Measles Control & Smallpox Eradication Program

272.

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(Staff Memorandum)

Measles Control and Smallpox Eradication Program (Phase I)

Attachments:

A. Tables:

1 Summary of Total Program - CDC Five Year Plan, with Country Sheets
2 Summary of Phase I (Based on CDC Estimates), with Country Sheets
3 Comparison of Cost Estimates and Possible Savings
4 Potential U.S. Dollar Drain

B. Background Documents:

1 Press Release, May 18, 1965
2 PHS Proposal, August 20, 1965
3 Memorandum for the Administrator, November 15, 1965
4 Press Release, November 23, 1965
5 Draft E-1, FY'67-'71, January 21, 1966 (Prepared by CDC)
6 General Terms of Reference for the Measles Control/Smallpox Eradication Program in West Africa, (airgram sent March 12, 1966)
7 WHO Smallpox Eradication Programme, March 28, 1966
8 Letter from Surgeon General dated April 19, 1966 (Recommendation on strain of measles vaccine)
9 WHO Resolution, Nineteenth World Health Assembly, May 13, 1966
10 Excerpt from "Public Health Problems in 14 French Speaking Countries in Africa and Madagascar" National Academy of Sciences 1966
11 Summary of CDC Five Year Program for Nigeria, with Terms of Reference

Measles Control and Smallpox Eradication Program

I. OBJECTIVE

On May 18, 1965 the President stated "This Government is ready to work with other interested countries to see to it that smallpox is a thing of the past by 1975".

This program represents a U.S. contribution to the global smallpox eradication program by provision of assistance towards smallpox eradication in 19 of the West African countries. (Cameroon, CAR, Chad, Congo (B), Dahomey, Gabon, Gambia, Ghana, Guinea, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, Upper Volta)

In announcing the proposed U.S. plan on November 23, 1965, to assist these countries, the President also offered a "measles control program to run concurrently in the same area".

II. BACKGROUND

A. Early History

Africa is one of the world's major areas of smallpox incidence. Approximately 25 percent of those stricken by the disease there become fatalities. According to WHO, West Africa is one of the principal sources from which smallpox infections are spread to other parts of the world.

Measles is also one of the principal causes of death and disability in African children. A death rate of 20 percent is not unusual and rates have run as high as 50 percent. In West Africa, around 21 million children under the age of six are susceptible to measles, but this increases at the rate of approximately 2-3 million per year.

While AID has been providing assistance for measles programs in the Francophone countries of West Africa, starting in 1963 with a pilot and demonstration program in Upper Volta, it has not provided any assistance for smallpox programs until FY'66 when it provided a total of 5 million doses smallpox vaccine to the OCCGE and CCCGEAC. (OCCGE, 3 million, OCCGEAC 2 million) Those countries which have received assistance in measles control programs are Cameroon, Central African Republic, Chad, Dahomey, Guinea, Ivory Coast, Mali, Mauritania, Niger, Togo and Upper Volta.

At the time of the 18th World Health Assembly in Geneva, in May, 1965, President Johnson instructed the U.S. Delegation to pledge American support for an international program to eradicate smallpox completely from the earth within the next decade. In announcing this pledge on May 18, 1965, he stated "This government is ready to work with other interested countries to see to it that smallpox is a thing of the past by 1975. (See Attachment B-1)

Following this announcement AFR undertook consideration of possible plans for Africa which would at the same time build on its ongoing programs of measles control in certain West African countries.

On August 20, 1965, at a meeting between PHS staff and Mr. Bell to discuss AID-PHS relationship, Dr. Terry, the Surgeon General, left with Mr. Bell a proposal for a 16 country measles-smallpox vaccination program for West Africa. (See Attachment B-2) It was to cover the OCCGE and OCCGEAC countries, plus Gambia, Liberia and Sierra Leone.

On November 12, 1965, AFR sent a proposal for an 18 country program to the Administrator for approval in principle, since there had been no country studies. It represented the consensus of AID, PHS and WHO judgment on the best possible approach, but subject to further study and country involvement. It had the Surgeon General's concurrence. (See Attachment B-3)

This proposal was approved in principle by the Administrator.

However, any formal commitment on the part of the U.S. to undertake such programs in any of the 18 countries would be dependent on:

"1. A clear indication on the part of each country that it will make an appropriate contribution of its own resources; and has the capability to help execute the program.

2. That the undertaking is feasible from a technical and administrative standpoint based on an operational plan approved by PHS and AID.

3. An understanding that U.S. financed commodities and services for this program will be procured in the United States thereby limiting the estimated, adverse impact on the U.S. balance of payments to approximately $400,000 a year representing personal, overseas expenditures by the U.S. technicians assigned to the program."

On November 23, 1965, the President announced plans to protect 105 million people from smallpox and measles in 18 West African countries. (See Attachment B-4) The smallpox eradication program was to fit within plans of the World Health Organization (WHO) to eradicate smallpox throughout Africa and the rest of the world within ten years.

The President's plan as announced provided for measles control program to run concurrently with the smallpox program in these countries. While the smallpox program was part of the international eradication program, the measles program was to be a continuation and expansion of an ongoing AID-financed program in 11 of the countries.

The AID contribution was to consist of technical assistance, vaccines and jet injectors which can inoculate 1,000 persons per hour. Vehicles, field supplies, freezers, and refrigerating equipment were also to be supplied.

The local costs and operational personnel were to be supplied by the individual countries cooperating in the program.

Operational responsibility for the project was to be assumed by the USPHS.

The 18 countries to whom this offer was made are Cameroon, Central African Republic, Chad, Dahomey, Gabon, Gambia, Ghana, Guinea, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, and Upper Volta. Subsequently, Congo (B) was included, as a member of OCCGEAC, to receive assistance administered through OCCCEAC.

Following the President's offer, the Communicable Disease Center of the Public Health Service under a PASA arrangement with AID has had the responsibility for developing proposed country programs with the national governments and the operation plan and funding requirements to implement these programs for AID review and approval.

In January 1966, CDC submitted a proposed plan for the program based on illustrative country requirements. (See Attachment B-5) These have been supplemented by detailed E-1s developed with Ministry of Health officials in 15 of the 19 countries in accordance with general terms of reference applicable to all countries. (See Attachment B-6) No country E-1s are available for the following countries for the reasons stated:

Congo (B) - This is being prepared by staff of OCCGEAC and has not been received.

Guinea - Inasmuch as CDC personnel were not permitted to leave Conakry, AID/W had accepted USAID recommendation that there be no program in FY'67. Subsequently GOG has indicated its desire to participate and CDC has agreed to undertake discussions with GOG officials after November 1966, provided USAID concurs.

Liberia - Since CDC does not plan to initiate a program in FY'67 they are not preparing an E-1. With respect to GOL's interest in participation the USAID indicated there would be a problem of Liberia financing its costs.

Sierra Leone - As with Liberia, since CDC does not plan to initiate a program in FY'67, they are not preparing an E-1.

Due to the long lead time, AID approval was given through a PASA for 14 medical personnel and funds were provided through a grant to OCCGE for

50 vehicles. AID also approved in principle the establishment of a CDC regional headquarters in Lagos, under the proposed operational plan of a headquarters office in Atlanta, with medical and operation officers in the countries.

B. Summary of CDC Plan for Project Implementation (January E-1 as modified by county visits and detailed country E-1's)

1) Objectives

a. Eradication of smallpox within 19 West African countries within a five year period (FY'67 - '71), on the following assumptions:

(1) All countries will participate for as long as necessary at the levels required.

(2) WHO will cover the rest of Africa and smallpox will have been eradicated by the end of that time period and it will initiate programs in Congo (L) and the Sudan to concide with U.S. programs in contiguous countries.

(3) WHO will pick up the shortfall in local costs as necessary in the 19 countries.

(4) AID will finance five years of the program through FY'71 including revaccination of the total population within that period at least once and possibly twice.

(5) Country surveillance systems will have been strengthened to permit early detection of any potential outbreak.

b. Control of measles through complete coverage of all susceptibles 1-6 years old in the 2-3 year period and maintenance programs for all newborns thereafter. The assumption is that AID will finance programs through FY'71 and the countries the maintenance thereafter.

2) Number of Countries and Time Phasing

The program will cover the 18 countries. In addition, commodity assistance will be provided to Congo (B) through OCCGEAC. The programs would be as follows:

FY'67

a. Initiate or expand U.S. financed programs in eight of the nine OCCGE countries. The country situation has necessitated deferral of Guinea temporarily pending further discussions with USAID and the GOG.

b. Initiate or expand U.S. financed programs in four of the five OCCGEAC countries, with Congo (B) temporarily deferred pending approval of OCCGEAC's plan of operation.

c. Preliminary programs in Nigeria and Ghana. (See attached Nigeria summary)

d. The program in Gambia will proceed simultaneously with that of Senegal.

e. Surveys and planning in Liberia and Sierra Leone.

FY '68

a. All nine OCCGE countries, on assumption of Guinea participation.

b. All five OCCGEAC countries.

c. Full program in Nigeria and Ghana and Gambia.

d. Initial programs Liberia, Sierra Leone.

FY '69-'71

All 19 countries, on assumption of Guinea participation.

3) Overall Organization and Administration

a. CDC will have operational responsibility for the AID financed program. It will organize its operations as follows:

(1) Headquarters office in Atlanta to provide a) policy and program direction and evaluation, b) U.S. backstopping for recruitment and orientation of personnel, and procurement of commodities, c) liaison and reporting to PHS/W and AID/W as well as liaison with WHO, and d) evaluation by the laboratory and statistical staff.

(2) Regional office in Lagos to provide a) operational coordination among country programs, b) conduct training, c) provide special technical advice on country request, d) undertake operational research, e) maintain operational statistics, f) administer material held in reserve for emergency use, and g) conduct preparation of subsequent year program requirements.

NOTE: An analysis of the functions of the regional office personnel reveals that this group is engaged principally in technical assistance in specialized fields to the individual countries. It is anticipated these personnel will spend perhaps 80% of their time in the African countries. In other words, the regional office is operational in nature. It supplies special skills which are necessary but for which a full-time technician is not justified in each country.

Information flows from the Headquarter's office at Atlanta directly to the field personnel in the individual countries with copies to the regional group so that it may assist in interpretation of headquarter's directives as necessary Traffic originating in the field will depend upon its character as to whether it goes directly to the Atlanta Headquarters or to the regional office. Blood specimens for serological examination, annual budget estimates and requests for emergency material known not to exist in the regional depots would go directly to the headquarter's office. Statistical data would flow first through the regional office so that the statistical advisor in the field could assure its adherence to a standardized format which would permit easy collation of information from all of the countries. Request for assistance in the field of health education and expertise contained in the regional group would go there first. In addition, regional staff would be called on to temporarily fill country slots due to incapacitation of assigned country staff.

(3) Country staff in each country consisting of medical officer and operations officer. The medical officer will serve as advisor to the Ministry of Health for the conduct of this program. The operations officer will be responsible for insuring maintenance of equipment and "trouble shooting" operational problems.

(4) A medical officer will be assigned as liaison officer to the OCCGE and to the OCCGEAC. This will be in addition to country responsibility for Upper Volta and Cameroon respectively.

(5) U.S. staffing proposed as follows:

Headquarters - Atlanta

2 Physicians
1 Virologist

2 Administrators
2 Statisticians
4 Secretaries
1 Clerk
2 Microbiologists
1 Laboratory Technician

Total positions - 15

Regional Headquarters, Lagos

2 Physicians
2 Administrators
1 Virologist
1 Health Educator
1 Statistician
1 Equipment Specialist
1 Secretary

Total positions - 9

Countries

Cameroon (also liaison OCCGEAC)

1 Physician (also serves Gabon)
1 Operations Officer

CAR

1 Operations Officer (Physician, Chad, also serves CAR)

Chad

. Physician (also serves CAR)
. Operations Officer

Congo (B) (no U.S. personnel)

Dahomey

1 Physician (also serves Togo)
1 Operations Officer

Gabon

1 Operations Officer (Physician, Cameroon, also serves Gabon)

Gambia (to be serviced by staff assigned to Senegal)

Ghana

1 Operations Officer

Guinea

1 Physician
1 Operations Officer

Ivory Coast

1 Operations Officer (Physician, Upper Volta, also serves Ivory Coast)

Liberia

1 Physician
1 Operations Officer

Mali

1 Physician (also serves Mauritania)
1 Operations Officer

Mauritania

1 Operations Officer (Physician, Mali, also serves Mauritania)

Niger

1 Physician
1 Operations Officer

Nigeria

4 Physicians
6 Operations Officers

Senegal

1 Physician
1 Operations Officer

Sierra Leone

1 Physician
1 Operations Officer

Togo

1 Operations Officer (Physician, Dahomey, also serves Togo)

Upper Volta (also liaison OCCGE)

1 Physician (also serves Ivory Coast)
1 Operations Officer

Total positions - 36

Total for country programs, Atlanta, and Lagos - 60

b. The Ministry of Health in each country will be responsible for the actual conduct of the program, assisted by CDC personnel. The expansion of their health services to intensify their present efforts to combat measles and smallpox will follow one of the following patterns.

1) Integrate within ongoing program

2) Separate teams within ongoing program

3) Independent teams

c. WHO will assign its West African regional smallpox advisor to Lagos to facilitate coordination with the CDC Regional Headquarters.

4) Method of Vaccination

a. Smallpox

Two methods will be used for smallpox vaccination - multiple pressure and jet injection. For the moment, only Upper Volta and Ivory Coast plan to use principally the multiple pressure method. The remaining 17 countries will rely on jet injection, limiting use of the multiple pressure method to approximately five percent for the scattered rural or individual cases.

b. Measles

The injection method will be used for measles vaccination in all instances.

5) Number of Mass Smallpox Vaccination Cycles

CDC recommends a second complete smallpox vaccination cycle with concomitant surveillance. The purpose of including a second cycle of mass vaccination against smallpox is to provide a built-in safety factor to further assure eradication of the disease. The actual percentage of the population necessary to be rendered immune to the disease which will positively prevent transmission is not known. In view of the fact that it is impossible to achieve 100% coverage of a given population in one mass campaign, some mechanism must be developed for assuring that those persons missed on the first go around are subsequently vaccinated. In Africa, because of the difficulty of travel and inadequate means of communication, this would be an extremely costly endeavor if attempted on the basis of finding individually those who had not been vaccinated in the first cycle and vaccinating them on an individual basis. Detailed field investigations made subsequent to the submission of the original proposal which only contemplated one mass smallpox vaccination cycle, followed by several years of surveillance, indicate that there is a much greater migration within and across the borders of the 19 countries than had been originally anticipated. As a time span is required for the vaccination teams to cover the entire area, it is possible for a significant number of people to inadvertently miss the vaccination teams by moving from an area not yet vaccinated into one which had been vaccinated several months previously. It is CDC's considered judgment that it would be less expensive to conduct a second campaign than to try to search out unvaccinated persons on an individual basis and that, therefore, this procedure is the method of choice until its necessity is proven otherwise. The cost of such a second cycle has been included in the project proposal.

6) Type of Vaccine

a. Smallpox Vaccine

U.S. freeze dried vaccine is to be supplied for use both by jet injector or by multiple pressure.

b. Measles Vaccine

In accordance with the medical recommendations of the Surgeon General only the further attenuated (Schwarz or equal) strain of live virus vaccine will be supplied. (See Attachment B-8)

7) Other Commodities

All commodities will be of U.S. make except where waived (e.g. Swedish refrigerator). Due to the problem of vehicle maintenance CDC has budgeted one vehicle in reserve for every two required. CDC has also included vaccination certificates for both cycles of vaccination.

8) Costs

a. U.S.

The U.S. will finance technical assistance and U.S. commodities. The estimated total cost, including local support for technicians, for a five year period is $47,150,000. It is based on two mass smallpox vaccination cycles and a total population of 117 million.

b. Local Costs

Operating costs to be assumed by the countries cover operating costs for personnel, vehicles, gas, maintenance and miscellaneous costs. Nigeria will assume costs for multiple pressure vaccine and for housing of the U.S. technicians. The total for the five year period is estimated at $10,448,000.

c. WHO Costs

In addition to its responsibility for the Congo and the Sudan, it will assist the other countries of Africa, coordinating its programs with those of the 19 West African countries. It will also, as requested by these countries, provide funding for portions of the local costs which these countries may not be able to fund. In the case of Congo (B) if requested it will provide technical assistance. The 19th World Health Assembly in May 1966 approved a budget of $2.4 million for its global program in 1967. (See Attachment B-9)

9) The funding arrangement will be as follows:

a. U.S. program commodities will be purchased through AAFC and funded by grant agreements with OCCGE and OCCGEAC and bilateral agreements for non-OCCGE and OCCGEAC countries.

b. U.S. personnel (U.S. and local), furniture, rent, travel, local support, and all other logistic costs will be included in the project.

c. Country contributions and interrelation of OCCGE and OCCGEAC will be included in country bilaterals as well as any participant costs.

C. Issues Involved

The proposal to the AID Administrator was a tentative proposal for approval in principle. The Administrator's memorandum to the President, recommending his approval, stated:

"Any formal commitment on the part of the U.S. to undertake such programs in any of the 18 countries would be dependent on:

1. A clear indication on the part of each country that it will make an appropriate contribution of its own resources; and has the capability to help execute the program.

2. That the undertaking is feasible from a technical and administrative standpoint based on an operational plan approved by PHS and AID.

3. An understanding that U.S. financed commodities and services for this program will be procured in the United States thereby limiting the estimated, adverse impact on the U.S. balance payments to approximately $400,000 a year representing personal, overseas expenditures by the U.S. technicians assigned to the program".

The proposal was based on assumptions of WHO responsibility for smallpox programs for the rest of Africa and gearing the WHO program in the Congo and the Sudan to coincide with the U.S. program as well as WHO covering the shortfall on local costs or smallpox for the 18 countries. WHO has no responsibility for measles programs.

The present proposed program prepared by CDC for AID program approval was based on country visits, detailed E-1s for 15 countries prepared in conjunction with Ministry of Health officials, and illustrative estimates for 4 countries. There were significant differences from the tentative plan approved in principle by the Administrator, in cost, coverage, duration, etc. which raised questions warranting consideration of other possible approaches.

The differences were as follows:

1. Country phasing for both smallpox and measles

Proposal to Administrator

In FY'67 initiate or expand U.S. financed programs in OCCGE and OCCGEAC countries. (Three countries which

have not participated in any form previously are Senegal and Gabon and Congo (B) which was added subsequently.)

In FY '68 initiate programs in Nigeria and Ghana.

CDC Proposal

In FY '67 the plan is to:

a) Initiate or expand U.S. financed programs in OCCGE and OCCGEAC countries. OCCGEAC would have responsibility for administrating and providing technical assistance to Congo (B). The program in Gambia would proceed with that of Senegal.

b) Initiate program in Nigeria. (This country represents the principal focus of the disease conditioning its spread throughout the other West African countries.) (See Attachment A-1)

c) Initiate program in Ghana. (CDC included Ghana at AID's request)

d) Preliminary surveys and planning in Liberia and Sierra Leone.

2. Duration

Proposal to Administrator

For 5 years, on assumption 3 years for mass attack and 2 years for newborns and surveillance.

CDC Proposal

For 5 years on assumption 3 years mass attack and repeat 3 year mass vaccination cycles until global eradication.

WHO has stated in Document A19/P&B/2, March 28, 1966, "Smallpox Eradication Programme":

"2.5 Maintenance programmes

Until all endemic countries have completed valid eradication programmes and until at least a three-year period has elapsed without documented cases anywhere in the world, maintenance programmes of vaccination will be required in each of the countries. Methods for the conduct of maintenance programmes are expected to vary widely from country to country. Certain specific groups, however, will require particular emphasis.

(1) Urban populations, especially those in densely crowded lower socio-economic areas.

(2) Migrants who might be expected to transmit the disease widely and those recently entering urban areas from less well vaccinated rural districts.

(3) School children among whom disease may pass quickly and thence to the community at large.

(4) Newborn babies, if not adequately vaccinated: a large portion of fully susceptible individuals can accumulate in a community within a comparatively short time.

(5) Dispensary and hospital staffs including laundry personnel. The high risk of disease spreading to these groups has repeatedly been demonstrated.

Some countries may elect to carry out intensified programmes augmented by continuing vaccination programmes in health centres and elsewhere; others may incorporate vaccination into other types of immunization and disease control programmes. Whatever the approach, it is most important to reach specifically the groups noted above and achieve as near total coverage of the population as possible. Finally, it should be noted that the development of the general health services is of the utmost importance to carry out the effective maintenance programme."

Dr. Henderson has stated:

"Since vaccination certificates have not yet proven to be a durable entity in Africa and since smallpox vaccine is the least expensive, by far, of all the immunizing agents, the most effective and least expensive approach to sustain overall population immunity appears to be that of repeat mass vaccination programs in the maintenance phase of the program."

CDC assumes U.S. funding for first 5 years, country funding subsequent years, if required.

3. U.S. Costs (See Attachment A-3)

Proposal to Administrator

An estimated cost of $31 million for a 5 year program for the period FY'67-'71

CDC Proposal

An estimated cost of $47.150 million for a 5 year program but with 6 year funding (FY'66-FY'71) (This is based on E-1s prepared for 15 countries and estimates for 4.) These costs represent essentially illustrative costs. There is no experience factor to equate them with. Both measles and smallpox are included. There are several unknowns which can move the cost up or down, such as duration of requirement for mass smallpox vaccination, degree of measles control and coverage, cost of measles vaccine, etc.

4. Local Costs

Proposal to Administrator

The President's offer was premised on countries paying local costs. These costs had not been estimated but the assumption was they could be carried by the governments involved and where this was not possible, WHO would cover the shortfall for the smallpox program.

CDC Proposal

Based on E-1s prepared by CDC and estimates, when no E-1 was available, the total local cost estimate for this program for five years is approximately $10 million. (See Attachment A-1) Some of this represents costs for regular ongoing programs. CDC did not separate out the additive costs for all countries. $1.1 million has been tentatively earmarked as a contingency requirement for WHO funds. The actual requirement on WHO contingency fund by default on the part of countries is not known. With the change in approach which requires revaccination until global eradication, the question is, who will pick

up any requirements for maintaining that portion of the program which has been U.S. financed after the five year period, the country or WHO? CDC assumes it is a country responsibility. The degree to which countries are aware of the potential cost involved or have agreed to assume these costs is not known.

It should be noted that the U.S., on the basis of normal practice in the countries in respect to support of U.S. technicians, is assuming the local support costs for U.S. technicians involved in this program with the exception of housing in Nigeria. An estimated total of $4,511,000 would be required for the five year period.

5. WHO Participation

The 18 countries in the President's offer, which represents a cohesive, contiguous group in West Africa, was to represent the U.S. contribution for Africa to the global program. WHO was to assume responsibility for assistance to the rest of Africa and provide shortfall for the 18 West African countries. While Congo (B) has been added as a 19th country for AID commodity assistance, WHO or OCCGEAC will be responsible for technical assistance. The assumption was WHO programs in the Congo and the Sudan would be timed to coincide with the U.S. programs.

