure could be expanded by increasing the time horizon. In addition, the solar-generated power is more dependable (especially given supply problems for fossil fuels), and is supplied more hours (all day, as needed, rather than only three hours per day as assumed above in arriving at a cost of \$64,000 per year).

ii. Air Transportation and Radio Communications

Improvements in transportation and communications between primary health-care units and more sophisticated ones would cost \$100,000 in investment and \$18,000 per year to use over the life of the project. This transportation is by the full-time equivalent of two small planes ordered and dispatched by a network of radios. USAID would supply two re-built engines and would raise the size of the transmitting network from seven radios at present to eighteen stationary and nine mobile radios at the end of the project.

This equipment would substantially increase the number of patient-trips to major centers compared with present conditions where planes are frequently grounded and where requesting them is sometimes excessively time-consuming. It is estimated that, with the additional equipment, each of two small aircraft would be operational about sixty more days per year over the life of

the project, for a total of 600 aircraft-days. Demand for trips is plentiful, and with adequate communication of this demand it is expected that each additional day of operation would result in ten or more patient-trips. This implies a total of 6,000 additional trips per year, or 3,000 round-trips.

At Z. 1.5 per person per km at present rates charged (NB: fully allocated cost would be about Z. 4.5 per person per km, but there are various subsidies that make up the difference), three persons per patient (for the seriously ill who make these trips), and approximately 400 km per round-trip, the total charges for 3,000 trips would be Z. 5.4 million or over \$130,000 per year at present prices. Thus, the addition of the new equipment would clearly be profitable from the point of view of a transportation enterprise if demand proved elastic enough to maintain fares as traffic increased.

From the point of view of the increase in value added by medical services, it suffices to note that for this transportation it is a question of seriously ill patients seeking appendectomies, caesarian sections, and other medical services altogether unavailable at primary health-care centers. Presently, the larger centers have the capacity to expand the number of such patients treated. If the value above cost of treating 3,000 additional patients were only \$30 each, the total at 3,000 patients per year would be roughly \$100,000 per year. Again, this would clearly show the investment in transportation and communications to be economically feasible at projected costs. In fact, the average value of hospital services per bed-day (including surgery, room, and so forth), without the project, are about \$15 per day in these cases. Stays tend to range from five to twenty days. Even at five days, 3,000 patients per year would receive services worth about \$225,000. Against this, incremental transportation costs of \$100,000 investment plus \$18,000 per year operations are clearly economically feasible.

e. Summary

Rough calculations of benefits, either reductions in costs or the value of increases or improvements in health care, shown above, are summed here.

- i. For primary health-care centers, \$143,000 per year.
- ii. For secondary health-care centers, \$312,500 per year.
- iii. For major hospitals, \$2,800,000 per year.
- iv. For solar power generation, cost savings of \$75,000 in present value at 15% discount (as well as increases in value of service which were not calculated).
- v. For transportation and communications, at least \$130,000 per year.

The first three categories of benefits are received by the patients of the health-care system. Against those gross benefits should be netted incremental costs incurred by the health-care system in using the assets and materials to be provided by the project. Since virtually all incremental equipment and supplies related to benefits are being supplied by the project, non-project incremental costs would be mainly labor costs. But since the health-care centers to be assisted are already fully staffed, incremental labor time will be minimal, and could not change the conclusion of the economic analysis.

At a 15% rate of discount, total benefits of about \$760,000 per year for years 2 through 10 of a ten-year planning horizon (with no benefits in year 1) would be adequate to offset the project cost to AID and the Government of Zaïre of \$3.624 million, even if incurred entirely in year 1. Calculated benefits greatly exceed \$760,000, even with some potential benefits not estimated: they total about \$3.4 million per year. Neither substantial delays in the appearance of the project's benefits (\$930,000 per year from years 3 through 10 would be required if there were no benefits in the project's first two years) nor substantial reductions in benefits (e.g., 50% of total benefits per year would be \$1.7 million) would not reverse this comparison.

At planned costs and outputs, the project is therefore economically feasible at a 15% rate of discount.

ANNEX 7

UNITED METHODIST DISPENSARIES

In Lualaba Sous-Region

Southern Sector (Headquarters: Medical Depot, Kolwezi)

Kolwezi District:

1. Kolwezi Ville

Mutshatsha District:

2. Mutshatsha Gare

3. Kawewe (new 1984)

4. Tshala

5. Lufupa

6. Kayembe (new 1984)

7. Musokantanda

8. Yamva (new 1984-1985)

Kasaji District:

9. Kasaji Gare

10. Mungulunga

11. Kazembe

12. Kisenge

13. Malonga

14. Kambalala (new 1984-1985)

15. Kakopa (new 1984-1985)

16. Chimbayeke (new 1984; already operating August 1984)

Dilolo District:

17. Dilolo Gare

18. Divuma

19. Muyeye

20. Sambembe (new 1984-1985; approved by church but not proposed for immediate funding in the Shaba Refugee Health Infrastructure Project because of questions of proximity to existing facilities at Katoka)

21. Mafunda-Kasai (new 1984-1985)

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Sandoa District:

22. Mwajinga (Sandoa United Methodist mission; Dispensary/Maternity)
23. Mwachisenge (Samutoma) (former FBI dispensary)
24. Chirungil (former FBI dispensary)
25. Chibamb (former FBI dispensary) (new 1984-1985)
26. Mwin Ndjungu (new 1984-1985)
27. Lubanda (1984-1985)
28. Kangamba
29. Sayav

Kafakumba District:

30. Kafakumba Lac
31. Sakundundu
32. Kayemb Mukur
33. Ndjimi
34. Diyamb II
35. Sapesa

Kapanga Sector (Headquarters: Samuteb Memorial Hospital, Musumb)

36. Chitazu
37. Chiying
38. Kalamb
39. Kambamb
40. Kamwang
41. Chibalak
42. Musevu
43. Samaband
44. Rubwiz
45. Mpand a Mwil
46. Kambangu
47. Chikab
48. Chal
49. Kanteng