WHO has been assisting in global smallpox eradication since 1962, though it had been providing assistance prior to that time. Its present program initiated in 1965 is aimed at accelerating these efforts and present plans cover programs through the decade to 1975. It is planned for the Congo to start the preparatory stage in 1967 ending in 1975. In the Sudan the attack phase will start in 1967 with the program extending through 1973. Included among the countries WHO currently is assisting are some of the 18 countries. This assistance will be reprogrammed to other countries.

WHO at its 19th World Assembly in May 1966 has approved 1967 funding of $2.4 million available January 1967, for its global program and passed a resolution approving assumption of costs for:

"a) such supplies and equipment as are necessary for the effective implementation of the program in individual countries.

b) such services as may be required in individual countries and as cannot be made available by the governments of such countries -----."

However, there was concern expressed, particularly on the part of the Director General "on the harmful effects initiating a smallpox eradication campaign or other campaigns

of that type could have on the development of national health services". Among his comments were the following:

> "Complete eradication of smallpox was a goal which should be reached as soon as possible but the normal development of health services should not be sacrificed to that goal."
>
> "Without adequate health personnel, without a minimum of health services, it would be difficult to bring a smallpox eradication programme to a successful conclusion, just as it had been difficult to bring the malaria eradication program to a successful conclusion everywhere and just as it would be difficult to carry out other types of mass campaigns----."

6. "The Dollar Drain"

The Memorandum to the President limited U.S. dollar expenditures overseas to approximately $400,000 a year. An initial estimate of these costs represents a total for the 6 year period (FY'66- '71) of $5,901,000 ranging from a low of $264,000 in FY'66 to a high of $1,212,000 in 1968. (See Attachment A-4)

7. U.S. Commitment

On May 18, 1965 (See Attachment B-1.) the President announced he "has instructed the U.S. delegation at the World Health Assembly.....to pledge American support for an international program to eradicate smallpox completely from the earth within the next decade". The President pointed out that:

> "As long as smallpox exists anywhere in the world no country is safe from it. This dread disease spreads so rapidly that even a single case creates the threat of epidemic. It is clear that every nation of the world, whether or not it has experienced smallpox in recent years has a national stake in a world wide eradication program."
>
> "To help in world wide eradication of smallpox the President's program of action includes:

Full support for the adoption by the World Health Organization of a smallpox eradication program with a goal for completion within a decade.

Contribution of technical personnel and other necessary resources to the Pan American Health Organization, the regional agency of the WHO, to step up the war against smallpox in Latin America.

Assisting in the establishment of laboratory facilities in the developing countries to help meet requirements of vaccine for the intensified program."

On November 23, 1965 (See Attachment B-4) the President announced:

"This government is ready to work with other interested countries to see to it that smallpox is a thing of the past by 1975".

"The smallpox activity would run concurrently with a measles control program in the same area."

The basic question is precisely what is the U.S. commitment to the global smallpox program. Is it until eradication which can be 5, 10 or more years, or can it be prescribed in terms of a definite time period and/or extent of coverage, irrespective of what may develop as the continuing and recurring requirements?

The U.S. program is not isolated from the WHO program. Considerable cooperation in programming, time phasing, distribution of costs is required. Where WHO has been assisting with technical assistance, et cetera, it must reprogram this assistance to other countries.

There are differences in incidence of the disease among countries, nomadic habits among tribes carry it across borders. All countries do not have the required technical and administrative ability or financial resources to undertake expanded programs.

In West Africa, Nigeria represents the principal focus of the disease. Guinea is a high incidence country, but the nature of the country situation necessitated postponing the program. Liberia is a problem country technically, administratively, and financially, but initiating the program has been postponed by CDC due to extent of coverage involved in starting programs in 16 countries, with one of them Nigeria. The Congo also represents a problem for WHO. There are problems in the Sudan, where incidence is increasing.

Ivory Coast, which with WHO help reduce the number of cases from 4656 in 1961 to 8 in 1965 must continue mass revaccination with U.S. assistance since it is exposed to 3 problem countries, Guinea, Liberia and Mali.

It would appear that all countries irrespective of the degree of smallpox eradication they may have achieved must continue cycles of mass vaccination until the problem countries have finally eliminated the disease. In this situation, when should the U.S. put in its major resources? Should the U. S. assistance be based on initiating a mass attack across the board now with recurring mass vaccination as required, or are there other approaches which should be considered such as focusing first on certain problem countries (e.g. Nigeria, Guinea, Liberia and Mali), then, when there is more comparability among the U. S.-financed countries and WHO-assisted countries, attack jointly across the board? Should it wait on WHO programs getting underway? Should it wait on commitment of understanding on the part of governments as to the possible long term implication and their assumption of additional costs after AID financing ceases? Should consideration be given to specifically strengthening national health services prior to expansion of country smallpox programs?

The situation with respect to measles is quite different. It is a control program, not eradication. Only children 1-6 are vaccinated, not the total population. Programs have been carried on in 11 countries. The plan is to extend these programs to all 19 countries. While timing and extent of coverage is flexible, there is a limiting seasonal factor which only permits campaigns during certain seasons of the year. It has been a bilateral program, not international. From past experience, it does have considerable political impact. While originally conceived in the President's offer to be conducted simultaneously with smallpox, a few countries prefer to treat the two separately.

Consideration of these programs can be separated from smallpox. If it should be decided to shift any of the present smallpox plans, measles program could still be provided.

Vaccine represents a major cost. Following on the Surgeon General's medical recommendation that only "further attenuated (Schwarz)" strain be used, cost will continue to be a major consideration since there is at present only one producer. With the provision of the further attenuated strain, there is no longer a problem on country participation. Should AID consider provision of assistance for measles control only in the context of the smallpox eradication program or should it consider it independently, in the context of U.S. bilateral objectives with respect to individual countries?

In summary, after a review of the situation with consideration of possible alternatives, the following emerges:

a. There is no agreement among the professionals as to when eradication is possible. Dr. Henderson of CDC believes it is not unreasonable to expect the eradication of smallpox from all of Africa by the end of a six year period. He agrees, however, that administrative delays and nonparticipation of certain countries (e.g. Guinea) may extend the total duration. The recent study by the National Academy of Sciences of the French West African countries does not consider eradication of smallpox possible in these countries in the foreseeable future without special efforts. It further states, "Nevertheless, the very fact that smallpox is being held in check, and is very seldom exported to the outside world from Africa, implies that the efforts being made are not wasted. They should be continued and encouraged." (See Attachment B-10)

b. There are differences of opinion as to the length of period vaccination will be required. WHO says until 3 years after the last case is reported. PHS does not agree.

c. CDC staff have prepared E-1s in conjunction with Ministry of Health officials and the assumption is the plans are administratively and technically feasible for this type of program. There is no real experience generally in these countries. AID experience might lead one to question country contribution and operational capability.

d. As a result of the President's public announcement followed by CDC studies in the countries, the countries, OCCGE and OCCGEAC assume U. S. assistance and are planning on initiating programs in November, 1966. A draft ProAg has been discussed with Nigeria. FY 66 funded grant agreements for some commodities have been executed with OCCGE and with OCCGEAC.

e. CDC, though only 14 medical personnel have been approved, has commitments to 26 operational personnel who will start orientation July 1 and expect to be in the countries in September. (The AID funding commitment to date is for the CDC study to develop program and plan of operations for AID approval, 14 medical positions, a grant to OCCGE for 50 vehicles in April, and on June 30 grants to OCCGE and OCCGEAC for vaccine and other commodities.)

In this situation, without an agreed professional judgment, it is not possible to make definitive program and administrative judgments. For foreign policy reasons AID/AMR is now involved in a situation comparable to the malaria eradication program, with its open end aspect. Depending on interpretation of the U. S. commitment, it could mean continuing assistance for some time to come, as has been the experience with the malaria program. It is important at this time to clarify the extent of the U. S. commitment and plan accordingly. While the general assumption on the part of WHO, the countries, and CDC may be that the President has commited the U. S. to "eradication of smallpox", our interpretation is that assistance in eradication, not eradication, is the commitment and that AID funding should be limited to assistance in the form of a contribution towards eradication on an annual funding basis subject to availability of appropriations. Such "assistance" should take the form of an agreement for a time period and coverage and country agreements should state the "mates and bounds". However, recognizing that, as with the original measles program which was to be for two years only, the governments may feel this too is subject to change, AID should be prepared for such change, should it be required to protect its investment.

III. Recommendations

A. Accepting the principle of U. S. willingness to help these 19 countries toward eradication of smallpox and the control of measles, the CDC proposal in general appears reasonable. It is recommended that it be approved with the following exceptions:

1. For smallpox, AID should be prepared to finance a maximum

of 5 years through FY 1971, subject to annual appropriations, as follows:

Phase I - Mass vaccination plus evaluation of type and extent of the most appropriate assistance during the remaining portions of the five year period.

Phase II- Whatever is agreed as the type of activity to follow mass vaccination.

The ProAgs would include language specifying the extent of the AID commitment as outlined above.

2. For measles, AID should be prepared to finance assistance, subject to annual appropriations, towards control of measles through mass vaccination coverage of susceptibles 1-6 years old for the same time period as Phase I for smallpox with further requirements beyond Phase I to be determined in conjunction with the smallpox evaluation.

3. For Phase I, AID should approve a multi-year level in the general magnitude of $29,000,000. However, in the annual approval of funds AID should be guided by possible savings some of which have been tentatively identified and estimated as shown in Column (E) of Table A-3. If most of these savings should materialize, there might be as much as a 12 percent savings. In addition, every country, especially the Ivory Coast, is being and should continue to be urged to provide from their own resources maximum support to the program in terms of personnel, vaccine, vehicles and other operating costs. Increased participation beyond that which can now be forecast could further reduce the cost of the program to the U.S.

4. The dollar drain of the program for Phase I is estimated at $3,363,000. Of this some $1,747,000 is to be spent in countries where SLC procedures are in effect. Should an SLC procedure be developed for RUA countries, an additional $1,024,000 could be handled through SLC procedures, leaving only $592,000 which is not so covered. Thus, two recommendations emerge:

   a. That RUA make every effort to develop an acceptable SLC arrangement with its countries.

   b. That as part of CDC's instructions all their field personnel be instructed that conversion of dollars, official or personal assets, into local currency will be through the local U.S. disbursing officer or such other channel as prescribed by the local U.S. embassy or AID representative.

Of the $592,000 which cannot be covered by SLCs there is $179,000 for 3rd country procurement of motorcycles, refrigerators and spares.

Approval is recommended to waive AID policy concerning U.S. source and origin requirements.

B. PHS should be requested to:

1. Work out arrangements as appropriate with WHO whereby funding will be available immediately for those countries requiring assistance in covering the local costs, and

2. Negotiate arrangements with WHO for assumption of the program in Guinea if AID cannot initiate a program in FY'67, and, if required, in Portuguese Guinea.

Attachments:

A. Tables

1 Summary of Total Program - CDC Five Year Plan, with Country Sheets
2 Summary of Phase I (Based on CDC Estimates), with Country Sheets
3 Comparison of Cost Estimates and Possible Savings
4 Potential U.S. Dollar Drain

B. Background Documents

1 Press Release, May 18, 1965
2 PHS Proposal, August 20, 1965
3 Memorandum for the Administrator, November 15, 1965
4 Press Release, November 23, 1965
5 Draft E-1, FY'67- '71, January 21, 1966 (Prepared by CDC)
6 General Terms of Reference for the Measles Control/Smallpox Eradication Program in West Africa, (airgram sent March 12, 1966)
7 WHO Smallpox Eradication Programme, March 28, 1966
8 Letter from Surgeon General dated April 19, 1966 (Recommendation on strain of measles vaccine)
9 WHO Resolution, Nineteenth World Health Assembly, May 13, 1966
10 Excerpt from "Public Health Problems in 14 French Speaking Countries in Africa and Madagascar" National Academy of Sciences 1966
11 Summary of CDC Five Year Program for Nigeria, with Terms of Reference

Concurrences:

ALoren, AFR/RA
DAlter, AFR/RA
HHirschbein, AFR/DP (Draft)
RCrochin, AFR/CA (Draft)
JKnoll, AFR/SA (Draft)
AHurt, AFR/RUA (Draft)
KRupard, AFR/ID
ACurtis, M.D., AFR/ID/PH
IMerrill, M.D., TOR/HS (Draft)
DRuthig, M.D., USPHS (Concurred with recommendations)
DAHenderson, M.D. USPHS (Concurred with recommendations)

SUMMARY - TOTAL PROGRAM - CDC Five Year Plan

	1966	1967	1968	1969	1970	1971	Total Doses & Value in $000
A. Summary of Vaccine Doses		(Doses 000's)					
1. Measles Doses		4,494	11,394	11,143	5,755	5,891	38,677 ($17,792)
2. Smallpox Doses		26,590	57,759	55,827	58,065	58,557	256,798 ($ 5,136)

								Total Cost
B. Summary of A.I.D. Contribution ($000)								
1) 19 Countries								
a. Commodities		$4,348	$7,359	$8,289	$4,770	$4,898	$ 193	$29,857
Procurement Charges @ 5%		$ 218	$ 368	$ 415	$ 239	$ 245	$ 10	$ 1,495
b. Technical assistance		$ 258	$1,277	$1,360	$1,365	$1,374	$1,290	$ 6,924
No. U.S. technicians			(36)	(36)	(36)	(36)	(36)	(36)
No. local hire			(58)	(58)	(58)	(58)	(58)	(58)
c. Participant Training			$ 39	$ 43	$ 43	$ 43	$ 43	$ 211
No. short-term participants			(58-87)	(64-97)	(64-97)	(64-97)	(314-475)	
TOTAL		$4,824	$9,043	$10,107	$6,417	$6,560	$1,536	$38,487
2) A.I.D. Financing of Lagos & Atlanta CDC Offices (Estimates for FY 1967 based on CDC revised budget proposal and for other years on Jan. 21, 1966 master E-1)								
a. Atlanta - U.S. Technicians (15)			794	813	867	742	729	3,945
b. Lagos- U.S. Technicians (9)		116	1,097	601	618	622	571	3,625
Sub-Total		116	1,891	1,414	1,485	1,364	1,300	$ 7,570
3) Embassy Service for Lagos and individual country units		---	360	360	360	360	360	$ 1,800
TOTAL A.I.D. by Fiscal Year		$4,940	$11,294	$11,881	$8,262	$8,284	$3,196	
TOTAL A.I.D. for Five Years								$47,857
TOTAL U.S. technicians for Country team, Lagos and Atlanta (60)								

($ 000)

	1966	1967	1968	1969	1970	1971	Total
C. Host Country Contributions							
1. Firm Sub-total		1,508	1,962	1,956	1,929	1,943	9,298
2. Vehicle Pol. & Maintenance (possible MDD contingency)		226	244	232	224	224	1,150
		1,734	2,206	2,188	2,153	2,167	10,448

SUMMARY COSTS OF LAGOS REGIONAL OFFICE - CDC Five Year Plan

	1966	1967	1968	1969	1970	1971	Total
Personnel Costs							
1. Salary & Differential		$ 248	$250	$250	$250	$250	
2. Logistic Support		$ 273	$155	$155	$155	$155	
		$ 521	$405	$405	$405	$405	$2,141
Commodities							
1. Supplies & Back-up Reserve	$ 31	$ 331	$ 94	$ 94	$122	$ 59	
2. Equipment including Vehicles for Regional Office	$ 79	$ 80	$ 30	$ 44	$ 20	$ 34	
3. Procurement Charges @ 5%	$ 6	$ 21	$ 7	$ 7	$ 7	$ 5	
Total Commodity	$116	$ 432	$131	$145	$149	$ 98	$1,071
Printing		$ 3		$ 3	$ 3	$ 3	12
Annual Meeting		$ 20	$ 20	$ 20	$ 20	$ 20	100
Training Costs			$ 10	$ 10	$ 10	$ 10	40
Overhead		$ 121	$ 35	$ 35	$ 35	$ 35	261
Total	$116	$1,097	$601	$618	$622	$571	$3,625
Embassy Services for both Regional and Country Offices		$ 360	$360	$360	$360	$360	$1,800

SUMMARY OF COSTS OF ATLANTA OFFICE- CDC Five Year Plan

	1966	1967	1968	1969	1970	1971	Totals
Personnel							
1. Salaries		182	191	200	210	220	
2. Logistic Support		161	86	149	90	101	
3. Consultants		30	30	30	30	20	
Total Personnel Costs		373	307	379	330	341	$1,730
Commodities							
1. Manuals		30	20	-	-	-	
2. Lab. Equipment		15	10	10	10	8	
Office supplies & Training aids		12	12	12	12	10	
3. Procurement Charges		124	171	181	109	112	
Total Commodities		181	223	203	131	130	868
Overhead		240	283	285	281	258	1,347
Total		794	813	867	742	729	$3,945

CAMEROON

Population: 4,600,000 Affiliation: OCCGEAC CDC 5 Year Plan

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage of Population 2/
			Dosages					
Measles Vaccinations							1,032	22
1. Attack (ages 1-6)		204	204					
2. Maintenance (new susceptibles)				204	210	210		
Smallpox Vaccinations							8,700	190
1. First mass vaccination		1,700	1,700	1,700				
2. Revaccination 1/3 annually					1,800	1,800		
AID CONTRIBUTION ($ thousands)								
1. Commodities	216	249	236	159	159	$ 3	1,021	
2. Technical Assistance	25	82	82	82	82	67	420	
- No. U.S. Technicians	(0)	(2)	(2)	(2)	(2)	(2)	(2)	
- No. Local Hire	(0)	(3)	(3)	(3)	(3)	(3)	(3)	
3. Participant Training in Africa	(0)	2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	241	333	320	243	242	$ 72	1,451	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		475	475	475	475	$ 475	2,375	
2. Miscellaneous		16	16	16	16	16	80	
Firm sub-total		491	491	491	491	491	2,455	
3. Vehicle POL and Maintenance		80	80	80	80	80	400	
(Possible WHO Contingency)								
POSSIBLE TOTAL		571	571	571	571	$ 571	2,855	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 1,300,000

CENTRAL AFRICAN REPUBLIC
Affiliation: OCCGEAC

CDC
5 Year Plan

PLAN OF ACTION	1966	1967	1968	1969	1970	1971	Total	Percentage of Population 2/
				Dosages				
Measles Vaccinations								
1. Attack (ages 1-6)		105	105	105			435	33
2. Maintenance (new susceptibles)					60	60		
Smallpox Vaccinations								
1. First mass vaccination (Entire population)		470	470	470			2,410	185
2. Revaccination (1/3 annually)					500	500		
AID CONTRIBUTION ($ thousands)								
1. Commodities	57	29	93	49	49	3	280	
2. Technical Assistance	13	40	40	41	40	32	206	
- No. U.S. Technicians	(0)	(1)	(1)	(1)	(1)	(1)	(1)	
- No. Local Hire	(0)	(2)	(2)	(2)	(2)	(2)	(2)	
3. Participant Training in Africa	(0)	2	2		2	2	10	
- No. short-term participants	-	(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	70	71	135	92	91	$ 37	496	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		60	60	60	60	$ 60	300	
2. Miscellaneous		4	4	4	4	4	20	
Firm sub-total		64	64	64	64	64	320	
3. Vehicle POL and Maintenance		4	4	4	4	4	20	
(Possible WHO Contingency)								
POSSIBLE TOTAL		68	68	68	68	$ 68	340	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e., percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 2,800,000 Affiliation: OCCGEAC

CHAD
CDC
5 Year Plan

N OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage of Population 2/
			Dosages					
Measles Vaccinations								
1. Attack (ages 1-6)		257	257				954	33
2. Maintenance (new susceptibles)				160	140	140		
Smallpox Vaccinations								
1. First mass vaccination Entire population first 2 years		1,496	1,496				7,657	273
2. Revaccination About 1/3 population annually				1,496	1,537	1,632		
D CONTRIBUTION ($ thousands)								
.. Commodities	203	181	182	123	120	$ 3	812	
2. Technical Assistance	31	88	88	89	88	67	451	
- No. U.S. Technicians	(0)	(2)	(2)	(2)	(2)	(2)	(2)	
- No. Local Hire	(0)	(3)	(3)	(3)	(3)	(3)	(3)	
3. Participant Training in Africa	(0)	2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	234	271	272	214	210	$ 72	1,273	
ST COUNTRY CONTRIBUTION ($ thousands)								
.. Personnel		204	204	204	204	$ 204	1,020	
2. Miscellaneous		40	40	40	40	40	200	
Firm sub-total		244	244	244	244	244	1,220	
3. Vehicle POL and Maintenance		10	10	10	10	10	50	
(Possible WHO Contingency)								
POSSIBLE TOTAL		254	254	254	254	$ 254	1,270	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines:

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

CONGO(B)

Affiliation: OCCGEAC- Problem Countr,

Population: 1,000,000 1/

Program to be administered by OCCGEAC. No U.S. tech. assistance. No E-1. Commodities estimated on basis twice Gabon

	Fiscal Year						CDC 5 Year Plan Total	Percentage Population
	1966	1967	1968	1969	1970	1971		
PLAN OF ACTION			Dosages					
Measles Vaccinations							340	34
1. Attack (ages 1-6)		110	110					
2. Maintenance (new susceptibles)				40	40	40		
Smallpox Vaccinations							2,870	297
1. First mass vaccination		594	594					
2. Revaccination				594	594	594		
U CONTRIBUTION ($ thousands)								
1. Commodities	180	90	100	52	52	$ 3	477	
2. Technical Assistance								
- No. U.S. Technicians								
- No. Local Hire								
3. Participant Training in Africa								
- No. short-term participants								
TOTAL	180	90	100	52	52	$ 3	477	
NEW COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel	No estimates-- to be worked out by OCCGEAC							
2. Miscellaneous								
Firm sub-total								
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)								
POSSIBLE TOTAL								

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 2,300,000 1/

DAHOMEY
Affiliation: OCCGE

CDC
5 Year Plan

PLAN OF ACTION	1966	1967	1968	1969	1970	1971	Total	Percentage Population
			Dosages					
Measles Vaccinations								
1. Attack (ages 1-6)		140	140				574	25
2. Maintenance (new susceptibles)				96	98	100		
Smallpox Vaccinations								
1. First mass vaccination (⅓ entire population annually)		250	1,250				4,949	215
2. Revaccination (1/3 entire population annually)				800	816	833		
AID CONTRIBUTION ($ thousands)								
1. Commodities	169	115	126	76	92	$ 3	$ 581	
2. Technical Assistance	18	75	75	75	75	67	385	
- No. U.S. Technicians	0	(2)	(2)	(2)	(2)	(2)	(2)	
- No. Local Hire	0	(3)	(3)	(3)	(3)	(3)	(3)	
3. Participant Training in Africa	0	2	2	2	2	2	10	
- No. short-term participants	0	(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	187	192	203	153	169	$ 72	$ 976	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		77	77	57	57	$ 57	$ 325	
2. Miscellaneous		8	8	6	6	6	34	
Firm sub-total		85	85	63	63	63	$ 359	
3. Vehicle POL and Maintenance (Possible WHO Contingency)		14	14	10	10	10	58	
POSSIBLE TOTAL		99	99	73	73	$ 73	417	

1/ WHO Estimate for 1966

Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

GABON

Population: 500,000 1/ Affiliation: OCCGEAC

CDC 5 Year Plan

PLAN OF ACTION	1966	1967	1968	1969	1970	1971	Total	Percentage Population 2/
			Fiscal Year					
			Dosages					
Measles Vaccinations							170	34
1. Attack (ages 1-6)		55	55					
2. Maintenance (new susceptibles)				20	20	20		
Smallpox Vaccinations							1,485	297
1. First mass vaccination (Entire population)		297	297					
2. Revaccination (⅓ annually)				297	297	297		
MID CONTRIBUTION ($ thousands)								
1. Commodities	91	45	51	27	27	$ 3	244	
2. Technical Assistance	14	41	41	42	41	35	214	
- No. U.S. Technicians	(0)	(1)	(1)	(1)	(1)	(1)	(1)	
- No. Local Hire	(0)	(2)	(2)	(2)	(2)	(2)	(2)	
3. Participant Training in Africa	(0)	2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-20)	
TOTAL	105	88	94	71	70	$ 40	468	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		82	82	82	82	$ 82	410	
2. Miscellaneous		18	18	18	18	18	90	
Firm sub-total		100	100	100	100	100	500	
3. Vehicle POL and Maintenance (Possible WHO Contingency)		4	4	4	4	4	20	
POSSIBLE TOTAL		104	104	104	104	$ 104	520	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 400,000 1/

THE GAMBIA
Affiliation: (None)

CDC
5 Year Plan

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population 2/
			Dosages					
Measles Vaccinations							132	33
1. Attack (ages 1-6)		71						
2. Maintenance (new susceptibles)			15	15	15	16		
Smallpox Vaccinations							773	193
1. First mass vaccination (Entire population)		353	15					
2. Revaccination (Entire population 3rd year)				374	15	16		
AID CONTRIBUTION ($ thousands)								
1. Commodities	70	12	45	11	11	$ 1	$ 150	
2. Technical Assistance	6	6	6	6	6	6	36	
- No. U.S. Technicians	(0)	(0)	(0)	(0)	(0)	(0)	(0)	
- No. Local Hire	(0)	(1)	(1)	(1)	(1)	(1)	(1)	
3. Participant Training in Africa	(0)	1	1	1	1	1	5	
- No. short-term participants		(1-2)	(1-2)	(1-2)	(1-2)	(1-2)	(5-10)	
TOTAL	76	19	52	18	18	$ 8	$ 191	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		5	5	5	5	$ 5	$ 25	
2. Miscellaneous		1	1	1	1	1	5	
Firm sub-total		6	6	6	6	6	$ 30.	
. Vehicle POL and Maintenance		4	4	4	4	4	20	
(Possible WHO Contingency)								
POSSIBLE TOTAL		10	10	10	10	$ 10	50	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

GHA
CDC
5 Year Plan

Population: 7,965,000 Affiliation: None

PLAN OF ACTION	1966	1967	1968	1969	1970	1971	Total	Percentage Population 2/
			Fiscal Year					
			Dosages					
Measles Vaccinations							1,960	25
1. Attack (ages 1-6) Pilot 1st year		120	770	770				
2. Maintenance (new susceptibles)					150	150		
Smallpox Vaccinations							14,300	180
1. First mass vaccination Pilot 1st year		600						
½ population each 2nd and 3rd years			3,850	3,850				
2. Revaccination					3,000	3,000		
½ population annually								
AID CONTRIBUTION ($ thousands)								
1. Commodities	95	506	276	474	212	$ 3	1,566	
2. Technical Assistance	18	75	75	75	75	75	393	
- No. U.S. Technicians		(2)	(2)	(2)	(2)	(2)	(2)	
- No. Local Hire		(4)	(4)	(4)	(4)	(4)	(4)	
3. Participant Training in Africa		2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	13	583	353	551	289	$ 80	1,969	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		8	47	47	31	$ 31	164	
2. Miscellaneous		2	10	10	7	7	36	
Firm sub-total		10	57	57	38	38	200	
3. Vehicle POL and Maintenance		2	10	10	7	7	36	
(Possible WHO Contingency)		12	67	67	45	$ 45	236	
POSSIBLE TOTAL								

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 3,500,000

GUINEA

Affiliation: OCCGE
(Problem country)

5 Year Plan estimates

($ Thousands) No E-1. All figures based on Senegal

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population 2/
			Dosages					
Measles Vaccinations								
1. Attack (ages 1-6)		420	300				1,200	34
2. Maintenance (new susceptibles)				160	160	160		
Smallpox Vaccinations								
1. First mass vaccination		2,100	1,500				7,500	214
2. Revaccination				1,300	1,300	1,300		
AID CONTRIBUTION ($ thousands)								
1. Commodities		202	189	132	141	$ 3	667	
2. Technical Assistance		41	42	41	42	41	207	
- No. U.S. Technicians		(2)	(2)	(2)	(2)	(2)	(2)	
- No. Local Hire		(2)	(2)	(2)	(2)	(2)	(2)	
3. Participant Training in Africa		2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL		245	233	175	185	$ 46	884	
HOST COUNTRY CONTRIBUTION ($ thousands)						$		
1. Personnel		43	43	43	43	43	215	
2. Miscellaneous		2	2	2	2	2	10	
Firm sub-total		45	45	45	45	45	225	
. Vehicle POL and Maintenance		10	10	10	10	10	50	
(Possible WHO Contingency)								
POSSIBLE TOTAL		55	55	55	55	$ 55	275	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

IVORY COAST

Population: 3,700,000 1/

Affiliation: OCCGE

CDC 5 Year Plan

	Fiscal Year							Percentage Population 2/
	1966	1967	1968	1969	1970	1971	Total	
PLAN OF ACTION								
			Dosages					
Measles Vaccinations							1,160	31
1. Attack (ages 1-6)		300	300					
2. Maintenance (new susceptibles)				182	190	198		
Smallpox Vaccinations							7,568.	204
1. First mass vaccination (Complete entire population)		1,320	1,474					
2. Revaccination (1/3 population annually)				1,540	1,584	1,650		
AID CONTRIBUTION ($ thousands)								
1. Commodities	256	219	199	145	183	$ 3	$1,005	
2. Technical Assistance	9	36	36	38	36	32	187	
- No. U.S. Technicians		(1)	(1)	(1)	(1)	(1)	(1)	
- No. Local Hire		(2)	(2)	(2)	(2)	(2)	(2)	
3. Participant Training in Africa		2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	265	257	237	185	221	$ 37	$1,202	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		92	92	90	90	90	$ 454	
2. Miscellaneous		9	9	8	8	8	42	
Firm sub-total		101	101	98	98	98	$ 496	
3. Vehicle POL and Maintenance		24	24	12	12	12	84	
(Possible WHO Contingency)								
POSSIBLE TOTAL		125	125	110	110	$ 110	580	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 28% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210%.(i.e., twice the population with 10% added for growth during five year period)

Population: 1,100,000

Affiliation: None

LIBERIA
CDC
5 Year Plan

No E-1 prepared at this date. These estimates are based on CDC Master E-1 of Jan. 21, 1966.

PLAN OF ACTION	Fiscal Year 1967	1968	1969	1970	1971	1972	Total	Percentage Population
		Dosages						
Measles Vaccinations								
1. Attack (ages 1-6)		97	145				407	27
2. Maintenance (new susceptibles)				55	55	55		
Smallpox Vaccinations								
1. First mass vaccination		485	725				1375	125
2. Revaccination				55	55	55		

AID CONTRIBUTION ($thousands)							
1. Commodities	85	103	56	36	50	$ 3	333
2. Technical Assistance	12	75	75	75	75	75	387
- No. U.S. Technicians	(0)	(2)	(2)	(2)	(2)	(2)	(2)
- No. Local Hire	(3)	(3)	(3)	(3)	(3)	(3)	(3)
3. Participant Training in Africa		2	2	2	2	2	10
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)
TOTAL	97	180	133	113	127	$ 80	730

HOST COUNTRY CONTRIBUTION ($ thousands)

1. Personnel
2. Miscellaneous — No E-1 yet received. WHO contingency estimated at $5,000 annually
   Firm sub-total
3. Vehicle Rt. and Maintenance
   (Possible WHO Contingency)
   POSSIBLE TOTAL — $20

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;
   (a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)
   (b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 4,700,000 1/

MALI
Affiliation: OOOGZ

CDC
5 Year Plan

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population
			Doses					
Measles Vaccinations							1,565	33
1. Attack (ages 1-6)		330	330					
2. Maintenance (new susceptibles)				289	301	315		
Smallpox Vaccinations							9,135	194
1. First mass vaccination (30% population first 2 years- 2nd year		2,000	2,000					
2. Revaccination (% population annually)				2,000	1,540	1,595		
AID CONTRIBUTION ($ thousands)								
1. Commodities	305	224	253	167	242	$ 3	$1,194	
2. Technical Assistance	18	75	75	75	75	67	385	
- No. U.S. Technicians		(2)	(2)	(2)	(2)	(2)	(2)	
- No. Local Hire		(3)	(3)	(3)	(3)	(3)	(3)	
3. Participant Training in Africa		2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-75)	
TOTAL	323	301	330	244	319	$ 72	$1,589	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		28	28	28	28	$ 28	$ 140	
2. Miscellaneous		1	0	1	0	1	3	
Plan sub-total		29	28	29	28	29	$ 143	
3. Vehicle M. and Maintenance (Possible WHO Contingency)		14	14	14	14	14	70	
POSSIBLE TOTAL		43	42	43	42	$ 43	213	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposed AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines:

(a) Measles= 20% (i.e. percentage of children 12 years and under at end of five years)

(b) Smallpox= 200% (i.e., twice the population with 20% added for growth during five year period)

Population: 1,000,000 a/

MAURITANIA
Affiliation: OCCGE

CDC
5 Year Plan

KIND OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percent Population b/
			Dosages					
Measles Vaccinations								
1. Attack (ages 1-6)		55	55	51			269	27
2. Maintenance (new susceptibles)					58	50		
Smallpox Vaccinations								
1. First mass vaccination (Principal accessible population)		340	340				1,706	171
2. Revaccination (1/3 annually)				363	363	300		
AID CONTRIBUTION ($ thousands)								
1. Commodities	87	44	83	46	56	$ 3	$ 319	
2. Technical Assistance	5	43	40	41	40	40	209	
- No. U.S. Technicians		(1)	(1)	(1)	(1)	(1)	(1)	
- No. Local Hire		(2)	(2)	(2)	(2)	(2)	(2)	
3. Participant Training in Africa	2/	2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	92	89	125	89	98	$ 45	$ 538	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		25	25	25	25	$ 25	$ 125	
2. Miscellaneous		2	2	2	2	2	10	
Firm sub-total		27	27	27	27	27	135	
3. Vehicle POL and Maintenance		10	10	10	10	10	50	
(Possible WHO Contingency)								
POSSIBLE TOTAL		37	37	37	37	$ 37	185	

a/ WHO Estimate for 1966

b/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

NIGER

Population: 3,100,000 1/ Affiliation: OCCGE CDC 5 Year Plan

	Fiscal Year							Percentage of Population 2/
	966	1967	1968	1969	1970	1971	Total	
N OF ACTION								
Measles Vaccinations							830	27
1. Attack (ages 1-6) Remaining 1/3 not vaccinated		260						
2. Maintenance (new susceptibles)			110	110	175	175		
Smallpox Vaccinations							8,150	263
1. First mass vaccination		1,500	1,370	1,130				
2. Revaccination					2,050	2,100		
D CONTRIBUTION ($ thousands)								
1. Commodities	239	103	161	146	147	$ 3	$ 799	
2. Technical Assistance	10	82	82	83	82	82	421	
- No. U.S. Technicians		(2)	(2)	(2)	(2)	(2)		
- No. Local Hire		(3)	(3)	(3)	(3)	(3)		
3. Participant Training in Africa		2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	—	
TOTAL	249	187	245	231	231	$ 87	$1,230	
NT COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		10	10	12	20	$ 20	$ 72	
2. Miscellaneous		3	3	3	4	4	17	
Firm sub-total		13	13	15	24	24	$ 89	
3. Vehicle POL and Maintenance		20	20	25	25	25	115	
(Possible WHO Contingency)								
POSSIBLE TOTAL		33	33	40	49	$ 49	$204	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 60,000,000 1/

NIGERIA
Affiliation: (None)

CDC
5 Year Plan

PLAN OF ACTION	1966	1967	1968	1969	1970	1971	Total	Percentage of Population 2/
			Dosages					
Measles Vaccinations							23,537	39
1. Attack (ages 1-6) (pilot 1st year)		810	7,543	8,241				
2. Maintenance (new susceptibles)					3,421	3,522		
Smallpox Vaccinations							149,767	250
1. First mass vaccination (Pilot 1st year)		5,550						
(Entire population 2nd & 3rd year)			34,118	34,936				
2. Revaccination (½ annually)					37,531	37,632		
U.S. CONTRIBUTION ($ thousands)								
1. Commodities	1,636	4,546	5,383	2 540	2,763	$ 15	$16,883	
2. Technical Assistance	50	417	375	375	389	389	1,995	
- No. U.S. Technicians	(0)	(10)	(10)	(10)	(10)	(10)	(10)	
- No. Local Hire	(0)	(15)	(15)	(15)	(15)	(15)	(15)	
3. Participant Training in Africa	(0)	10	10	10	10	10	50	
- No. short-term participants		(15-25)	(15-25)	(15-25)	(15-25)	(15-25)	(75-125)	
TOTAL	1,686	4,973	5,768	2,925	3,162	$ 414	$18,928	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		122	417	417	417	$ 417	$1,790	
2. Miscellaneous		20	10	10	10	10	60	
3. Vehicle POL and Maintenance		15	60	60	60	60	255	
4. Travel		19	19	19	19	19	95	
5. Smallpox vaccine		30	92	107	68	70	367	
6. Housing U. S. technicians		20	36	36	36	36	164	
WHO Estimate for 1966 Total		226	634	649	610	612	2,731	

Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Included in E-1 submission as U.S. cost

Population: 3,500,000 1/

SENEGAL
Affiliation: OCCGE

CDC
5 Year Plan

H OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage of Population 2/
			Dosages					
easles Vaccinations								
1. Attack (ages 1-6)		420	300				1,200	34
2. Maintenance (new susceptibles)				160	160	160		
mallpox Vaccinations								
1. First mass vaccination		2,100	1,500				7,500	214
2. Revaccination (1/3 population annually)				1,300	1,300	1,300		
D CONTRIBUTION ($ thousands)								
. Commodities	333	202	189	132	141	$ 3	$1,000	
. Technical Assistance	14	41	42	41	42	41	221	
- No. U.S. Technicians	(0)	(1)	(1)	(1)	(1)	(1)	(1)	
- No. Local Hire	(0)	(2)	(2)	(2)	(2)	(2)	(2)	
. Participant Training in Africa	(0)	2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	347	245	233	175	185	$ 46	$ 1,231	
COUNTRY CONTRIBUTION ($ thousands)								
. Personnel		43	43	43	43	$43	$ 215	
. Miscellaneous		2	2	2	2	2	10	
Firm sub-total		45	45	45	45	45	$ 225	
. Vehicle POL and Maintenance		10	10	10	10	10	50	
(Possible WHO Contingency)								
POSSIBLE TOTAL		55	55	55	55	$55	275	

WHO Estimate for 1966

Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

SIERRA LEONE

pulation: 2,500,000 1/
No E-1 prepared at this date. Estimates are based on CDC Master E-1 of Jan. 21, 1966

Affiliation: None

CDC 5 Year Plan

M OF ACTION	Fiscal Year 1967	1968	1969	1970	1971	1972	Total	Percentage Population
		Dosages						
Measles Vaccinations								
1. Attack (ages 1-6)							845	34
2. Maintenance (new susceptibles)		200	300					
				115	115	115		
Smallpox Vaccinations								
1. First mass vaccination							2,845	114
		1,000	1,500					
2. Revaccination								
				115	115	115		

L CONTRIBUTION ($ thousands)							
. Commodities	170	219	83	83	$ 82	3	640
. Technical Assistance	12	75	75	75	75	75	387
- No. U.S. Technicians	(0)	(2)	(2)	(2)	(2)	(2)	(2)
- No. Local Hire	(0)	(3)	(3)	(3)	(3)	(3)	(3)
. Participant Training in Africa	0	2	2	2	2	2	10
- No. short-term participants	(0)	(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)
TOTAL	182	296	160	160	159	80	1,037

L COUNTRY CONTRIBUTION ($ thousands)	
. Personnel	No E-1 yet received. WHO Contingency estimated at $5,000 annually.
. Miscellaneous	
Firm sub-total	
. Vehicle POL and Maintenance	
(Possible WHO Contingency)	
POSSIBLE TOTAL	$ 20

WHO Estimate for 1966

Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)
(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

TOGO

Population: 1,700,000 1/ Affiliation: OCCGE CDC 5 Year Plan

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage of Population 2/
			Dosages					
Measles Vaccinations							524	31
1. Attack (ages 1-6) (½ already vaccinated)		198						
2. Maintenance (new susceptibles)			78	80	83	85		
Smallpox Vaccinations							4,197	288
1. First mass vaccination (½ population each first 2 years)		935	935					
2. Revaccination (1/3 population annually)				751	775	801		
AID CONTRIBUTION ($ thousands)								
1. Commodities	143	94	87	91	89	$ 3	$ 507	
2. Technical Assistance	9	36	36	36	36	32	185	
- No. U.S. Technicians	(0)	(1)	(1)	(1)	(1)	(1)	(1)	
- No. Local Hire	(0)	(2)	(2)	(2)	(2)	(2)	(2)	
3. Participant Training in Africa	0	2	2	2	2	2	10	
- No. short-term participants	--	(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	152	132	125	129	127	$ 37	$ 702	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		5	5	6	6	$ 6	$ 28	
2. Miscellaneous		1	1	1	1	1	5	
Firm sub-total		6	6	7	7	7	$ 33	
3. Vehicle POL and Maintenance		9	9	8	8	8	42	
(Possible WHO Contingency)								
POSSIBLE TOTAL		15	15	15	15	$ 15	75	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 4,800,000

Affiliation: OCCGE

UPPER VOLTA

CDC
5 Year Plan

PLAN OF ACTION	1966	1967	1968	1969	1970	1971	Total	Percentage Population
			Dosages					
Measles Vaccinations								
1. Attack (ages 1-6)		342	277				1,515	32
2. Maintenance (new susceptibles)				290	304	320		
Smallpox Vaccinations								
1. First mass vaccination ½ population each st 2 years		2,500	2,625				13,811	288
2. Revaccination ½ population annually				2,756	2,893	3,037		
AID CONTRIBUTION ($ thousands)								
1. Commodities	268	243	314	261	295	$ 3	1,384	
2. Technical Assistance	18	75	75	75	75	67	385	
- No. U.S. Technicians	(0)	(2)	(2)	(2)	(2)	(2)	(2)	
- No. Local Hire	(0)	(3)	(3)	(3)	(3)	(3)	(3)	
3. Participant Training in Africa	(0)	2	2	2	2	2	10	
- No. short-term participants		(3-5)	(3-5)	(3-5)	(3-5)	(3-5)	(15-25)	
TOTAL	286	320	391	338	372	$ 72	1,779	
HOST COUNTRY CONTRIBUTION ($ thousands)								
1. Personnel		13	13	13	37	$ 37	113	
2. Miscellaneous		3	3	3	2	2	13	
Firm sub-total		16	16	16	39	39	126	
3. Vehicle POL and Maintenance		11	11	11	6	6	45	
(Possible WHO Contingency)								
POSSIBLE TOTAL		27	27	27	45	$ 45	171	

* WHO Estimate for 1966

/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

SUMMARY - PHASE I
(Based on CDC Estimate:

	1966	1967	1968	1969	
A. Summary of Vaccine Doses	(Doses 000's)			(Total Doses & Value in $000)	
1. Measles Doses	-	3,777	11,163	9,912	24,852 ($11,432)
2. Smallpox Doses	-	23,035	57,619	46,174	126,828 ($ 2,537)
B. Summary of AID Contribution ($000)					Total Cost - Phase
1. 19 Countries					
a. Commodities	$4,348	$ 7,359	$ 6,773	$ 39	$ 18,519
Procurement Charges @ 5%	$ 218	$ 368	$ 339	$ 2	$ 927
b. Technical Assistance	$ 258	$ 1,254	$ 1,360	$ 889	$ 3,761
No. U.S. Technicians	-	(30)	(36)	(24)	(36 in FY 1968)
No. Local Hire	-	(49)	(57)	(37)	(57 in FY 1968)
c. Participant Training		$ 37	$ 43	$ 26	$ 106
No. Short-Term Participants	-	(55-82)	(64-97)	(39-65)	(158-244)
TOTAL	$4,827	$ 9,018	$ 8,515	$ 956	$ 23,313
2. AID Financing of Lagos & Atlanta CDC Offices (Estimates FY 1967 based on CDC revised budget proposal, for other years on Master E-1, 1/21/66, with exception of procurement charges)					
a. Atlanta (U.S. Technicians - 15)	-	$ 670	$ 632	$ 686	$ 1,988
b. Lagos (U.S. Technicians - 19)	116	$ 1,097	$ 601	$ 618	$ 2,432
Sub-Total	116	$ 1,767	$ 1,233	$ 1,304	$ 4,420
3. Embassy Services for Lagos and Country Teams	-	360	360	360	$ 1,080
TOTAL AID by Fiscal Year	$4,940	$11,145	$10,108	$ 2,620	
TOTAL AID for Phase I					$ 28,813
TOTAL U.S. Technicians for Country Teams, Lagos and Atlanta (60)					
C. Summary of Host Country Contribution					
Firm sub-total - Personnel Costs, Etc.	-	$ 1,463	$ 1,962	$ 1,346	$ 4,771
Possible WHO Contingency - Gas, Oil Vehicle Maintenance	-	$ 216	$ 244	$ 144	$ 604
Possible Total		$ 1,679	$ 2,206	$ 1,490	$ 5,375

[redacted]

	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2. [redacted]					
a. [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
b. [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
c. [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2. [redacted]					
a. [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
b. [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
c. [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
3. [redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

SUMMARY COSTS OF LAGOS REGIONAL OFFICE - PHASE I

	1966	1967	1968	1969	Total
1. Personnel					
a. Salary & Differential	-	248	250	250	748
b. Logistic Support	-	273	155	155	583
Total Personnel		521	405	405	1,331
2. Commodities					
a. Supplies & Back-up	-31	331	94	94	550
b. Equipment - Vehicles	79	80	30	44	233
c. Procurement Charges - 5%	6	21	7	7	41
Total Commodities	116	432	131	145	824
3. Printing	-	3	-	3	6
4. Annual Meeting	-	20	20	20	60
5. Training Costs	-	-	10	10	20
6. Overhead	-	121	35	35	191
TOTAL A.I.D.	116	1,097	601	618	$2,432

CAMEROON

CDC Estimated Phase I

Population: 4,600,000

Affiliation:

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage of Population
Measles Vaccinations		204	204				408	
1. Attack (ages 1-6)								
2. Maintenance (new susceptibles)								
Smallpox Vaccinations		1,700	1,700	1,700			5,100	
1. First mass vaccination								
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	216	249	236	3			$704	
2. Technical Assistance	25	82	82	82			271	
- No. U.S. Technicians		(2)	(2)	(2)			(2)	
- No. Local Hire		(3)	(3)	(3)			(3)	
3. Participant Training in Africa		2	2	2			6	
- No. short-term participants								
TOTAL							$ 981	
	241	333	320	87				
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		491	491	491			1,473	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)		80	80	80			240	
POSSIBLE TOTAL								
		571	571	571			1,713	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 1,300,000

C. A. R.

CDC Estimated Phase I

Affiliation:

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population
Measles Vaccinations								
1. Attack (ages 1-6)		105	105	105			315	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination		470	470	470			1410	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	57	29	93	3			182	
2. Technical Assistance	13	40	40	41			134	
- No. U.S. Technicians		(1)	(1)	(1)			(1)	
- No. Local Hire		(2)	(2)	(2)			(2)	
3. Participant Training in Africa		2	2	2			6	
- No. short-term participants								
TOTAL	70	71	135	46			322	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		64	64	64			192	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)		4	4	4			12	
POSSIBLE TOTAL		68	68	68				

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 2,800,000

Chad
Affiliation:

CDC Estimated
Phase I

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage of Population
Measles Vaccinations								
1. Attack (ages 1-6)		257	257				514	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination		1496	1496				2992	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	203	181	3				387	
2. Technical Assistance	31	88	88				207	
- No. U.S. Technicians		(2)	(2)				(2)	
- No. Local Hire		(3)	(3)				(3)	
3. Participant Training in Africa		2	2				4	
- No. short-term participants								
TOTAL	234	271	93				598	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		244	244				488	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)		10	10				20	
POSSIBLE TOTAL		254	254				508	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 1,000,000

Congo (B)
Affiliation:

CDC Estimate
Phase I

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Expenditure
Measles Vaccinations								
1. Attack (ages 1-6)		110	110				220	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination		594	594				1188	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities								
2. Technical Assistance	180	90	3				273	
- No. U.S. Technicians								
- No. Local Hire								
3. Participant Training in Africa								
- No. short-term participants								
TOTAL								
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total								
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)								
POSSIBLE TOTAL								

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; all estimates follow; standard percentages in computing revised cost of measles and smallpox vaccines:

(a) Measles- 22% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 212% (i.e., twice 1% population with 5% added for growth during five year period)

Population: 2,300,000

DAHOMEY

C.C
Estimated — se I

Affiliation:

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population 2/
Measles Vaccinations		140	140				280	
1. Attack (ages 1-6)								
2. Maintenance (new susceptibles)								
Smallpox Vaccinations		1,250	1,250				2,500	
1. First mass vaccination								
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	$169	$ 115	$ 3				$ 287	
2. Technical Assistance	18	75	75				168	
- No. U.S. Technicians	-	(2)	(2)				(2)	
- No. Local Hire		(2)	(2)				(2)	
3. Participant Training in Africa		2	2				4	
- No. short-term participants								
TOTAL	$187	$192	$80				459	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		85	85				170	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)		14	14				28	
POSSIBLE TOTAL		99	99				198	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 500,000

Gabon

Affiliation: CDC Estimated

Phase I

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population
Measles Vaccinations		55	55				110	
1. Attack (ages 1-6)								
2. Maintenance (new susceptibles)								
Smallpox Vaccinations		297	297				594	
1. First mass vaccination								
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	91	45	3				139	
2. Technical Assistance	14	41	41				96	
- No. U.S. Technicians		(1)	(1)				(1)	
- No. Local Hire		(2)	(2)				(2)	
3. Participant Training in Africa		2	2				4	
- No. short-term participants								
TOTAL	105	88	46				239	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		100	100				200	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)		4	4				8	
POSSIBLE TOTAL		104	104				208	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

CDC Estimate
Phase I

GAMBIA

Population: 400,000

Affiliation:

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population
Measles Vaccinations		71					71	
1. Attack (ages 1-6)								
2. Maintenance (new susceptibles)								
Smallpox Vaccinations		383	15				398	
1. First mass vaccination								
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	70	12	3				$85	
2. Technical Assistance	6	6	6				18	
- No. U.S. Technicians		(0)	(0)				(0)	
- No. Local Hire		(1)	(1)				(1)	
3. Participant Training in Africa		1	1				2	
- No. short-term participants							$105	
TOTAL	76	19	10					
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		6	6				$12	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)		4	4				$ 8	
POSSIBLE TOTAL		10	10				20	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

CDC Estimated
Phase I

GHANA

Population: 7,965,000

Affiliation:

($ Thousands)

	Fiscal Year							Percentage Population
	1966	1967	1968	1969	1970	1971	Total	
PLAN OF ACTION								
Measles Vaccinations	120	770	770				1.660	
1. Attack (ages 1-6)								
2. Maintenance (new susceptibles)								
Smallpox Vaccinations	600	3,850	3,850				8,300	
1. First mass vaccination								
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	95	506	276	3			$880	
2. Technical Assistance	18	75	75	75			243	
- No. U.S. Technicians		(2)	(2)	(2)			(2)	
- No. Local Hire		(4)	(4)	(4)			(4)	
3. Participant Training in Africa		2	2	2			6	
- No. short-term participants								
TOTAL	113	583	353	80			1,129	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		10	57	57			$124	
3. Vehicle [illegible] and Maintenance								
(Possible WHO Contingency)		2	10	10			$ 22	
POSSIBLE TOTAL		12	67	67			$146	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;
(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)
(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 3,500,000

GUINEA
Affiliation:

CDC Estima
Phase I

($ Thousands)

	Fiscal Year							Percentage 1/ Population 2/
	1966	1967	1968	1969	1970	1971	Total	
PLAN OF ACTION								
Measles Vaccinations			420	300			720	
1. Attack (ages 1-6)								
2. Maintenance (new susceptibles)								
Smallpox Vaccinations			2,100	1,500			3,600	
1. First mass vaccination								
2. Revaccination								
AID CONTRIBUTION								
1. Commodities		$ 202	$ 189	$ 3			$ 394	
2. Technical Assistance		18	42	42			102	
- No. U.S. Technicians			(2)	(2)			(2)	
- No. Local Hire			(2)	(2)			(2)	
3. Participant Training in Africa			2	2			4	
- No. short-term participants								
TOTAL		220	233	47			$500	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total			45	45			90	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)			10	10			20	
POSSIBLE TOTAL			55	55			110	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 3,700,000

IVORY COAST
Affiliation;

CDC Estima
Phase I

($ Thousands)

	Fiscal Year							Percentage Population
	1966	1967	1968	1969	1970	1971	Total	
PLAN OF ACTION								
Measles Vaccinations		300	300				600	
1. Attack (ages 1-6)								
2. Maintenance (new susceptibles)								
Smallpox Vaccinations		1,320	1,474				2,794	
1. First mass vaccination								
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	256	219	3				$478	
2. Technical Assistance	9	36	36				81	
- No. U.S. Technicians		(1)	(1)				(1)	
- No. Local Hire		(2)	(2)				(2)	
3. Participant Training in Africa		2	2				4	
- No. short-term participants								
TOTAL	265	257	41				$563	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous		101	101				202	
Firm sub-total								
3. Vehicle POL and Maintenance		24	24				48	
(Possible WHO Contingency)								
POSSIBLE TOTAL		125	125				250	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 1,100,000

Liberia

Affiliation:

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	CDC Estimated Phase I Total	Percentage Population
Measles Vaccinations								
1. Attack (ages 1-6)			97	145			242	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination			485	725			1210	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities		85	103				191	
2. Technical Assistance		12	75	75			162	
- No. U.S. Technicians			(2)	(2)			(2)	
- No. Local Hire			(3)	(3)			(3)	
3. Participant Training in Africa			2	2			4	
- No. short-term participants								
TOTAL		97	180	80			357	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous			(NO Estimate)					
Firm sub-total								
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)			5	5			10	
POSSIBLE TOTAL							$ 10	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 4,700,000

MALI

Affiliation: CDC Estimated Phase I

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population
Measles Vaccinations								
1. Attack (ages 1-6)		330	330				660	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination		2,000	2,000				4,000	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	305	224	3				$532	
2. Technical Assistance	18	75	75				168	
- No. U.S. Technicians		(2)	(2)				(2)	
- No. Local Hire		(3)	(3)				(3)	
3. Participant Training in Africa		2	2					
- No. short-term participants								
TOTAL	323	301	80					
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		29	28				$ 57	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)		14	14				$ 28	
POSSIBLE TOTAL		43	42				$85	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 1,000,000

MAURITANIA

Affiliation:

CDC Estimated Phase

($ Thousands)

	Fiscal Year							
	1966	1967	1968	1969	1970	1971	Total	Percentage Population
PLAN OF ACTION								
Measles Vaccinations								
1. Attack (ages 1-6)		55	55	51			161	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations		340	340	363			1,043	
1. First mass vaccination								
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	87	44	83	3			$217	
2. Technical Assistance	5	43	40	41			129	
- No. U.S. Technicians		(1)	(1)	(1)			(1)	
- No. Local Hire		(2)	(2)	(2)			(2)	
3. Participant Training in Africa		2	2	2			6	
- No. short-term participants							$ 352	
TOTAL	92	89	125	46				
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		27	27	27			$81	
3. Vehicle RCL and Maintenance		10	10	10			$30	
(Possible WHO Contingency)								
POSSIBLE TOTAL		37	37	37			$111	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 31,000,000

NIGER

Affiliation: CDC Estimate Phase I

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population
Measles Vaccinations								
1. Attack (ages 1-6)		260					260	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination		1,500	1,370	1,130			4,000	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	239	103	161	3			$506	
2. Technical Assistance	10	82	82	83			257	
- No. U.S. Technicians		(2)	(2)	(2)			(2)	
- No. Local Hire		(3)	(3)	(3)			(3)	
3. Participant Training in Africa		2	2	2			6	
- No. short-term participants								
TOTAL	249	187	245	88			$769	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		13	13	13			$39	
Vehicle RCL and Maintenance								
(Possible WHO Contingency		20	20	20			$ 60	
POSSIBLE TOTAL		33	33	33			$99.	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 60,000,000

Nigeria
Affiliation:

CDC Estimated
Phase I

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population
Measles Vaccinations								
1. Attack (ages 1-(		810	7,543	8,241			16,594	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination		5,550	34,118	34,936			74,604	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	1636	4,546	5,383	15			11,580	
2. Technical Assistance	50	417	375	375			1,217	
- No. U.S. Technicians		(10)	(10)	(10)			(10)	
- No. Local Hire		(15)	(15)	(15)			(15)	
3. Participant Training in Africa		10	10	10			30	
- No. short-term participants								
TOTAL	1,686	4,973	5,768	400			12,827	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		226	634	649			1509	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)							0	
POSSIBLE TOTAL								

WHO Estimate for 1966

Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 3,500,000

Senegal Affiliation: CDC Estimated Phase I

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population
Measles Vaccinations								
1. Attack (ages 1-6)		420	300				720	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination		2100	1500				3600	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	333	202	3				$538	
2. Technical Assistance	14	41	42				97	
- No. U.S. Technicians		(1)	(1)				(1)	
- No. Local Hire		(2)	(2)				(2)	
3. Participant Training in Africa		2	2				4	
- No. short-term participants								
TOTAL	347	245	47				$639	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		45	45				90	
3. Vehicle POL and Maintenance		10	10				20	
(Possible WHO Contingency)								
POSSIBLE TOTAL		55	55				110	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 2,500,000

Sierra Leone
Affiliation: CDC Estimate
Phase I

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population
Measles Vaccinations								
1. Attack (ages 1-6)			200	300			500	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination			1000	1500			2500	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities		170	219	3			392	
2. Technical Assistance		12	75	75			162	
- No. U.S. Technicians			(2)	(2)			(2)	
- No. Local Hire			(3)	(3)			(3)	
3. Participant Training in Africa			2	2			4	
- No. short-term participants								
TOTAL		182	296	80			558	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous			(No estimate)					
Firm sub-total								
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)			5	5			10	
POSSIBLE TOTAL							$ 10	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

Population: 1,700,000

Togo
Affiliation:

CDC Estimated
Phase I

($ Thousands)

PLAN OF ACTION	Fiscal Year 1966	1967	1968	1969	1970	1971	Total	Percentage Population 2/
Measles Vaccinations								
1. Attack (ages 1-6)		198					198	
2. Maintenance (new susceptibles)								
Smallpox Vaccinations								
1. First mass vaccination		935	935				1870	
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	143	94	3				240	
2. Technical Assistance	9	36	36				81	
- No. U.S. Technicians		(1)	(1)				(1)	
- No. Local Hire		(2)	(2)				(2)	
3. Participant Training in Africa		2	2				4	
- No. short-term participants								
TOTAL	152	132	41				325	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		6	6				12	
3. Vehicle POL and Maintenance								
(Possible WHO Contingency)		9	9				18	
POSSIBLE TOTAL		15	15				330	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

CDC Estimate
Phase I

UPPER VOLTA

Population: 4,800,000

Affiliation:

($ Thousands)

	Fiscal Year							Percentage of Population 2/
	1966	1967	1968	1969	1970	1971	Total	
PLAN OF ACTION								
Measles Vaccinations		342	277				619	
1. Attack (ages 1-6)								
2. Maintenance (new susceptibles)								
Smallpox Vaccinations		2,500	2,625				5,125	
1. First mass vaccination								
2. Revaccination								
AID CONTRIBUTION								
1. Commodities	268	243	3				$514	
2. Technical Assistance	18	75	75				168	
- No. U.S. Technicians		(2)	(2)				(2)	
- No. Local Hire		(3)	(3)				(3)	
3. Participant Training in Africa		2	2				4	
- No. short-term participants								
TOTAL	286	320	80				$ 686	
HOST COUNTRY CONTRIBUTION								
1. Personnel								
2. Miscellaneous								
Firm sub-total		16	16				$32	
3. Vehicle POL and Maintenance (Possible WHO Contingency)		11	11				$22	
POSSIBLE TOTAL		27	27				$54	

1/ WHO Estimate for 1966

2/ Percentage based on CDC proposal; AFR estimates following standard percentages in computing revised cost of measles and smallpox vaccines;

(a) Measles- 29% (i.e. percentage of children 11 years and under at end of five years)

(b) Smallpox- 210% (i.e., twice the population with 10% added for growth during five year period)

COMPARISON OF COST ESTIMATE AND POSSIBLE SAVINGS

($000)

Category	Five Year Plan					Phase I		
	Proposed in Memo to Administrator	Proposed by CDC, E-1 1/21/66	Proposed by CDC Field E-1s	Possible if Savings Col. (E) Occur	Possible Savings in Col. (C)	Per CDC Proposals in Col. (C) 5 Yr. Plan	Possible if Savings Col. (C) Occur	Possible Savings in Col. (A)
	A (B-3)	B (B-5)	C (A-1)	D	E	A	B	C
Personnel	8,000	11,062	10,764	10,764	----	6,151	6,151	----
Vaccines	15.000	16,224	22,334	19,122	(1)3,212	13,554	12.023	(1)1,531
Vehicles & Spares (Incl. Boats)	4,000	3,258	3,873	2,622	(2)1,251	2,521	2,521	
Jet Injectors-Spares	2,250	1,510	2,634	1,754	(3) 800	1,774	1,774	----
Freezers	300	142	255	255	----	199	199	----
Contract Services	300	----	----	----	----			
Supplies & Field Equipment	800	733	1,385	1,385	----	1,164	1,164	----
PASA Overhead	350	1,347	1,347	619	(4) 728	808	595	(4) 213
Items Not included in Memo. to the Administrator								
Embassy Services			1,800	1,150	(5) 650	1,080	690	(5) 390
Procurement Charges		695	1,495	1,046	(6) 449	927	662	(6) 265
Participant Training		50	211	211	----	106	106	----
Certificates		1,578	940	940	----	464	464	----
Printing-Reproduction			12	12	----	5	5	----
Annual Meetings (Lagos)		100	100	100	----	60	60	----
				$39,980			$26,414	
Additional Possible Savings								
Atlanta Headquarters				- 623	(7) 623		- 419	(7) 419
Nigeria Housing				- 270	(8) 270		- 162	(8) 162
TOTALS	$31,000	$36,679	$47,150	$39,087	$8,063	$28,813	$25,833	$2,980

FOOTNOTES - EXPLANATION OF SAVINGS
(Cost shown in $000)
Five-Year Program

(1) Vaccines: (Saving - $3,212)
(a) Smallpox - Reduce funding in E-1's total $4,578 million - 299,350,000 doses - to 220,000,000 doses (double population). Saving 9,350,000 doses @ .02= $187.

(b) Measles - Reduce to 29% population estimated percentage children 11 years and less over five-year period. Total reduced from $17,425 million funding for 37,880,000 doses to 32,000,000 doses. Saving 5,880 doses @ .46= $2,705 saving - $1,251. Additional saving by reducing price of dose from .46 to .45 - 32,000,000 X .01= $320.

(2) Vehicles:
E-1 estimate for vehicles and spare parts based on two-year life span, ($2\frac{1}{2}$ vehicle units). (Revised estimate based on life span of three-years, 1 2/3 vehicle unit). This results in saving of 1/3 total 5-year cost ($3,753) of vehicles and spares, or $1,251.

(3) Jet Injectors: (Saving $880)
Life span increased from one year to $1\frac{1}{2}$ years (CDC concurs). Total estimate saving 1/3 of $2,634.

(4) PASA Overhead: (Saving $728)
Revised figure of $619 for PASA overhead is based on 15% of total salaries, as is normal.

(5) Embassy Services: (Saving $650)
The revised cost of Embassy Service is based on FY 1966 billings from State for 13 of 19 countries included in this program. Average cost per U.S. technician in those 13 countries is $2,850. We use a liberal average of $4,000 in computing Embassy Service since it is likely more such service will be required for CDC technicians than for AID direct hire.

The estimate of $1,000 per local hire is considered reasonable.

Computation

$4,000 per U.S. technicians X 43 X 5=	$860
$1,000 per local hire X 58 X 5=	290
Total Embassy Service	$1,150
Saving	650

(6) Procurement Charges: (Saving - $449)
The total estimate of $7,150 includes a 5% procurement charge on all commodities. Estimate of $3\frac{1}{2}$% appears more realistic on basis AAPC scale and anticipated size of individual orders. AAPC scale follows:

(1) Transactions up to $100,000 - 4%
(2) $100,000 - 1,000,000 - 2%
(3) Over $1,000,000 - 2%

Estimate of 3½% includes bank charge of 1/10 of 1% and insurance of ½ of 1%.

(7) Atlanta CDC Headquarters: (Saving - $623)
The five year estimate in January 21, 1966 E-1 was $3,238. This was estimate for FY 1967 to $523,000. (Projected over 5 years, this results in a total cost of $2,615, or a saving of $623).

(8) Nigeria Housing: (Saving - $270)
Housing for U.S. Technicians in Nigeria program for five years to be paid GON. Nigeria Desk concurs.

Phase I

(1) Vaccines: (Saving $1,531)
CDC estimates include 24,850,000 doses of measles vaccine. Assuming children to be reached Phase I represent about 20% of the total population, 22,100,000 doses will suffice, saving 2,850,000 doses @ .46= $1,311. Additional savings on the result of a decrease in the price of measles vaccine from .46 to .45 per dose amount to $220. TOTAL----$1,531.

(4) PASA Overhead: (Saving $213)
Computed on basis of 15% of salaries as for revised Five-Year estimate.

(5) Embassy Services: (Saving $390)
New Total of $690 is computed on same basis as for revised Five-Year estimate.

(6) Procurement Charges: (Saving $265)
New estimate based on same AAPC scale as for Five-Year estimate.

(7) Atlanta Headquarters: (Saving $419)
New estimate based on revised PASA estimate for FY 1967 as for revised Five-Year estimate. $523,000 X 3= $1,569 million instead of $1,988 million in January 1966 E-1.

(8) Nigeria Housing: (Saving $162)
Housing for U.S. technicians to be paid for by GON (E-1 estimate: FY 1967 $82; FY 1968 $40; FY 1969 $40).

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POTENTIAL DOLLAR DRAIN ($000's)

FIVE - YEAR PLAN

A. 19 Countries	FY 1966 (1)	(2)	(3)	1967 (1)	(2)	(3)	1968 (1)	(2)	(3)	1969 (1)	(2)	(3)	1970 (1)	(2)	(3)	1971 (1)	(2)	(3)	Totals (1)	(2)	(1)+(2)	(3)	SLC	RUA SLC	Phase I Only Total	Off-shore	SLC	RUA SLC
CCCOE: Dahomey - (RUA)	-	13	(5)	14	34		14	38	(4)	14	34		14	38	(4)	14	34		70	191	251	(13)		248	113	(5)	-	108
Guinea	-	3	(3)	6	24		6	27	(3)	6	24		6	27	(3)	6	24		30	129	159	(9)			96	(3)	-	-
Ivory Coast - (RUA)	-	7	(3)	6	20		6	24	(4)	6	20		6	23	(3)	6	20		30	114	144	(10)		134	63	(3)		69
Mali*	-	14	(6)	14	34		14	40	(6)	14	34		14	40	(6)	14	34		70	195	250	(15)	248		116	(6)	110	-
Mauritania - (RUA)	-	3	(3)	6	27		6	30	(3)	6	27		6	27		5	27		30	141	171	(6)		165	105	(3)	-	102
Niger - (RUA)	-	9	(9)	14	41		14	50	(9)	14	41		14	41		14	41		70	223	293	(18)		275	183	(9)	-	174
Senegal - (RUA)	-	13	(6)	6	24		6	30	(6)	6	24		6	24		6	24		30	139	169	(12)		157	79	(6)	-	73
Togo - (RUA)	-	5	(1)	6	21	(1)	6	21	(1)	6	21	(1)	6	21	(1)	6	20		30	109	139	(5)		136	59	(1)	-	58
Upper Volta - (RUA)	-	11	(3)	14	34		14	37	(3)	14	34		14	37	(3)	14	34		70	187	257	(9)		248	110	(3)	-	107
OCCOFAC: Cameroon	-	30	(15)	14	41		14	52	(11)	14	41		14	41		14	41		70	246	316	(26)			206	(15)	-	-
C.A.R. - (RUA)	-	11	(3)	6	24		6	27	(3)	6	24		6	24		6	24		30	134	164	(6)		158	104	(3)	-	101
Chad - (RUA)	-	30	(9)	14	47		14	54	(7)	14	47		14	47		14	47		70	272	342	(16)		325	159	(9)	-	150
Congo (B)	-	15	(16)	-	-		-	6	(6)	-	-		-	-		-	-			22	22	(22)			16	(16)	-	-
Gabon - (RUA)	-	17	(8)	6	25		6	28	(3)	6	25		6	25		5	25		30	145	175	(11)		164	82	(8)	-	74
Non-Affiliated: Nigeria*	-	69	(69)	65	217		66	239	(64)	66	175		66	193	(4)	66	180		320	1092	1412	(137)	1275		893	(69)	820	-
Ghana		10	(2)	14	49	(7)	24	45	(3)	14	48	(6)	14	45	(3)	14	42		70	239	309	(21)			104	(9)	-	-
Gambia - (RUA)		3	(3)	-	7		-	10	(3)	-	7		-	7		-	7		-	41	41	(6)		35	20	(3)	-	17
Liberia*		-		6	30	(3)	6	27		6	30	(3)	6	27		6	27		30	141	171	(6)	165		105	(3)	102	-
Sierra Leone*		-		14	39	(5)	14	24		14	39	(5)	14	34		14	39	(5)	70	185	255	(15)	240		154	(5)	250	-
Sub Totals	-	264		235	738		286	819		226	695		220	721		226	600		1130	3926								
Totals (1) + (2)	264			964			1,045			921			947			925					5056		2928	2041	2362		$1277	1024
Total Offshore (3)			($164)			($16)			($139)			($15)			($27)			($5)				($366)				($170)		
B. Lagos Regional Off.																												
30% U.S. Salaries	-	-		52			52			52			52			52			260	-								
Local Travel, Per Diem, Etc.	-	-			56		-	56		-	56		-	56		-	56		-	280	-							
Rent	-	-			36		-	36		-	36		-	36		-	36		-	180	-							
Vehicle Operation					8		-	8		-	8		-	8		-	8		-	40	-							
Totals				52	100		52	100		52	100		52	100		52	100		260	500								
Totals (1) + (2)				152			152			152			152			152					760		760		456		456	
C. Accra Hq.																												
Local Travel, Per Diem, Etc.	-	-			15			15			15			15			15		-	75	75				45			
D. Grand Total	264			1131			1212			1035			1114			1092			$1330	$4511	$5901	$366	$2864	$2041	$3363	$175	$1776	$1024
Total Potential SLC																							+5501				$2771	

4948

KEY: (1) - 30% salaries U.S. Technicians.
(2) - Total local currency requirement for housing rental, participant training, local hire salaries, local travel and per diem and vehicle operation cost for U.S. technicians.
(3) - Offshore procurement (motorbikes and freezers) not covered by SLC.
(*) - Countries in which SLC procedures already exist.
Note: Possibly changes as a result of advance rental payments will change Lagos figures and totals.

IMMEDIATE RELEASE

May 18, 1965

Office of the White House Press Secretary

THE WHITE HOUSE

President Johnson announced today that he has instructed the U.S. Delegation at the World Health Assembly, now in progress in Geneva, to pledge American support for an international program to eradicate smallpox completely from the earth within the next decade.

Although smallpox has been eliminated in the United States and other technologically advanced countries, it is still prevalent in Asia, Africa and parts of Latin America, killing one out of every four victims.

The President pointed out that "as long as smallpox exists anywhere in the world, no country is safe from it. This dread disease spreads so rapidly, that even a single case creates the threat of epidemic. It is clear that every nation of the world, whether or not it has experienced smallpox in recent years, has a major stake in a world-wide eradication program."

The President's call for a world-wide war on smallpox was the latest in a series of steps recently on world health matters in connection with the U.S. observance of International Cooperation Year. The first announcement on April 21 urged the establishment of an International Adverse Drug Reaction Center.

At the present rate of inoculation against smallpox, the eradication of this disease is not in sight.

Yet experience has shown that with concerted international effort smallpox could be effectively wiped from the face of the earth. A highly efficient vaccine is available, and the recent development of jet injection equipment makes it possible to vaccinate entire communities with relative ease.

The technical problems of a world-wide vaccination campaign against smallpox are minimal. The administrative problems -- including the assurance of an ample supply of vaccine, the personnel to administer the injections, and the coordinating mechanism -- can be solved through international cooperation.

The President's announcement today followed a report by the Director-General of the World Health Organization to the World Health Assembly. The report stressed that the eradication of smallpox, though hampered since 1958 by insufficient resources, is an attainable goal by 1974 -- if greater resources are made available for an intensified attack upon it. This is the goal which the U. S. Delegation to the World Health Assembly has been instructed to support.

In making today's announcement the President stated:

"On June 10 last year I said that we now have the knowledge to reduce the toll from many diseases and to avert millions of separate tragedies of needless death and suffering. I noted that the United Nations had designated 1965 International Cooperation Year, and at that time I said that I proposed to dedicate 1965 to finding new techniques to serve man's welfare. Today I am pleased to announce that our search for new ways of improving the world's health have brought to light another opportunity through international cooperation to keep people from dying."

To help in the world-wide eradication of smallpox, the President's program of action includes:

Full support for the adoption by the World Health Organization of a smallpox eradication program with a goal for completion within a decade.

Contribution of technical personnel and other necessary resources to the Pan American Health Organization, the regional agency of the WHO, to step up the war against smallpox in Latin America.

Assisting in the establishment of laboratory facilities in the developing countries to help meet requirements of vaccine for the intensified program.

The President added: "This government is ready to work with other interested countries to see to it that smallpox is a thing of the past by 1973."

# # # #

MEASLES-SMALLPOX VACCINATION PROGRAM FOR WEST AFRICA

Summary

This is a program for vaccination against measles and smallpox through systematic country-wide campaigns in 16 West African countries. The program encompasses projects already committed by AID for FY 1966 and will extend over the succeeding five years. It will be fully integrated with the World Health Organization's global smallpox eradication scheme, for which United States assistance was pledged by President Johnson. The total cost of the five year program is estimated at $29 million.

Submitted to AID Administrator, by Dr. Terry, August 20, 1965

Program Outline

1. The Public Health Service will immediately assume operational responsibility for combined measles-smallpox vaccination programs already committed by AID in nine West African countries for FY 1966. The countries include: Cameroon, Chad, Dahomey, Guinea, Ivory Coast, Mauritania, Mali, Niger, and Togo. The costs and extent of participation will be defined by a series of PASA agreements now being negotiated.

2. During the 1966 fiscal year, detailed plans will be developed for combined measles-smallpox vaccination programs to be conducted during FY 1967-1971 in the nine countries listed above plus Central African Republic, Gabon, Gambia, Liberia, Senegal, Sierra Leone, and Upper Volta. During this period necessary staff will be recruited and trained and the necessary logistical, technical, and diplomatic groundwork laid. Requisite costs for this developmental phase of the program will be provided by AID through a PASA agreement to be completed by September 15, 1965.

3. The following developments are expected during the period of this program:

   a) smallpox and measles will have been eliminated from the 16 countries;

   b) smallpox eradication, under WHO leadership, will have progressed in neighboring countries to the point so as to no longer constitute a source for reintroduction of the disease in the 16 countries of this program; and

   c) the experience and knowledge gained in this program will have made it possible to design measures to assure the permanent exclusion of measles from the area.

4. The program, organizationally, will be handled as a regional endeavor, coordinated with eradication activities in the rest of Africa and the WHO global program as a whole. A field staff of scientists and program coordinators will assist each of the countries in the conduct of their programs. To support the field staff the Public Health Service will establish a regional office in an appropriate West African country, staffed by scientists, administrative, and secretarial personnel. A supporting scientific, administrative, and technical staff will also be established at the Communicable Disease Center in Atlanta.

5. It shall be the objective to complete by 1969 a program of measles vaccination for all children six months to six years of age in the 16 principal countries and to vaccinate against smallpox all individuals in these same areas. During the three year period, FY 1969-1971, repeat campaigns will be conducted in the 16 countries to vaccinate against measles all children six months to three years of age, i.e., those born since the previous program. To insure more adequate protection against smallpox and to protect those in areas reached in measles vaccine campaigns only during the past two years, smallpox vaccination will be offered to all individuals in every country during this period. In all, it is estimated that by the conclusion of the program 11.5 million doses of measles vaccine and 65 to 70 million doses of smallpox vaccine will have been administered.

6. Jet injectors will be relied upon principally in conduct of the full program. Developed in the USA, the injectors permit far more rapid vaccination than by any other means. For smallpox vaccination they have been shown to be more consistently effective than conventional multiple pressure or scratch techniques. Because of the smaller doses of smallpox vaccine required, substantial savings in vaccine can be effected.

7. To detect residual foci and possible operational flaws, mechanisms for the surveillance of measles and smallpox will be developed coordinately with the mass vaccination programs in each of the 16 countries.

8. Full program costs, including those for personnel, equipment, transportation, vaccines, and technical and administrative services, will be provided through AID on a FAA agreement. Procurement of equipment, transportation and vaccines will be handled by AID for the FY 1966 program, and the U.S. WHO will handle procurement for the principal five-year program. To permit necessary recruiting of personnel and development of the program by the WHO, a commitment on the part of AID for the full program shall be received by October 15, 1965.

9. The total cost of the principal five-year portion of the program is now estimated to be approximately $39 million (one Annex). Developmental and planning costs for the present fiscal year will be approximately $150,000, exclusive of costs for technical support for the nine programs presently committed.

Background

Measles is one of, if not the principal cause of death and disability in African children. When this acute infectious systemic disease is imposed on the disease burden which the average African child is already bearing, it triggers a series of disastrous events which result in a staggering mortality. The sequelae may leave the child alive but handicapped throughout life by mental impairment or loss of hearing or eyesight.

Measles as a problem in Africa involves principally the broad belt of population in the sub-Sahara area. Among the 170 million persons about 7.5 million children are born each year, of whom virtually all will experience measles by age 5 and 10% will die from the disease or its complications. While it is impossible to place a monetary value on such a catastrophic situation, it is evident that a significant economic and human resource loss is suffered; meager medical care facilities are continually taxed to provide necessary care.

Little attention has been focused on this unfortunate condition, either within Africa or by the outside world, because of the apparent hopelessness of the situation. With the discovery and perfection in the USA of an effective measles vaccine, hope is offered. A single injection of this vaccine provides life-long immunity.

Smallpox, the most malignant, devastating disease in medical history, has now been eradicated from many areas of the globe, including North and Central America, Europe, and North Africa; partial control only has been achieved in most other countries. Its continuing ominous threat, however, was dramatically re-emphasized again only three years ago when, in England and Sweden, following introduction of the disease, 40% of the unvaccinated persons died despite optimal medical care. In the United States alone some $20 million annually is expended in vaccination and quarantine efforts.

The demonstration that smallpox can be eliminated from major land masses of the world with reasonable facility induced the World Health Assembly to recommend that a program for global eradication be initiated. This was by unanimous vote of the 117 member countries (including the 16 West African countries voted for this proposal.) President Johnson has pledged United States support for the worldwide eradication of smallpox within a decade. The eradication program is in various stages of evolution in different parts of the world. Sub-Sahara Africa, however, is next to a major reservoir of the disease; few countries have yet been able to develop more than partial control programs. Critically needed is a vigorous, regional phased program of eradication of this dread disease in support of the global program.

It is proposed that a total of 16 West African countries be included in a regional measles-smallpox vaccination project. These countries are: Cameroon, Central African Republic, Chad, Dahomey, Gabon, Gambia, Guinea, Ivory Coast, Liberia, Mauritania, Mali, Niger, Senegal, Sierra Leone, Togo, and Upper Volta. Measles and smallpox are major problems to all. Nine of them are accessible through an African regional organization of their own, the OCCGE. With a few exceptions, they are countries in which a modest demonstration of U.S. interest and presence is desired without involving the U.S. in major dollar and personnel expenditures. This program would most effectively accomplish this aim.

The 16 country participants proposed for the combined program have a population of 41 million persons. By the end of FY 1966, about 3.8 million children, six months to six years of age, will have been vaccinated against measles. In FY 1967-1968, it is planned to complete vaccination programs in these countries through vaccination of an additional 4.5 million children. Smallpox vaccine will also be administered to these children and all others in the area where the measles vaccine programs are conducted. This would amount to a total of 32 million persons. In FY 1969-1971, country-wide programs will be repeated in each of these areas with the plan to administer measles vaccine to those six months to three years of age, i.e. those born since the preceding program. Smallpox vaccine will be given to all. The repeat program undoubtedly can be conducted more systematically and with greater efficiency than the earlier pilot program. Since many will have not received smallpox vaccine in areas where measles vaccination programs have already been completed, this repeat program will permit adequate protection of the total population against smallpox. Repeat vaccination of those already given smallpox vaccine will induce a more permanent, lasting immunity. During the period FY 1969-1971, it is estimated that 21.5 million persons will have received measles vaccine and 65 to 70 million, smallpox vaccine.

Operational Guidelines

The objective of this program is the vaccination against measles and smallpox through systematic country-wide campaigns in the 16 West African countries. It is expected that this will result in the elimination of smallpox from these countries. Ideally, it would be hoped that measles also might be eradicated. However, available epidemiological data indicate that measles is more communicable than smallpox and, being able to spread with greater facility, may be much harder to eradicate. Although smallpox eradication has been shown to be wholly possible even in areas with limited medical resources, no country has yet embarked on a measles eradication scheme. Additional experience will be necessary to ascertain the feasibility of measles eradication, and it may be easier than it would presently appear. Valuable information will be forthcoming from this program.

The program will be organized on the basis of national political and geographical units. However, in this area of the world, national boundaries do not necessarily correspond with tribal boundaries, and large numbers of people move back and forth across national borders. Particularly then is it important to conduct a fully coordinated and comprehensive program of vaccination for this entire area, working in close cooperation with the smallpox vaccination programs to be developed in neighboring countries under the leadership of the World Health Organization. Otherwise, the disease can be reintroduced from adjacent areas, establishing itself by the infection of routine susceptibles, individuals with waning immunity, and others who missed vaccination during the mass program.

With completion of the project program, the participant countries would have a technical expertise, experience with mass vaccination programs, and at least a primitive surveillance program for the detection of measles and smallpox cases. From this substantial background of experience the individual countries will be able to chart the most effective means for continuing disease control efforts.

Evolution of Program

The first national program of measles immunization was carried out in 1961 by the Government of Upper Volta with support from the United States National Institutes of Health and AID. A total of 731,000 children were vaccinated. The enthusiastic response of the Voltan people clearly demonstrated the desire for and acceptance of measles vaccination. Upper Volta medical authorities estimate that the lives of 100,000 children were saved by this single campaign; complications of mental retardation and blindness were prevented among uncounted additional numbers. Based on the success of this program, AID extended assistance in measles vaccination programs to a number of additional countries. During FY 1965 additional children were vaccinated in Cameroon, Dahomey, Togo, Guinea, Ivory Coast, Mauritania, Mali, and Niger. Commitments have been made to continue the programs in these countries during FY 1966 and to initiate a similar program in Chad. By the end of this fiscal year, 3,800,000 children in 10 countries will have been vaccinated against this disease. Numerous requests for similar programs have been received from other countries.

So far in these programs, children have been vaccinated against measles only. The procedure will now be modified to provide for the concurrent vaccination of children against both measles and smallpox. Small trials of this combined procedure have shown it to be medically sound and acceptable. Results of large scale studies will be available by the end of September 1965. Because of the probability that these studies will prove entirely satisfactory, wisdom dictates that plans be made for the institution of the combined vaccination process for children between the ages of six months and six years coupled with smallpox vaccination for all adults residing in the area. Consideration has been given to including other vaccines in the program including such as oral polio vaccine, typhoid, diphtheria, tetanus, whooping cough, etc., but it was felt prudent to add only one new procedure at this time. The wisdom of adding others will be reexamined at a later date.

Programs conducted during the past year have already demonstrated the necessity of adequate U.S. technical assistance to assist each of the countries in the administrative and technical problems inherent in application of this totally new procedure of mass vaccination with mechanical equipment. The expanded scope of the program dictates the necessity for a larger, more permanent structure to provide the necessary supervision and guidance of the program if it is to realize its full potential.

Necessary Immediate Action

PASA's must be negotiated immediately for the vaccination campaigns to be conducted during FY 1966 in Cameroon, Chad, Dahomey, Guinea, Ivory Coast, Mauritania, Mali, Niger, and Togo.

The five-year principal program will be covered by a PASA, which will include provision for the planning and preliminary development to be accomplished during FY 1966. It is important that this PASA be negotiated by mid-September 1965 in order that the U.S. Public Health Service may make the necessary staff commitments.

Attachment: Annex showing breakdown of Estimated Costs

Annex

MEASLES-SMALLPOX VACCINATION PROGRAM FOR WEST AFRICA

Estimated Costs - FY 1967-1971

1.	Vaccines Smallpox - $ 900,000 Measles - 14,500,000	$15,400,000
2.	Vehicular transport	3,000,000
3.	Jet injector guns	2,250,000
4.	Freezers	330,000
5.	Miscellaneous supplies (Publicity materials, camping equipment, loudspeakers, etc.)	820,000
6.	Personnel, including transportation and administrative costs	7,200,000
	TOTAL	$29,000,000

DRAFTED: November 12, 1965

INITIALED: _____

Nov 15 11 16 AM '65
AID
EXECUTIVE SECRETARIAT

ACTION MEMORANDUM FOR THE ADMINISTRATOR

THROUGH: EXSEC

FROM: Edmond C. Hutchinson, AA/AFR

Problem: Need for Presidential approval for an expanded AID program of measles control and smallpox eradication in 18 West African countries.

Discussion: AID is presently assisting eleven West African countries in combined measles-smallpox vaccination programs.

In response to the President's announcement of May 18, 1965 which stated, "This Government is ready to work with other interested countries to see to it that smallpox is a thing of the past by 1975", we propose to expand this program to accomplish smallpox eradication in 18 countries in West Africa and measles control in any or all of the 18 countries desiring this assistance. These projects would involve 105 million people over a 6 or 7 year period at a cost to the U.S. of approximately $31 million. Recent discussions with Dr. M. G. Candau, Director General of the World Health Organization, indicated that WHO will accept the responsibility for eradication programs in all other African countries and welcomes this proposed U.S. program as part of the total world-wide smallpox effort.

AID contributions will consist of technical assistance, vaccines and jet injectors, vehicles and field supplies and equipment. The countries will be required to provide all local costs, or procure such from non-U.S. sources.

The Communicable Disease Center of the U.S. Public Health Service is agreeable to assuming operational responsibility for the program as indicated in the proposal which Drs. Terry and Watt of PHS presented to you on August 20, 1965.

Details of the proposed program are contained in the attached staff memorandum which was used as the basis for my review in conjunction with PC and TCR representatives. Additional preparatory work remains to be accomplished however. The relations between the PHS/CDC unit, WHO and the two regional multilateral African health organizations involved must yet be defined. The country-by-country plan of operations and Project Agreements will have to be worked out in the field. The operational organizational structure proposed by PHS/CDC also requires further negotiation.

We would plan to give first priority to the eleven countries in which we are now involved. The other countries would be added only after a careful feasibility study of each has been made and a realistic plan of operations developed.

We have a relatively pressing requirement for a prompt decision on this matter. It would be most desirable to send representatives of the CDC and AID to the November 23, 1965 meeting of the OCCGE in Upper Volta which will be attended by the Ministers of Health of nine of the eighteen countries, and to the meeting beginning December 7, of the parallel organization (CCEAC) at which four additional countries will be represented. Measles and smallpox are on the agenda for both meetings. We wish to make an announcement there of a USG offer to embark on an expanded program and to explain the basic concepts and proposed approach at those meetings.

For these reasons, we have prepared the atiached recommendation to the President which would enable us to proceed with an approval of the general intent and magnitude of this proposed project; the projected announcements at the OCCGE and CCEAC meetings; and the verification of the feasibility of this effort in conjunction with the 18 designated countries.

Recommendation: That you sign the Memorandum to the President.

Attachments.

Concurrences:

CSHinman, AFR/DP	(Draft)	Date:
RLRupard, AFR/ID		Date:
BHarvey, AA/PC		Date:
AHMoseman, AA/TCR	(Draft)	Date:
GMWilliams, AF (State)		Date:
WStewart, SG, US PHS	(Draft)	Date:

ACCurtis, M.D.:meh:AFR/ID/PH:11/12/65.

NOV 18 1965

MEMORANDUM FOR THE PRESIDENT

SUBJECT: Request for Approval of an AID-Assisted Combined Measles Control and Smallpox Eradication Program in 18 West African Countries

AID is now assisting eleven West African countries in combined measles-smallpox vaccination programs. The programs have been highly successful in reducing these major diseases in West Africa, and have received exceptional response from both governments and people in the countries concerned.

In response to the President's announcement of May 18, 1965 which stated, "This Government is ready to work with other interested countries to see to it that smallpox is a thing of the past by 1975", we propose to expand the vaccination programs to accomplish smallpox eradication in 18 countries in West Africa and measles control in any or all of the 18 countries desiring this assistance. (A list of the countries to be included in the program is attached.) These projects would involve 165 million people over a six or seven year period at a cost to the U.S. of approximately $31 million. Recent discussions with Dr. M. G. Candau, Director General of the World Health Organization, indicated that WHO will accept the responsibility for eradication programs in all other African countries and welcomes this proposed U.S. program as part of the total worldwide smallpox effort.

AID contributions will consist of technical assistance, vaccines and jet injectors, vehicles and field supplies and equipment. The countries will be required to provide all local costs.

In addition to the major and direct benefits to the people of the African countries concerned, the United States Government would also benefit directly from the program since it will be a major step towards global eradication of smallpox.

The Ministers of Health of nine of the proposed countries are meeting in Ouagadougou, Upper Volta, the week of November 23, 1965, to discuss present limited measles--smallpox programs. It would be most advantageous if AID and PHS representatives could at that time inform them of the U.S. intent and initiate discussions preliminary to undertaking feasibility studies and development of project plans in depth.

RECOMMENDATIONS:

It is recommended that approval be granted to permit:

1. Announcement of the U.S. Government's willingness to participate in a joint program of measles control and smallpox eradication with the 16 African governments. (I would recommend a White House release on this.)

2. Discussions on the part of AID and PHS representatives with the African governments, both at the meeting in Ouagadougou, Upper Volta, and individually.

Any formal commitment on the part of the U.S. to undertake such programs in any of the 16 countries would be dependent on:

1. A clear indication on the part of each country that it will make an appropriate contribution of its own resources; and has the capability to help execute the program.

2. That the undertaking is feasible from a technical and administrative standpoint based on an operational plan approved by PHS and AID.

3. An understanding that U.S. financed commodities and services for this program will be procured in the United States thereby limiting the estimated, adverse impact on the U.S. balance of payments to approximately

$430,000 a year representing personal, overseas expenditures by the U.S. technicians assigned to the program.

Surgeon General Stewart, USPHS, concurs in this proposal.

/s/ David M. Bell
David M. Bell

Attachment

ACCurtis, M.D.:meh:AFR/ID/PH:11/12/65

Rewritten by FChapin-JMKeenan EKSEC 11/15/65

Proposed Countries for Inclusion in AID-Assisted Combined Measles Control and Smallpox Eradication Program

Members OCCGE (l'Organisation de Coordination et de Cooperation pour la Lutte Contre les Grandes Endemies)

Dahomey, Guinea, Ivory Coast, Mali, Mauritania, Niger, Senegal, Togo, Upper Volta.

Members OCEAC (l'Organisation de Coordination et de Cooperation pour la Lutte Contre les Grandes Endemies Afrique Centrale)

Cameroun, Central African Republic, Chad, Gabon.

Non-Members

Gambia, Ghana, Liberia, Nigeria, Sierra Leone.

November 11, 1965

STAFF MEMORANDUM

SUBJECT: Proposal for combined smallpox and measles program for 18 West African countries.

Problem: The problem is twofold but interrelated--the need for determination of: 1) nature and scope of an expanded measles control program in Africa, and 2) extent and form of U.S. support in Africa as pledged by President Johnson to the WHO program for world-wide eradication of smallpox within ten years.

Discussion: The present situation is as follows:

Measles

In CY 1961, the Division of Biologic Standards, NIH/PHS, without AID participation, conducted the first experimental measles vaccination of 200 African children in Upper Volta. The results were so successful that Dr. Lamboin, Minister of Health of Upper Volta, requested AID's assistance in performing a mass measles vaccination campaign in Upper Volta. DBS/NIH/PHS supplied two scientists, Merck Company donated the then unlicensed experimental vaccine, and AID funded $43,000 (FY 61) for vehicles, jet guns, supplies and equipment. The campaign took place in the Fall of CY 1962 and 731,000 children were immunized against measles. After the spectacular consequences of the Upper Volta experience, six other countries (Dahomey, Guinea, Ivory Coast, Mali, Mauritania and Niger) in the area requested projects. In FY 1963, AID allotted $230,000 for demonstration and training projects in these countries. These were conducted as a regional project in collaboration with l'Organisation de la Coordination et Cooperation pour la lutte contre les Grande Endemies (OCCGE). In FY 1964, AID allocated $1,478,000 for mass immunization programs in these countries covering twenty-five percent of the susceptibles. In FY 1965, AID allotted $1,198,000 to cover another 25% of susceptibles. In FY 65, five other countries (Cameroon, Central African Republic, Chad, Togo and Upper Volta) were added.

AFR now has approved programs for measles control in eleven of the West African countries (Cameroon, Central African Republic, Chad, Dahomey, Guinea, Ivory Coast, Mali, Mauritania, Niger, Togo, Upper Volta). Four of these (Cameroon, Central African Republic, Chad and Togo) are being implemented as direct country programs while the remaining seven are being serviced through a regional program under the auspices of the OCCGE (l'Organisation de Coordination et de Cooperation pour la lutte contre les Grandes Endemies), an organization composed of nine West African countries and France which assists the member countries in the coordination of all campaigns against the major endemic diseases of Francophone West Africa. Togo has subsequently become a member of the OCCGE and will be treated as such henceforth. Cameroon, Central African Republic and Chad had no covering regional organization so were handled on a bilateral basis. This year (1965) an organization similar in most respects to the OCCGE, known as the OCCGEAC (OCCGE for Afrique Centrale) but abbreviated to OCEAC for distinction, has been implemented with Cameroon, Central African Republic, Chad, Congo (B) and Gabon as members. It is possible the first three countries may be handled hereafter on a regional basis with that multinational organization. These programs designed to cover 50% of susceptibles, 1-6 years of age, have been highly successful. Since measles in Africa is a deadly disease, and the new vaccine developed by American scientists presumably provides lifelong immunity, vaccination programs are welcomed by Africans in those countries where measles is a scourge. Such activities carry considerable impact in expressing U.S. interest in people, and have accrued considerable benefits for the U.S. The "area across the middle of Africa" is generally considered the "measles belt", though there are no accurate figures of extent or incidence. WHO has not as yet been involved in measles control programs. Where an indigenous endemic disease service exists in French West Africa, the principal requirements beyond the vaccine are for vehicles, jet guns, training of vaccinators, and provision of medical consultants for the period of the campaigns. Where country interest and supporting services exist, it is possible to initiate campaigns in additional countries and expand coverage in those already involved.

Smallpox

The President has announced in a White House press release of May 18, 1965, his support to the international program of the World Health Organization for the eradication of smallpox on a global basis within the next 10 years.

Africa represents one of the major areas of incidence. While some African countries have carried on vaccination programs both with and without WHO assistance, relatively little has been done. Eradication of smallpox is important to the U.S. and other countries, where it has been eliminated, to prevent possible reintroduction. As African governments do not necessarily place the same priority on its eradication, they have not always been willing to bear the additional financial burden necessary to achieve full eradication.

AID's only activity in smallpox immunizations in Africa has been in the nature of a pilot study of combining vaccination against smallpox with measles. This was performed on 300 children in Togo by CDC/PHS personnel from February 1 to mid April, 1965. Careful followup revealed that the combination was acceptable clinically to the African children and produced eminently satisfactory serological results as measured by serum antibody titers.

More study is required in terms of relative smallpox incidence; optimum vaccination coverage and timing; adequacy of vaccine production facilities for maintenance programs; and planned support to eradication programs by the individual governments, WHO, UNICEF and other donors. These activities will be performed as part of the scope of work of the attached project proposal.

Combined Smallpox and Measles

Based on field studies, a medical judgment has been made by the USPHS Division of Biologic Standards/NIH and the Communicable Disease Center, Atlanta, Georgia, that it is possible to administer the two vaccines at the same time. Unlike measles where the vaccination has been limited to the one to six age group, it is necessary to vaccinate all age groups for smallpox.

While dual vaccinations can be given to children age 1-6 at little extra cost per individual, additional support services are required for major coverage of the entire population. These will consist primarily of vaccines, jet injection equipment, field supplies, vehicles and technical advisory assistance. Increased local costs will be minimal as sufficient trainable personnel is already on the payroll of the countries since all countries are presently engaged in smallpox control activities. Technical assistance will consist of training and coordinating activities. The major increase in costs to the governments will be for gasoline, oil and vehicle maintenance.

Even this, however, is limited to five or six years. Dr. M. G. Candau, Director General of the WHO, stated in a conference with Mr. Hutchinson on November 2, 1965, that WHO would assist in meeting the increased local costs if this became absolutely necessary to assure success of any country program. He also expressed the opinion that increased local costs would not be great as readjustment of on-going services would minimize required additional expenses.

In order to provide 1) evidence in Africa of U.S. actions in support of the President's pledge to contribute to the eradication of smallpox pending further study and planning on the part of the U.S. and WHO as to the U.S. global contribution and 2) to gain experience in mass campaigns in Africa, it has been decided to add smallpox vaccinations to the on-going measles control campaigns in 11 countries (Cameroon, Central African Republic, Chad, Dahomey, Guinea, Ivory Coast, Mali, Mauritania, Niger, Togo and Upper Volta). Messages have been sent (AIDTO Circ. X266, Sept. 21, 1965) to the U.S. Embassies and AID staffs in these 11 countries. Replies show that all of the countries are interested in the smallpox eradication offer. Two countries (Chad and Ivory Coast) are reluctant to alter on-going smallpox vaccination routines until a more definitive offer of assistance is forthcoming. It is felt, from the tenor of the messages, that all the countries will cooperate in a WHO coordinated regional eradication program, once such a long-term proposal is made.

Meetings have been held between WHO, PHS and AID staff to study the magnitude of the problem and to outline a tentative course of action particularly with respect to the eradication of smallpox on the African Continent and more particularly the U.S. contribution to such an effort.

It is the general consensus that the 18 countries of West Africa (Cameroon, Central African Republic, Chad, Dahomey, Gabon, Gambia, Guinea, Ghana, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta) represent a cohesive entity, susceptible both technically and administratively to complete eradication within a determined time period. It is proposed that this become the area for the U.S. smallpox eradication effort in Africa. WHO has given assurance that it will undertake essentially simultaneous campaigns in the contiguous countries so as to protect the flanks of the AID supported campaigns. WHO will also be responsible for development of eradication programs in all other African countries.

In the November meeting referred to above, Dr. Candau stated that U.S. assistance to the 18 countries would fit well into the WHO plans for Africa, and that WHO would assist the other countries in eradication activities. Dr. Candau assured that the flanks of the U.S. area activity would be protected. In general, Dr. Candau stated that smallpox eradication in Africa is technically and administratively feasible; that such programs are wanted and acceptable to the governments; that any additional financing required may be provided from the general budget of WHO; that a program to the above effect would be presented to the World Health Assembly in May, 1966; and that, if the program is accepted by the WHO, eradication operations will be started by WHO that Fall.

With respect to expansion of measles vaccination beyond the currently planned 11 countries, this has to be considered in a different context. Mass immunization against measles is such a new concept that there is insufficient epidemiological experience at present upon which to base reliable prognostications regarding eradication. The long-lasting protection afforded by the single injection may make eradication feasible, but, until this is substantiated, the measles program should be considered one of control rather than eradication. Therefore, judgment on coverage must be based on other factors such as technical and administrative feasibility of simultaneous campaigns and the political impact of providing the benefit of a significant American scientific breakthrough with respect to a major African health problem. Since present programs in the eleven countries represent a coverage of only 50% of the 1-6 years of age susceptibles, it would appear desirable to extend this to all children in this age range in these and perhaps other countries from among the 18, dependent on further study of country interest and AID program considerations.

Attached is a preliminary project description, developed as a result of these discussions, incorporating both measles and smallpox programs in 18 countries over a period of six years at an estimated cost of $31.0 millions. Although this proposal envisions completion in Africa of this commitment in six years, it would be unrealistic not to expect some slippage since considerable effort on the part of the participating countries to gear up for such an intensive effort is required.

Dr. D. A. Henderson, CDC/PHS, has stated that in order to have eradication in contrast with control, all 18 countries must participate.

The number of countries including measles vaccinations as part of this program is not a critical point since measles is only a control program, but CDC would assist also in any combined projects. Effective smallpox eradication activities require a solidly coordinated, tightly geared structure, well staffed with competent administrators and technical personnel, but also including mechanical skills capable of developing crews to keep the equipment and vehicles operational. USPHS/CDC is prepared to mount such an operation if a true smallpox eradication endeavor is launched. Tooling up can begin immediately with field operations to begin in the Fall of CY 1966.

In order to be in a position to move ahead, there is considerable preliminary work required as follows:

1) Agreement with WHO on U.S./WHO contributions.

2) More definite and detailed information and planning on country capacities, interest and support is required, as well as development of joint operational plans. While U.S. and WHO may consider smallpox eradication important, countries have other needs in the health field which may have priority for local resources. U.S. and country interests have to be reconciled. However, Dr. James Watt, Chief, Office of International Health, stated in the Hutchinson meeting that ensuing international quarantine difficulties will force countries to conform and Dr. Candau expressed the opinion that other participating countries would persuade any reluctant government to institute eradication activities.

The Administrator's approval in principle, subject to WHO agreement to collaborate, is required to enable PHS to:

1) Negotiate agreement with WHO.

2) Refine smallpox eradication requirements and develop country operational plans.

3) Recruit and train personnel for this purpose.

4) Recommend desirable coverage for extended measles control programs.

5) Assist countries in implementing their programs by executing the attached project proposal:

Other Alternatives Under Consideration

It is to be noted that the attached project proposal is for the maximum and optimum project for vaccinating all the measles and smallpox susceptibles in the total 18 countries. While it is necessary to vaccinate all smallpox susceptibles in the entire 18 countries, if this project is to result in smallpox eradication, varying degrees of involvement in measles vaccinations on a country-by-country basis is possible. While it is strongly recommended that assistance be offered all 18 countries to permit vaccination against both smallpox and measles because of the economy of such a combined program as well as the humanitarian aspects, two alternatives with respect to measles coverage may be considered:

1. Vaccinate all 18 countries against smallpox and sixteen countries against measles -- Nigeria and Ghana would not be included for measles. The cost of this operation would approximate $23 million.

2. Vaccinate all 18 countries against smallpox and the present 11 countries against measles. The cost of this operation would approximate $20 million.

ATTACHMENT

TENTATIVE PROPOSAL
for
COMBINED SMALLPOX AND MEASLES PROGRAM FOR 18 WEST AFRICAN COUNTRIES

*(Cameroon, Central African Republic, Chad, Dahomey, Gabon, Gambia, Guinea, Ghana, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta)

I. OBJECTIVE

The objective of this project is the eradication of smallpox in 18 West African countries (Cameroon, Central African Republic, Chad, Dahomey, Gabon, Gambia, Guinea, Ghana, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta) and measles control in 11 of these countries in which measles vaccinations are already established (Cameroon, Central African Republic, Chad, Dahomey, Guinea, Ivory Coast, Mali, Mauritania, Niger, Togo and Upper Volta); plus any additional number of the 18 countries up to 18 which might request to be included in the measles program.

This goal is to be reached through AID assisted and WHO coordinated systematic country-wide vaccination campaigns over the next six years at an estimated cost to AID of 31 million dollars of Development Grant Funds. AID will fund off-shore costs by providing to the governments:

1. Live virus measles and smallpox vaccines and jet gun injection equipment.

2. Transport and field supplies and equipment.

3. Technical assistance and advisory personnel.

In addition, AID will assist in upgrading an existing smallpox vaccine production laboratory in Yaba, Nigeria to produce stable, potent, safe vaccine for vaccinating the newborn susceptibles in future years.

Local costs and operational personnel will be supplied by the individual countries or from non-U. S. sources.

II. JUSTIFICATION

While humanitarian considerations are an important aspect of this activity, it can be justified in both economic and political terms.

A. Smallpox Eradication

1. The demonstration that smallpox can be eliminated from major land masses of the world with reasonable feasibility induced the World Health Assembly (1958) to recommend that a program for global eradication be initiated. This was by an unanimous vote of the 117

border countries including the 13 West African countries named for this project. Sub-Saharan Africa represents a major reservoir of the disease; few countries have yet been able to develop more than partial control programs. Critically needed is a systematic, regionally based program of eradication of this dread disease in support of the global program.

2. On May 14, 1965, President Johnson expressed the intent of the United States to support global smallpox eradication under WHO auspices. This project would constitute the United States Government's contribution toward this goal with respect to the continent of Africa. Dr. Karel Raska, Chief of the Division of Communicable Diseases, WHO, has stated to US officials that, in his opinion, if such a project were implemented, the World Health Organization would consider this to be the U. S. Government's total contribution to smallpox eradication activities in Africa. While this is an unofficial opinion, Dr. Raska seemed confident that he could persuade WHO to adopt it as an official attitude.

3. The U. S. delegation to the 18th meeting of the World Health Assembly which met in Geneva, May 1965, stated that the United States was expending $15 to 20 million annually on quarantine measures aimed chiefly at preventing the reintroduction of smallpox into this country. While smallpox has been eradicated within the United States, as long as it exists elsewhere the U. S. must continue this expense. This project as part of the worldwide smallpox eradication program under WHO auspices could help stimulate other donors to engage in eradication efforts with WHO and less developed countries and thereby help eventually to remove this cost to the United States as well as to other countries which now maintain quarantine systems.

4. On a global basis, WHO has designated some 45 countries as the principal focal from which smallpox infection is spread to other parts of the world. The 13 countries in this proposal are among those for which WHO recommends intensive eradication activities. AID assistance to these countries would thus fit into WHO plans for global eradication.

5. In Africa, smallpox kills approximately 25% of those stricken. An effective vaccine for its prevention has long existed. Scientists have determined that the disease is eradicable by utilizing presently available mass techniques. The American scientific breakthrough in the development of the hypospray jet injector permits much more rapid vaccination utilizing a much smaller quantity of vaccine than the conventional multiple pressure method thereby greatly reducing the vaccine cost.

6. Sporadic epidemics of smallpox continue to occur in these countries in Africa. Substantial investment capital must be diverted to controlling the epidemics; maintaining isolation facilities for treating

the disease; and caring for the sequelae of blindness, disfigurement and incapacitation.

7. The 13 countries comprise a solid geographic grouping with a minimum of exposed flanks within which the World Health Organization, the U. S. Public Health Service and AID Public Health Officials consider eradication as being technically and administratively feasible. WHO officials have assured AID informally that within 6 to 12 months after a decision on the part of AID to conduct eradication campaigns in these 13 countries, WHO will make arrangements for simultaneous small-pox eradication programs to take place in contiguous countries thereby reducing chances of reintroduction of the disease into the area.

B. Measles Control

1. Measles is one of the principal cause of death and disability in African children. When this acute, systemic infection is imposed on the disease burden which the average African child is already bearing, it triggers a series of disastrous events which result in a staggering mortality. (Case fatality rates as high as 50% have been reported and a death rate of 20% is not unusual). The sequelae may leave the child handicapped throughout life by mental impairment or loss of hearing or eyesight.

2. Measles as a problem in Africa involves principally the broad belt of population in the Sub-Sahara area. Among the 105 million persons involved in this project proposal, about 4.7 million children are born each year (45 live births per 1,000 population). Virtually all of these children will experience measles by age 6 and 10% will die from the disease or its complications. While it is impossible to place a monetary value on such a catastrophic situation, it is evident that a significant economic and human resources loss is suffered; meager medical care facilities are continually taxed to provide the necessary care.

3. Little attention had been focused on this unfortunate condition, either within Africa or by the outside world, because of the apparent hopelessness of the situation. However, with the discovery and production in the U.S. of a potent live virus measles vaccine, effective immunity can be provided.

4. The U. S. has been and can continue to make a unique contribution to this heretofore hopeless situation by utilizing two distinctly American scientific breakthroughs; the live virus measles vaccine and the hypospray jet injector gun. The hypospray multidose jet injector permits rapid, safe, painless injection of vaccines at rates of 1,000 persons per hour without the use of a needle. The jet injector discharges a hairthin stream of vaccine at such high velocity as to penetrate the skin to any desired depth in any required dosage.

III. SPECIFIC END RESULTS

The following developments are expected during the period of this

1. Experience indicates that smallpox will be eliminated from these countries. Ideally, it would be hoped that measles also might be eradicated. However, available epidemiological data indicate that measles is more communicable than smallpox and, being able to spread with greater facility, may be harder to eradicate. Although smallpox eradication has been shown to be wholly possible even in the areas with ill-developed resources, no country has yet embarked on a measles eradication scheme. Additional experience will be necessary to ascertain the feasibility of measles eradication but it may be easier than it would presently appear. Valuable information will be forthcoming from this program in this respect.

2. Smallpox eradication, under WHO leadership, will have progressed in neighboring countries to the point so as to constitute no longer a source for reintroduction of the disease into the 13 countries of this program.

3. The experience and knowledge gained in this program will have made it possible to design measures to assure the permanent reduction of measles to an insignificant community health problem.

4. Over 90 million persons (adults and children) will have been vaccinated against smallpox and 2) million children immunized against measles.

5. With completion of the project, the participant countries will have technical expertise and experience with mass vaccination programs, and a surveillance program for the detection of imported cases of smallpox or measles. From this substantial background of experience, the individual countries will be able to chart the most effective means for continuing disease control efforts.

IV. [illegible] OF WORK

The program organizationally will be handled as a regional endeavor coordinated with smallpox eradication activities in the rest of Africa and the WHO global program as a whole. Procedurally, activity will begin in Fiscal Year 1968 and extend through Fiscal Year 1971. The first three or four years will involve planning in depth and the vaccination of the backlog of smallpox susceptibles (all ages) and the vaccination of all measles susceptibles below the age of six. The next two years' activity will consist of maintenance vaccination against both diseases of all newborns, surveillance and statistical followup. Upgrading of the smallpox vaccine production laboratory will take place during the first three years of activity.

A population of 105 million people giving birth to approximately 4-3/4 million babies a year, of which about 4 million will survive to one year of age, is involved. It is estimated that there are 21 million measles susceptible children below the age of six in this population and that

probably 60 million individuals will require smallpox vaccinations as of this date. When the above backlog of susceptibles has been immunized, about 4 million newborns will require routine vaccinations against smallpox and measles each year for the last two or three years of the project. Hence, during the six-year course of this project, it is estimated that over 90 million smallpox immunizations will be administered and 29 million measles immunizations performed. This latter will be additional to the 4 million children who will have been immunized against measles by the end of Fiscal Year 1966 through other projects.

The entire population of the countries will be reached through the medium of mobile units and field teams; systematically and carefully scheduled to reach all of the populated areas. Jet injection equipment will be utilized to perform the vaccinations. For smallpox vaccinations this method has been shown to be considerably more effective than conventional multiple pressure or scratch techniques. To detect residual foci and possible operational flaws, mechanisms for the surveillance of measles and smallpox will be developed coordinately with the mass vaccination programs in each of the 10 countries. Program costs, including those for U. S. personnel, vehicles, jet injection equipment including refrigeration elements, vaccines and the U. S. technical and administrative services will be funded by AID through a PASA with the Public Health Service. The Public Health Service will handle procurement of commodities and will fully backstop the project, including all recruiting and administrative handling of personnel. It is estimated that 52 American professionals (positions) will be involved and that the project will cost approximately 31 million dollars over the six-year time span.

The program will be organized on the basis of national, political and geographical units. It will be fully coordinated with the smallpox vaccination programs to be developed in neighboring countries under the leadership of World Health Organization.

The proposed methodology of implementation is as follows:

1. AID as soon as possible will effect a PASA with the Public Health Service delegating all operational responsibility to that organization.

2. The Public Health Service will then develop an informal memorandum of understanding with the World Health Organization setting forth the responsibilities and relationship of the two agencies.

3. An organizational structure is tentatively proposed as follows:

a. WHO will establish a coordinating office in Geneva for directing the global smallpox eradication activities.

b. WHO will provide a smallpox eradication Regional Officer in Lagos, Nigeria to coordinate WHO activities with those of AID/PHS.

c. The Public Health Service will provide staffing for a Regional Office in Lagos consisting of three physicians, one scientist, one laboratory technician, three administrative people, one procurement and supply officer, and two statistical people.

d. The PHS will supply 14 physicians and 20 operations type administrators who will, under direction of the Lagos Regional Office, be assigned to individual countries to advise on operational activities.

e. The PHS will staff a backstopping office in the United States to be composed of two scientists, three program coordinators and two secretaries.

4. Within six months of the signing of the PASA, PHS personnel (possibly accompanied by WHO personnel) will visit the individual countries and draw up a firm plan of operation for each country. The country visits probably will be coordinated with a convocation called by WHO of the ministers of health of the participating countries. Top PHS administrators and scientists will participate in this meeting.

The plan of operation will concern itself with individual country development of (1) an organization and administrative system for carrying on the project, (2) a budget for local costs and how these will be defrayed, (3) the solution of logistic problems, (4) a schedule of availability of personnel and the training of necessary additional personnel, (5) a maintenance sector to insure operability of both technical and mobile equipment and (7) a timetable.

It must be understood that the timing estimations given in this and succeeding paragraphs and sections is approximate and that the administration must be prepared to accept some slippage when realities so require.

5. Within 12 months of the signing of the PASA, PHS will subcontract with an American vaccine production organization to upgrade the already present vaccine production laboratory in Yaba, Nigeria.

The proposed timing of implementation is as follows:

1. FY 66--In the presently scheduled 11 countries (Cameroons, CAR, Chad, Dahomey, Guinea, Ivory Coast, Mali, Mauritania, Niger, Togo and Upper Volta involving a population of 33.3 million)--complete the inoculation of 50% of the backlog of measles susceptibles and vaccinate 25% of the population against smallpox.

2. FY 67--In the above 11 countries plus five new countries (Gabon, Gambia, Liberia, Senegal and Sierra Leone--the entire 16 countries involving 70.3 million people) vaccinate in the 11 countries an additional 5% of the estimated measles susceptible children to a total of 10% coverage and vaccinate the remaining 75% of the population against smallpox. For the new five countries, vaccinate 5% of the measles susceptible children and 5% of the total population against smallpox.

3. FY 68--In the original 11 countries, a mop-up operation to accomplish vaccination to 10% of all smallpox and measles susceptibles and the vaccination of all newborns for measles and smallpox. For the five countries added in FY 1967, vaccinate the remaining 5% of measles susceptibles and the remaining of 5% of smallpox susceptibles to a total of 10% coverage for both diseases. Start the attack phase (three years required for 100% coverage) in Nigeria and Ghana for measles and smallpox. (Total population involved 105 million).

4. FY 69--Surveillance in the 16 countries for sporadic cases of both measles and smallpox. Vaccinate the newborns against smallpox and measles in the 16 countries. Continue into the second year of attack in Ghana and Nigeria against both diseases.

5. FY 70--Continue surveillance and vaccination of the newborns against both diseases in the 16 countries and continue into the third year of attack against measles and smallpox in Ghana and Nigeria. By the end of this year, the population of Ghana and Nigeria will have been vaccinated to 100% against measles and smallpox.

6. FY 71--Continue surveillance activities in all 16 countries and vaccinate the newborns in all 16 countries against smallpox and measles.

V. PROGRESS TO DATE

On May 13, 1965, President Johnson, in a White House Press Release stated, "This Government is ready to work with other interested countries to see to it that smallpox is a thing of the past by 1975." This offer added a new dimension to the measles vaccination programs being sponsored by AID in 11 West African countries.

On August 17, in a conference chaired by Mr. Herman Kleine, A/AFR officials together with representatives from TOA, PC and State/IP discussed the various facets of a combined measles and smallpox vaccination program in Africa. The decisions made by Mr. Kleine at that meeting were: "(1) immediate study by AID in consultation with PHS of criteria and therefore scope for a large-scale program for public (possibly Presidential) announcement for measles control and smallpox eradication in all areas in Africa where measles is a serious health scourge, though with initial activities presumably limited to the 11 countries covered by current

AID-financed programs; (2) a recommendation to the Administrator based on the results of that study, followed when approved by request for PHS survey in development of a detailed program; (3) immediate action to add smallpox vaccinations to approved measles programs to be undertaken this fall and winter without decision on the larger program." This project proposal is in response to Decision Nos. 1 and 2; Number 3 having been implemented as described below.

On August 20, 1965, Dr. Luther Terry, Surgeon General of the United States Public Health Service, presented to the Administrator a proposal which the U. S. Public Health Service was willing to undertake through a Participating Agency Service Agreement with and funding by AID for the eradication of smallpox and the control of measles in eighteen West African countries. This present project proposal is a refinement of the Surgeon General's proposal, generally concurred in by USPHS.

During the week of August 30, Mr. Milton Segal, Assistant Director General WHO, and Dr. Karel Raska, Chief, Communicable Disease Division, WHO, visited Washington and entered in numerous discussions with various AID-Bureau officials. Again, the present project proposal is a distillation of technical conferences which develop in depth the relationship between WHO and the United States and especially the Agency for International Development with respect to activities in Africa.

On September 24, 1965, the African Bureau of AID authorized and provided $175,000 of Regional Development Grant funds for the purchase of smallpox vaccine and additional jet guns to implement the addition of smallpox vaccinations to the currently scheduled measles programs.

The Surgeon General of the United States Public Health Service has designated the Communicable Disease Center of the Public Health Service in Atlanta, Georgia as being responsible for implementation of any PASA which may eventuate between AID and PHS and specifically assigned Dr. D. A. Henderson, Chief of the Surveillance Section of CDC, as the principal negotiating officer for that Agency.

USPHS/CDC is in accord with the contents of this proposal and has cooperated marvelously in its development. Timing is of the utmost importance, however, if the project is to be launched in the Fall of Calendar Year 1966. The Public Health Service must have official notice of AID's intentions so that recruitment of personnel may be instituted as soon as possible.

VI. FUNDING

The cost of vaccinating the 18 countries against smallpox and measles is as follows:

1.	Personnel	$ 8,000,000
2.	Vaccines	15,000,000

3.	Vehicles	$ 4,000,000
4.	Jet injector guns	2,250,000
5.	Freezers and refrigeration equipment	300,000
6.	Contract	300,000
7.	Supplies	800,000
8.	PASA overhead	350,000
	TOTAL	$31,000,000

Local costs and operational personnel will be supplied by the individual countries or from non-US sources.

If the above proposal is implemented, money will be needed by Fiscal Year as follows:

FY 66	$ 2.5 million
FY 67	7 million
FY 68	6.5 million
FY 69	5.5 million
FY 70	5.5 million
FY 71	4.0 million
	$31,000,000

FOR IMMEDIATE RELEASE NOVEMBER 23, 1965

Office of the White House Press Secretary
(Austin, Texas)

THE WHITE HOUSE

Plans for a campaign to protect 105 million people from smallpox and measles in 18 African countries were announced today by the White House.

The plans result from President Johnson's pledge of May 18, 1965: "This government is ready to work with other interested countries to see to it that smallpox is a thing of the past by 1975."

AID and the Public Health Service staff are beginning consultations with African and World Health Organization officials on plans for the campaign, its acceptability to African countries and their willingness to contribute to the program.

The smallpox eradication program is being designed to fit within plans of the World Health Organization (who) to eradicate smallpox throughout Africa and the rest of the world within ten years.

The eradication program would help prevent the possible reintroduction of smallpox into the United States and other smallpox free countries. The smallpox activity would run concurrently with a measles control program in the same area.

The AID contributions would consist of technical assistance, vaccines and jet injectors which can inoculate 10,000 persons per hour. Vehicles, field supplies, freezers, and refrigerating equipment would also be provided under the AID plan.

Local costs and operational personnel would be supplied by the individual countries cooperating in the program.

Operational responsibility for the project would be assumed by the U.S. Public Health Service in cooperation with AID.

A measles control program has already been implemented by AID in 11 African countries, all of which are included in the 18 to be covered in the smallpox project. The 18 countries are Cameroon, Central African Republic, Chad, Dahomey, Gabon, Gambia, Ghana, Guinea, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta.

Africa is one of the world's major areas of smallpox incidence. Approximately 25 percent of those stricken by the disease there become fatalities. According to WHO the 18 African countries are among the 45 countries that are the principal sources from which smallpox infections are spread to other parts of the world.

Measles is also one of the principal causes of death and disability in African children. A death rate of 20 percent is not unusual and rates have run as high as 50 percent. In the area concerned, around 21 million children under the age of six are susceptible to measles.

Draft - E-1 NCDC
FY 67-71
January 21, 1966

Project for Smallpox Eradication and Measles Control in 19 Countries of West Africa

I. The Activity Target

The primary goal of this Regional Project is the eradication of smallpox from 19 geographically contiguous countries in West Africa (Cameroon, Central African Republic, Chad, Congo Brazzaville, Dahomey, Gabon, Gambia, Ghana, Guinea, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta) and the establishment of measles control programs in each of these. The program will be funded by AID and carried out by the Communicable Disease Center, Public Health Service, through a PASA.

The reduction or elimination of measles and smallpox in West Africa can be expected to have a major impact in several areas:

1. Such medical facilities as are now existent in West Africa devote up to 20 percent of their resources to the care of individuals afflicted with these diseases. The elimination or control, respectively, of these disease problems thus represents an indirect and very significant expansion of available medical resources.

2. Long term sequelae following these diseases are not uncommon. Their costs are not insignificant in terms of a drain on medical and human resources. Blindness, chronic lung disease, kwashiorkor, deafness and a variety of other complications are known to be precipitated by these illnesses. Although their frequency is poorly documented, one report from a Blindness Commission in Northern Nigeria ascribes 38 percent of the cases of blindness in this area to measles and 15 percent to smallpox. Measles in West Africa results in death among approximately 10 percent of all children born; most deaths occur in pre-school age children. Smallpox, now partially controlled, results in a reported 3,000 to 6,000 cases annually although these figures may be understated by as much as tenfold.

3. The eradication of smallpox in West Africa coordinated with an intensified global program under WHO auspices should permit the discontinuation of smallpox vaccination programs within 8 to 10 years. Termination of continuing vaccination programs would permit diversion of limited medical resources to other pressing needs.

In accomplishing the primary objectives of smallpox eradication and measles control secondary objectives are envisaged:

1. The establishment or, in some countries, improvement of mobile disease control services capable of administering vaccines or other preventive medications efficiently, economically and on a mass scale throughout the country.

2. The establishment in each country of a system of disease surveillance broadly applicable to a variety of communicable disease problems. Such a disease surveillance system includes the development of effective disease reporting mechanisms, epidemiological field investigations of specific problem areas and educative techniques designed to acquaint responsible medical personnel throughout the country with current problems and development relating to the occurrence and control of the diseases of concern.

3. The development of highly simplified statistical sampling techniques applicable in these developing countries, which will permit rapid assessment of disease problems.

4. The establishment of elementary virological laboratories in many of the countries capable of simple laboratory procedures for the diagnosis of smallpox.

5. Improvement of the existing smallpox vaccine production laboratory in Yaba, Nigeria, such that it is capable of producing stable, potent, safe vaccine of the multiple puncture type economically and in quantities sufficient for Nigeria and other countries in this area.

If the projected plan can proceed as scheduled, indigenously transmitted smallpox cases should cease by the end of the fourth year of the program; at this time, measles should be reduced to the level of sporadic occurrences or, at most, small focal outbreaks. By the end of the fifth year, maintenance vaccination programs capable of being conducted by local personnel should be fully established. Of the secondary objectives, the first two must evolve progressively throughout the program; the last three objectives should be accomplished by the end of the third year of the program.

Delay in achieving these objectives may be expected to occur variably from country to country depending on political stability and the capability and permanence of local personnel assigned to the specific projects.

II. Justification

A. Smallpox Eradication

1. For centuries, smallpox has represented one of the most lethal, readily communicable diseases known to man. In all countries, vaccination is practiced to effect at least partial control of the disease. Concern regarding smallpox is reflected by the fact that in the United States, despite an absence of cases for over 15 years, $20 million is expended annually in protection; other countries in Europe and North America with no indigenous smallpox spend proportionately large sums.

As stated by the Director-General of WHO in a report to the Executive Board in January, 1966: "Of all the infectious diseases, smallpox, in its epidemiological behaviour, lends itself uniquely to an eradication effort. Directly transmitted from person to person, without known insect or animal reservoirs, rarely occurring in sub-clinical form, smallpox may quickly be detected in an area. The victim of the

disease is generally incapable of transmitting the virus for more than two weeks and is rendered essentially permanently immune against a subsequent attack. Since the disease has a two-week incubation period, prompt identification of a case permits the initiation of effective containment measures. Eradication can be accomplished in a comparatively simple and straightforward manner by rendering immune, through vaccination, a sufficiently large proportion of the population so that transmission is interrupted."

From the results of successful vaccination programs in the Central and South America, Southeast Asia, the Middle Eastern countries and North Africa, it has become abundantly clear that intensive, systematic vaccination programs can rapidly eradicate the disease even in the less economically privileged areas.

The development in the United States of a lyophilized (dried) form of smallpox vaccine which will not deteriorate in tropical climates and the later American scientific breakthrough of a process for vaccination by jet injection, permitting vaccination of up to 1000 persons per hour, has brought the concept of global eradication within the realm of reasonable probability.

At the Eighteenth World Health Assembly, May, 1965, the President of the United States pledged the support of this country "for an international program to eradicate smallpox completely from the earth within the next decade." In accord with the instructions of the President, the United States Delegation successfully sponsored a resolution declaring the world-wide eradication of smallpox to be a major objective of the World Health Organization. This resolution was unanimously approved by the Assembly and urged "member States to give the program greater support than in the past and to provide the substantial contributions essential for its execution." Although it was recognized that each of the endemic countries would have to take initiative in this enterprise, the Director-General of the World Health Organization pointed out: "The speed at which initial control and ultimate eradication will be accomplished will depend on how much practical help is given by the countries already free from the disease . . . . The non-endemic countries must provide either in kind or in cash the very large quantities of vaccine, equipment, transport, and other support necessary for the programs."

In September of 1965 the African countries at a Regional WHO meeting in Lusaka, Zambia, unanimously reaffirmed the resolve of the World Health Assembly that smallpox eradication should be regarded as an immediate major objective of the African countries.

The need for and importance of well-coordinated regional eradication programs has been strongly emphasized by the Director-General of the World Health Organization. Failure in the past in South America, for example, to undertake an eradication program on a regional scale has resulted in frequent disease reintroductions from Brazil to neighboring

countries and, in several instances, has required repeated country-wide vaccination programs.

A number of exploratory discussions relating to the present Project have been held with the Director-General of the World Health Organization and members of his staff. They strongly urged that the Project be conducted as a Regional effort and that it be closely coordinated with World Health Organization efforts in Africa and elsewhere in the world. The Director-General indicated that the World Health Organization would promptly undertake to implement eradication programs in smallpox endemic countries adjoining the Regional group of 19 countries designated in this proposal. The adjoining endemic countries are Sudan and Congo Leopoldville. All countries north of the Sahara are presently smallpox free.

In the 19 countries indicated in this Project, all except Mauritania and the Central African Republic have reported cases in the past two years. During 1964, 3454 cases were reported; incomplete data from 1965 record 5909 cases. On the basis of discussions with responsible national authorities, it is estimated that these figures represent one-tenth or less of the actual number occurring.

Smallpox case rates, as reported, are highest in Congo Brazzaville, Dahomey, Gabon, Guinea, Liberia, Mali, Niger, and Nigeria. (Fig. 1) However, of the 9363 cases reported during these two years, over 80 percent were reported from the three adjacent countries of Nigeria, Niger and Dahomey. (Fig. 2)

D. Measles Control

A disease experienced by over 90 percent of children throughout the world, measles is the most serious of the so-called "common" childhood diseases. It is characterized by high fever, rash and systemic symptoms normally lasting a week or more. Among children in tropical Africa, it normally occurs at a much younger age than in the United States and imposed on a background of other acute and chronic infections, results in a staggeringly high mortality. It is estimated that about 10 percent of all African children die from this disease; in some local epidemics, over 50 percent of infected children have succumbed. Sequelae from the disease may leave the child alive but handicapped throughout life by mental impairment, chronic pulmonary disease, kwashiorkor, or loss of hearing or eyesight.

During measles epidemics, available medical resources are severely taxed. It has been stated that up to 20 percent of all medical resources are concerned with the care of measles cases and complications.

Although, like smallpox, measles is transmitted from person to person and has no known insect or animal reservoirs, it appears to be considerably more communicable than smallpox. Illustrative of this phenomenon is the fact that while the occurrence of smallpox among adults is not unusual, measles cases in adults are rare throughout the world. In the United States, for example, over 90

percent of children have experienced measles by age 15; in Africa, this proportion is reached by 4 to 6 years of age. Although it is conceivable that measles eradication might be achieved through this Project in West Africa, the apparently greater communicability of measles suggests that it will be considerably more difficult to attain eradication than in the instance of smallpox. Valuable information pertinent to this question should be forthcoming from this Project. Until more is known, however, the measles vaccination aspect of the West Africa Project must realistically be regarded as a "control" effort rather than an "eradication" effort.

The discovery and development in the United States of measles vaccines provides the only possible means for control of this feared disease which constitutes such a significant drain on the economy of the country. A single injection of the vaccine provides durable, probably lifetime immunity. Since the measles vaccine can be administered by the jet injector guns, large scale programs can quickly and efficiently be carried out at a modest cost compared to the present economic liability imposed by the disease.

III. Course of Action

The Project will be developed as an overall Regional endeavor closely coordinated with World Health Organization efforts elsewhere in Africa. Programs will be carried out through bilateral arrangements with each of the individual countries and in direct collaboration with recognized sub-regional organizations which serve some of the countries, OCCGE (l'Organisation de la Coordination et Cooperation pour la leutre les Grands Endemies)* and the OCCGEAC (a similarly named organization in Afrique Centrale)**. Since the United States does not have diplomatic relationships with Congo Brazzaville, it is not possible to formulate a plan of action in this country without further discussions with the State Department.

A. Countries to be Included

Programs will be initiated in a majority of the countries in the Fall of 1967 and in the remainder during the succeeding year. Mass vaccination programs will be completed in most countries by 1970 and in all countries by 1971. Maintenance campaigns will be supported through June, 1972. The nature of the campaigns, the specific methods of disease surveillance and investigation and assessment methods for the programs will be specifically adapted to the existent pattern of health services in each of the countries. This will permit maximum utilization of the limited available resources in each of the countries and should, with greater certainty, insure the permanent incorporation of many of the techniques employed into the permanent structure of their developing health services.

This program represents, in significant measure, a continuation of measles vaccine control programs initiated by AID in Upper Volta

*Includes Dahomey, Ivory Coast, Mali, Mauritania, Niger, Senegal, Togo and Upper Volta.
**Includes Cameroon, Central African Republic, Chad, Congo Brazzaville and Gabon.

in FY 1962, in 6 additional countries (Dahomey, Guinea, Ivory Coast, Mali, Mauritania and Niger) in FY 1963 and in an additional four countries (Cameroon, Central African Republic, Chad and Togo) in FY 1964. Experience gained by Communicable Disease Center technical consultants assigned to these projects for periods of one to five months during each of these programs and more detailed exploratory discussions with these and other countries in the 19 country area during November-December, 1965, by a special consultant team (Tour Report attached - Appendix I), provides the foundation upon which these more detailed Project plans have been based.

Although it has been made abundantly clear to us by representatives of 17 countries with whom this overall project was directly discussed (indirect reports only were forthcoming from Gambia and Ghana) that they would eagerly welcome the proposed assistance, it is also apparent that to begin projects in all of the countries within the coming year would represent a difficult logistical fete. Priorities have had to be assigned.

Each of the 11 countries presently receiving measles vaccine fully anticipates continuation of the program next year. Rather firm commitments have also been made by AID to Gabon that it too would be included next year. Political considerations thus dictate the inclusion of these 12 countries in the smallpox eradication/measles control (SPE/MC) Project during FY 1967.

In addition, Nigeria, the most populous country in this area and the one which has accounted for fully 60 percent of all smallpox cases in West Africa in the past two years, has taken a series of definitive steps in planning a smallpox program to be initiated in the autumn of 1966. Federal direction and coordination of the program has been agreed upon; a budget has been prepared for submission to Parliament this Spring; plans have been made to divert the 500 or so yaws eradication team members from the yaws project which is being concluded to a national smallpox eradication effort; vaccine for multiple puncture has been produced in substantial quantity and stockpiled. Mr. P. C. Asiodu, Permanent Secretary, Federal Ministry of Health of Nigeria wrote to Mr. MacDonald, Director, U.S.AID Mission as follows on January 3, 1965: "I am to indicate that the Nigerian Government welcomes the United States Government offer of assistance. As you are aware, however, much preparatory work and planning have been completed in connection with our National Smallpox Eradication Campaign. Doses of vaccines have been built up and the project is given the highest priority. We would not wish to delay longer than is necessary. The assistance which you envisage could be most useful in ensuring the rapid execution of the Campaign. This Ministry will be happy therefore to receive Communicable Disease Center staff as early as possible to work out the necessary details on the basis of which a formal agreement can be reached." Although very recent political events could conspire to delay this program, it is presumed at this stage that the groundwork laid over the past two years should mature into an active program.

In the development of preliminary proposals for the Regional SPE/MC Project, the progress made in Nigeria in the planning of a national smallpox eradication program was not appreciated. It is apparent, however, that the immediate initiation of a program in

Nigeria is critical in order to capitalize the momentum already generated and to eradicate with all possible speed the principal focus in the entire Region.

Thus, programs in 13 of the countries are planned for FY 67. In the remaining 6 countries, more detailed plans will be developed by personnel from the Regional Project Office during FY 67 for implementation during FY 68.

B. Nature of Mass Campaigns

In the 12 countries (all Francophone countries) in which continued assistance in the conduct of measles programs has been implied or essentially committed by AID, all have a more or less adequately functioning Service des Grandes Endemies, which include a number of roving medical units normally providing vaccination and a number of other curative and prophylactic biologicals to the native populations. The adequacy of these teams and their programs varies widely from country to country. Coverage of the population thus is variably complete. Special teams have been drawn from these Services to conduct the measles campaigns to date. Responsible personnel in the countries which have the most adequate multi-purpose roving medical units indicate that they would prefer to offer smallpox vaccination by multiple puncture to the population in the context of the mobile multi-purpose team activity while carrying out the measles program with special teams for this purpose alone. While this eventuates in what would appear to be a less efficient system, cogent arguments have been advanced regarding the advantages of this system (see Tour Report). Since a program of this nature was propounded by countries with generally effective Service vaccination activities, it is difficult to propose an alternative approach without close observation of the total program over many months to a year's period. In the countries with a less adequate roving medical unit program, a program involving simultaneous administration of measles and smallpox vaccines was readily accepted as the preferred approach. In Nigeria, the concept of combined simultaneous vaccination against measles and smallpox was readily accepted. Thus, in the framework of the policy to adapt the program to the country's operating health structure and needs, it is clear that different approaches will be required.

In principle, the objective of the Regional Project will be to achieve widespread vaccination coverage of populations throughout each of the countries as rapidly as possible. Since smallpox cases in Africa as elsewhere in the world occur among persons of all ages, smallpox vaccine must be admininistered to the total population. However, since virtually all children in Africa have experienced measles by the sixth year of age, measles vaccine will be given only to those 6 years of age and younger. It will not be given to children younger than 6 months of age since, in this age group, antibody acquired at birth from the mother prevents a satisfactory vaccine "take"

A number of additional considerations also influence the nature of the programs to be carried out. In 11 of the Francophone countries, substantial quantities of measles vaccine have already been dispersed in a variably systematic fashion. Smallpox vaccine, however, was made available to only a few of these

countries late in FY 66. The small amount of smallpox vaccine (3 million doses) already supplied has not been further considered in the Project planning. Where the combined program is to be conducted, areas previously covered by measles vaccination teams will have to be revisited to provide smallpox vaccination; since no program for maintenance measles immunization has been developed, children born since the last program will have to be vaccinated also. Epidemiological and serological studies to define the previously accepted age limits for measles vaccination must be undertaken by Regional and Headquarters staff of the Project. Limited studies to date in Ghana and Nigeria indicate that vaccination of 5 and 6 year old children is not indicated. If this can be confirmed elsewhere, a saving of about one-third can be realized in quantities of measles vaccine required.

C. Nature of Maintenance Campaigns

Maintenance vaccination programs to date have received essentially no attention. Since these particularly must be imaginatively integrated with the country's existent and projected health structure, definitive plans must await continued close observation by assigned personnel in each country over a period of a year or more. For example, in some areas, permanently based health units effectively serve local populations and might well provide maintenance coverage; in other areas, mobile services may be required to visit each area every two or three years. In some instances the multi-purpose mobile service may be able to carry out this function; in other areas, special teams may be required. Since epidemiological evidence as to the proportion of susceptibles necessary for the occurrence of measles outbreaks is not known, it is yet uncertain as to what intervals in a mass maintenance-type campaign it will be necessary to provide vaccination to children born since the last campaign. It may be at intervals of two, three or even four years. Studies to deal specifically with this problem will be developed by the Regional Staff of the Project.

Maintenance programs for smallpox vaccination pose a somewhat different problem. Immunity conferred by the vaccine appears to be less permanent than for measles vaccine; cases occur among all ages in the population. Although an effective program to vaccinate newborns may be developed, sporadic large-scale programs in more densely settled urban areas may be required to sustain immunity at sufficiently high levels among imigrants and others in lower socio-economic classes where crowding permits ready transmission.

Clearly, for the development of an effective maintenance phase for the smallpox-measles programs, considerable study, thought and imagination will be required. The nature of the programs may be expected to vary considerably from country to country and even between areas within countries.

D. Surveillance Procedures

None of the countries concerned in this Project has much more than a rudimentary reporting system for the communicable

diseases. In none, is there a well-defined procedure for the investigation of suspect cases, a system to appraise and control cases and outbreaks or an adequately developed scheme for current analysis of disease problems and problem areas.

In each of the countries, it will be a principal responsibility of the assigned technical personnel of the Project to work with county authorities in the development of an adequate surveillance system for suspect smallpox and measles cases. Only by this means can there be an adequate assessment of the success of the program as a whole.

Surveillance can be carried out through medical posts, hospitals, aide stations, etc., of which each country, in fact, has a surprising number. This fact is well illustrated in Table 1 which, although computed several years ago, indicates the existence of a substantial number of hospitals and medical centers in each of the countries. In addition, there are a number of other aide posts and local dispensaries at which patients might be seen and from which information could be routinely obtained.

Utilizing these as principal "detection sites", amplified by whatever other sources may be developed (e.g. schools, political authorities, etc.), a system for the routine reporting of suspect cases will be developed along with a program of systematic follow-up of all suspect cases of smallpox and outbreaks of measles. Appropriate control procedures, principally mass vaccination, would be applied in each instance.

Since the occurrence of measles outbreaks or smallpox cases essentially represents a flaw in the vaccination program, specific emphasis will be placed in determining the cause of outbreaks or cases in order that subsequent activities may be appropriately redirected.

Information pertaining to the occurrence of these diseases in each of the countries will be routinely forwarded to the Regional Staff of the Project for consolidation and distribution to responsible authorities throughout the Region.

Vaccine Assessment Procedures

Continuing assessment of the extent of vaccination coverage will be carried out by highly simplified sampling techniques to be developed by Regional and Headquarters Project Staffs. In general, assessment will be carried out by independent teams in each country seven days following a mass program. Vaccination reactions will be appraised. An alternate appraisal system may be employed in which each person vaccinated will be asked to dip a finger in a silver nitrate solution. This non-toxic solution discolors the fingernail for a period of weeks and makes it possible to identify readily vaccinated persons. This could represent a means for rapid assessment of vaccination coverage. The acceptability and ease of this approach will have to be further explored in pilot projects to be conducted by Regional and Headquarters Project Staffs.

F. Virological Confirmation of Smallpox and Measles Cases

When cases have reached a low level in a given country or area, the importance of accurate diagnosis becomes increasingly important. Chickenpox, herpes simplex and other diseases may, at times, closely simulate smallpox. Occasionally, outbreaks of febrile illness associated with rash may mimic measles.

Simplified diagnostic techniques for smallpox, probably employing growth of virus on egg chorioallantoic membrane and an agar gel precipitin method, will be perfected and progressively introduced to about 10 laboratories throughout this Region. These laboratories will be able to serve as Regional diagnostic centers. Since smallpox virus is very stable, specimens can be transported over long distances without refrigeration thus making a Regional laboratory concept feasible.

For the laboratory diagnosis of measles, the problem is more complex. Serological procedures will undoubtedly be required. Some capability for testing by the hemagglutination-inhibition procedure now exists at Dakar, Lagos, Accra, and Bangui. With some training and provision of limited laboratory supplies, specific diagnostic tests can be carried out in these centers.

The refinement and evaluation of these tests and the subsequent training of local personnel will be the responsibility of virological staff in Regional and Headquarters Project Offices.

G. Smallpox Vaccine Production Facilities

Facilities for smallpox vaccine production are presently operative at Lagos (Yaba Laboratory) and Dakar. On the basis of past experience, a few, large vaccine production centers are to be preferred. In a large production facility, more adequate supervision is possible thus insuring a better quality of vaccine. The Yaba Laboratory is capable of large scale production of vaccine of acceptable potency but the vaccine contains a bacterial count too high to permit its use in jet injection equipment. Although technical assistance to this laboratory is planned under this Project to improve both the quality and quantity of production, Dr. Colin Kaplan, Director of the Lister Institute and long-time consultant to this facility, believes for a variety of technical reasons, that a vaccine of sufficiently low bacterial count to permit its use in jet injectors is not technically possible. The situation regarding the capability of the Dakar Laboratory to produce smallpox vaccine for jet injection is not yet clear. Efforts will be directed to raising standards of production of smallpox vaccine at Yaba and Dakar to fulfill all multiple puncture vaccination needs during the maintenance programs.

H. Relationship of Project Program to Regional Organizations

The Project in all stages of its evolution to date has been developed in the closest consultation with the World Health Organization.

In preparation for the major global eradication program, the World Health Organization in the summer of 1965, divided Africa for operational purposes into two Areas, designated "West Africa" and "East Africa". West Africa constitutes the 19 country group in this Project excluding Brazzaville Congo. WHO Medical Officers were assigned to Area headquarters in Monrovia and Nairobi to begin the development of operational plans. These plans have been duly considered and variously incorporated into the presently proposed program. Specific project agreements and more detailed planning in subsequent years will be developed in collaboration with WHO Regional and country representatives.

In discussion with the Director-General, it was agreed that with approval of the Project, the United States should assume principal responsibility for the conduct of the West African Area program. It was agreed that relocation of the WHO staff presently in Area Headquarters in Monrovia to the site of the Headquarters of the Regional Project would be carried out. This will facilitate effective cooperation and will permit a free exchange of important technical data pertinent to the programs in East and West Africa. Additionally, WHO agreed to support local costs for campaigns in particular countries in West Africa where inadequate local costs pose the major barrier to implementation of the program. WHO agreed to support local costs for campaigns in particular countries in West Africa where inadequate local costs pose the major barrier to implementation of the program. WHO agreed, further, to the joint sponsorship of a conference this year to include the principal representatives of each of the participant Project countries. This has been tentatively scheduled for April 29-30 in Geneva. Formal written agreements with WHO with respect to these several points will be consumated in the near future.

The proposed program has been discussed at length with the Secretariat of the OCCGE and OCCGEAC and has received their enthusiastic approval. Close liaison with these two organizations will be maintained by the assignment of senior medical staff officers to Upper Volta and to the Cameroons. Plans will be made for senior staff who are fluent in French to attend all technical meetings of these organizations for continued dialogue regarding the progress of the program. At present, both organizations serve primarily to sponsor forums for the discussion of common problems in communicable disease control and as directorates for the conduct of specific research at specialized institutes. Since neither conduct operational programs at the country level, the operational aspects of the Project will be handled on a bilateral country basis in general accord with the wishes of the organizations' members. Should either organization in the future indicate a desire to participate directly in operational programs at the country level, every effort will be made to adjust the administrative aspects of the Project to take cognizance of this.

It has been proposed by Mr. Barrows, American Ambassador to the Cameroons, that support to a program in Brazzaville Congo might be directed through the OCCGEAC group. This possibility will be explored in the coming year.

I. Regional and Headquarters Project Staff Activities

A Regional Office for this Project will be established in Lagos staffed by two medical officers, two administrative officers, an equipment specialist, a statistician, a health educator, a virologist, and necessary supporting staff.

As previously noted, the WHO will shift its West Africa Area headquarters from Monrovia to Lagos and will assign a medical officer and secretary to the Regional Project Office to serve in a coordinative liaison capacity.

The Regional staff will be expected to travel extensively throughout the region to insure that the programs are running effectively and to make such suggestions or adjustments of personnel or equipment as to insure the optimal operation of the separate programs. Within this context, the staff will develop arrangements between countries to coordinate programs along the border areas where nomadism is prevalent; consult with assigned Project staff regarding the development of plans for subsequent year's programs; arrange for specific operational field research studies; consult with and train, country staffs in specific surveillance and assessment methods, in health education, and in equipment maintenance. At the Regional headquarters, a reserve supply of equipment will be maintained which can be mobilized quickly and dispatched where indicated. The Regional Project staff will be responsible for the distribution of information to the respective countries detailing the current status of first smallpox and later measles; the progress of campaigns; new developments in methodology and scientific findings. The staff will also serve as an emergency personnel resource for problem areas. The virologist will be specifically responsible for upgrading the Yaba Laboratory, for the institution of smallpox diagnostic centers throughout the area and for continuing support to these laboratories to insure their optimal performance.

The necessity for such a Regional Project staff was repeatedly stressed by AID Mission personnel, WHO Regional Office and country representatives. Lagos was unanimously recommended as most ideal since it places the resources of the Regional Project Office in close proximity to a country program which constitutes fully 50 percent of the overall effort; transportation to and from Lagos is as optimal as anywhere in West Africa; Lagos also is the site of the regional supply center for the American Embassies and AID Missions in West Africa. Further, the Yaba Laboratory is located in Lagos along with substantial available laboratory and office space in an adjoining compound.

The Project Headquarters Staff in Atlanta will be supplemented at no cost to the Project by additional CDC personnel currently working on smallpox problems both in the laboratory and in the field. The Headquarters staff will be responsible for overall policy guidance for the program, coordination and liaison with AID and other organizations conducting programs in West Africa of immediate pertinence such as the Public Health Service, Peace Corps, Crossroads Africa, etc.; special studies and evaluations of

an operational type will be pursued in West Africa or other areas as appropriate; reference, operational and instructional manuals pertaining to the diagnosis of smallpox, laboratory methodology, statistical assessment, surveillance and operational procedures will be developed. The Headquarters Project Laboratory will serve as the principal resource for a variety of studies pertinent to the most efficient operation of this Project, many of which have previously been detailed. The Headquarters staff further will serve to recruit and train personnel for the program, undertake negotiation and procurement of commodities and arrange their transport. They will provide substantial direct consultation and assistance to the Regional Project Office and country Project personnel.

Regional and Headquarters Project staffs functioning effectively in this overall activity can be expected to effect overall savings which should largely repay costs relative to their establishment. With only brief exploration of operational methods currently employed in the AID measles programs, it is abundantly clear that a more efficient program at substantially reduced cost can be carried out.

I. Technical Staff Assigned to Countries

An Operations Officer will be assigned to each country in which a program is to be conducted and in each of the regions of Nigeria, each of which is more populous than many of the participating countries; a Medical Officer will be assigned to each of the major countries and to each Nigerian region. Planned assignments for FY 67 are as follows:

Country	Population (millions)	Medical Officer	Operations Officer
Cameroon	4.6	1	1
CAR	1.3	1	1
Chad	2.8	1	1
Congo Brazzaville	1.0	Planning Deferred	
Dahomey	2.3	1	1
Gabon	0.5	0	1
Gambia	0.4	For FY 68	
Ghana	7.4	For FY 69	
Guinea	3.5	1	1
Ivory Coast	3.7	0	1
Liberia	1.1	For FY 69	
Mali	4.7	1	1
Mauritania	1.0	0	1
Niger	3.2	1	1
Senegal	3.5	For FY 68	
Sierra Leone	2.3	For FY 68	
Togo	1.7	1	1
Upper Volta	4.8	1	1
Nigeria	55.7	1	1
Northern Region	29.8	1	2
Mid-Western Region	2.5	1	1
Eastern Region	12.4	1	1
Western Region (incl. Lagos)	11.0	1	1
Total		14	18

Technical assistance has been provided to AID by CDC in a number of measles vaccine campaigns during the past two years. Medical officers assigned were principally occupied throughout the consultations in seeking to locate supplies and material ostensibly dispatched to the country but lost in transit or never shipped at all; in locating miscellaneous spare parts for various types of equipment and repairing the equipment or facilitating its repair; and in instructing vaccinators in the use of equipment. Time to provide more constructive assistance and advice in the conduct of campaigns was limited at best. Past experience thus dictates the necessity of assigning an operations officer to each country. This officer will be responsible for carrying out minor mechanical repair and maintenance of vehicles, jet guns and refrigeration equipment and expediting supply problems; he will also provide basic training to vaccinators in use and preventive maintenance of vehicles, guns and refrigerators. The operations officer will be responsible with the medical officer in the planning and conduct of the mass campaigns and maintenance programs, in establishing the surveillance activities and in the broader assessment program.

K. Training Program

Personnel for this Project not already employed under the FY 66 PASA will be brought on duty on or about July 1, 1966. During July and August all will be provided an intensive program of training and orientation which will include: discussions of the plans, objectives, and methodology of the SPE/MC Project including principles of mass campaigns, surveillance and assessment; principles of field epidemiology; the organization and development of preventive medical services in West Africa; the geography, history, sociology and political structure of West Africa; administrative details pertinent to this program and a discussion of personnel problems and living conditions to be encountered in West Africa. Instruction and training pertinent to the mechanical equipment will be provided to all personnel with more detailed instruction to be given all operations officers.

Since French is a "must" in the Francophone areas, provision will be made for adequate language training. Since such training normally might extend eight weeks or more, preference in assignment will be given to those with capability in French. Some training may be given prior to their entry on duty in July 1966, to shorten the training period.

In the overall training program, special consultants with particular skills or knowledge will be employed to conduct many of the phases of training. Tentative agreements for assistance in this training have been reached, for example with Dr. Weaver and his staff, Atlanta University, who are responsible for much of the West Africa Peace Corps training; Mr. Estes, American Ambassador to Upper Volta; and several on the staff of the London School of Tropical Medicine who have been instrumental in the development of health services in West Africa.

L. Equipment - Special Notes

In addition for the responsibility of carrying out this program, the Public Health Service will also be fully responsibile for the procurement of supplies and equipment. This should facilitate the operational aspects substantially.

1. Transport - The experience of the past two years has amply demonstrated that the simplier the vehicle, the more practical it is for field use in terms of maintenance and servicability. Further, the cost of the standard carry-all type vehicle, much employed by Service des Grandes Endemies teams, is about half that of the more elaborate vehicles provided by AID for the measles programs in recent years. Since American vehicles must be purchased and since parts and repair facilities for such vehicles are rare to non-existent in West Africa, the American vehicles constitute essentially a financial and operating liability. Accordingly, spare parts must be provided and stockpiled in profusion; in addition, a vehicle in reserve for every two operating is felt to be a necessity.

Provision for transport of assigned technical personnel must also be made. A station wagon type vehicle has been generally advised.

In some areas along the coast, motor launches will be required to reach certain villages and population groups. Only a rough estimate of actual needs for launches can be ascertained at this time. In addition, as experience is gained in the operational logistics of the program, a limited supply of bicycles or motorcycles may be indicated for advance propaganda teams. None, however, are provided for under the current plans.

The makes of vehicles preferred for the different countries will be determined in consultation with GSA which is endeavoring to standardize on particular makes in different countries for all operating agencies.

2. Vaccines

a. Measles - Two principal types of measles vaccines are available and have been made available to date in the AID measles programs. The Edmonston B vaccine, the first to be developed, provokes approximately twice the frequency of marked febrile responses (temperatures over 103°F.) as does the further-attenuated (Schwarz) vaccine. However, a higher antibody titer is produced by the Edmonston B vaccine but whether this is important so far as the durability of protection is not known. From experience with other virus diseases and from scientific studies to date pertaining to this question, it is not felt to be of significence.

In the Francophone countries, Edmonston B vaccine has been determined to be quite safe and practical for mass use. Most tend to favor using this vaccine in their programs. In Nigeria, Sierra Leone and Gambia, however, health officials have been very concerned that the high frequency of marked febrile responses (30 percent) would cause their limited health resources to be overburdened by children with fevers shortly following a mass campaign. Despite studies to the contrary and the favorable experience of the former French countries, vocal advisors to the Nigerian and Sierra Leonean governments are strongly opposed to the use of the Edmonston B vaccine.

Ideally, it would be best if each government could indicate the vaccine strain it prefers. AID officials, however, have been concerned that with only one producer of the Schwarz strain vaccine, the monopoly position would cause the company to elevate the price sharply. The present price of about $.10 per dose was in fact over twice this figure when Merck, Sharp and Dohme held a monopoly position for measles vaccine. This was, of course, prior to the availability of the more recently developed Schwarz strain.

This problem must yet be fully explored. Politically, however, it would be preferable if the country were given the option as to the vaccine type rather than to be informed that "you will take what we give you".

b. Smallpox - Vaccine either for multiple puncture inoculation or administration by jet injection will be provided. As previously noted, some smallpox vaccine for multiple puncture use will be produced at Lagos, Nigeria, and Dakar, Senegal. Hopefully, in the second year of the program, most of the vaccine for multiple puncture use will be provided by these laboratories.

3. Refrigeration - To date in the measles vaccine programs, refrigeration both on the trucks and at base depots has been provided to store measles vaccines. Provisional data, presently being investigated in a series of complex laboratory studies at the Communicable Disease Center (CDC), suggest that actual refrigeration equipment in the trucks can be replaced by styrofoam-type containers with cooling bags. This simplification in the logistics should result in substantial savings and make the programming much easier.

4. Jet Guns - Present experience suggests that the fewer the numbers of types of equipment, the better. Although two types of jet guns are available, the "Ped-O-Jet" presently appears to be the most versatile for general use. Until subsequent experience indicates that the slower but more portable hand model jet injector could be effectively used, principal reliance will be on the Ped-O-Jet. Simplified manuals for its operation and maintenance are now under development at CDC and will be provided in French. Promising

simplified sterilization techniques which will result in less wear and tear on the gun are also currently being tested at CDC. It is anticipated that with a better manual, more adequate and continued training of local vaccination personnel by technical assignees of the Project, and an equipment specialist at the Regional Project Office to handle more major problems that the guns will have a more extended and functional life span.

Electrically powered jet injectors previously provided to a number of the countries by AID will be dismantled to provide additional spare parts which are largely interchangeable with the Ped-O-Jet. This will permit full discontinuation of generators on the trucks presently used to power these guns and the refrigerators.

5. Miscellaneous - Field equipment, such as tents, cots, etc., provided in the past has been "more adapted for tourist use" as expressed by one French medical officer. More durable Army-type equipment will be provided with a less complex array of miscellaneous items.

Battery operated "bull horns" will be substituted for more complex amplification equipment.

H. Miscellaneous

1. Local Costs - Under some circumstances, it may be impossible for the governments of participating countries to provide all of the necessary local costs. Since AID policy will not permit the SPE/MC Project to provide such support at this time, WHO has indicated that it might be able to do so at least on a limited basis to selected countries.

2. Local Hire - Provisions must be made in the Project for local hire of clerical, interpreter, driver, laborer, and other services in support of technical Project personnel. In some instances, it may be possible to hire locally, skilled secretarial or professional talent from among African, American or others.

3. Local Funds - Provision must be made in each country Project Agreement for local funds for miscellaneous emergency and petty expenses without reference to the Lagos Regional Project Office or Atlanta Headquarters.

4. Participant Training - Provision must be made for the special training of country Nationals in epidemiology, laboratory procedures, equipment maintenance, etc., either in the Lagos Regional Project Office or in the U.S. Most training, however, will be conducted in the respective countries.

5. Country Intelligence - Information on the geography, history, political development, medical facilities and programs, etc., will be gathered by field personnel and transmitted to Atlanta. From this source, and other sources in the United States, information of value to

the SPE/EC program will be compiled and made available to the field.

H. Specific Country Plans

As previously described, the health structures and capabilities of each of the countries differ. Plans accordingly must be tailored to secure maximum utilization of these resources and to mold the SPE/EC Project program into functioning health structures so that it may have durability beyond the five-year projected period of the Project. This can be effectively accomplished only when an intimate working knowledge of the country's health programs has been achieved. Fully 6 to 12 months will be required. Desirable redirection of highly structured existing programs, particularly various of the Services des Grandes Endemies, will require time, tact and imagination. A map depicting areas where programs will be conducted during FY 67 is presented as Figure 3.

Programs which will be initiated in the 12 Francophone countries during FY 67 will initially have to correspond closely with current program practices. It is planned therefore not to propose a deviation from the already formulated, current plans of operations in these countries during FY 67. Assigned Project personnel, after having achieved acceptance and professional recognition and after acquisition of knowledge of the programs, will be able to work constructively with local authorities to develop more definitive program plans after the first year.

Nigeria, as described in the letter from the Permanent Secretary (see before) and as verified by the WHO West Africa Area Smallpox Director, has been formulating plans during the past two years. Fundamentally, the program as now envisaged incorporates the concept of small scale pilot programs in each Region of that country to be initiated in November and December, 1966. These pilot projects will be expanded progressively to include increasing numbers of teams by incorporation of former members of the yaws teams and others as the yaws program is phased out. Training of vaccination teams is expected to proceed concomitant with the expansion of the program; detailed methodology will be evolved as the program expands. The program will be under the overall direction of the Nigerian Federal Ministry of Health who will finance a portion, perhaps all of the local costs although for administrative purposes, the program will be conducted on a Regional basis. The concept proposed is sound; assurance must be provided, of course, as with each of the other participating country projects, that the government is willing to provide necessary local costs for the program.

An overall, country-by-country estimate of costs under this Project has been prepared for each of the five years of planned operations. It must be understood, of course, that this represents the best current estimate of the situation and needs. Periodic revisions will be requisite. Country visits by CDC staff during January-April, 1966, may be expected to

alter the FY 67 estimate by perhaps 10 percent but as material changes are anticipated.

Specific considerations pertaining to each of the countries are provided below:

1. Ivory Coast, Togo, Mauritania (Tables A9, A12, A17)

In these countries, sufficient measles vaccine has been provided in recent AID programs to vaccinate about 50 percent of the estimated population between 6 months and 6 years of age. An additional 50 percent of the population can be done in FY 67 following which maintenance programs will be continued. During the maintenance phase, measles vaccine sufficient for the newborns will be provided. Newborns each year represent about 4 percent of the population. Allowing an additional small quantity of vaccine for local outbreak control and some inadvertent loss, it is estimated that during the maintenance phase, an amount equivalent to 5 percent of the population should be provided annually.

For the smallpox vaccination program, these countries, with moderately well-developed Services des Grandes Endemies, have indicated a desire to integrate the smallpox vaccination activity with the functions of the mobile multi-purpose treatment teams using multiple puncture vaccination (see previous). Annual vaccination of about one-third of the population is planned. Using consistently high potency smallpox vaccine in their programs, these countries should accomplish eradication with reasonable facility.

Primary emphasis in these countries will be to increase the efficiency of the multi-purpose mobile teams to develop assessment and surveillance mechanisms and to initiate sound maintenance programs.

2. Chad, Upper Volta (Tables A3, A18)

Measles vaccine was provided by AID to Chad in FY 66 sufficient for vaccination of about one-third of the population between 6 months and 6 years of age. Upper Volta carried out an extensive measles vaccination program early in 1962 but established no maintenance program. Measles control was good until late in 1965 when accumulating numbers of unvaccinated newborns provided fertile soil for the development of outbreaks once again. Measles vaccine sufficient for about one-third of the 6 month to 6 year old population was again provided by AID to Upper Volta during FY 66.

For these two countries, measles vaccine sufficient for the vaccination of approximately one-third of the susceptible children has been provided for both FY 67 and FY 68. Vaccine for the maintenance phase has been calculated by the same formula as for the countries in Category 1.

Other comments pertinent to smallpox vaccination and program emphasis described under group 1 pertain also to these countries.

3. Central African Republic (Table A2)

Measles vaccine plus some supporting equipment were purchased for the C.A.R. during FY 66. Delays in delivery, however, precluded the initiation of a program in this country during FY 66. Additional vaccine will be provided during FY 67 to permit vaccination of approximately half the estimated proportion of susceptible children during FY 67 with the remainder scheduled for vaccination during FY 68.

Comments relating to maintenance vaccination programs for measles vaccine, smallpox vaccination and program emphasis for countries in group 1 are also pertinent to the Central African Republic.

4. Dahomey, Guinea, Mali, Niger (Tables A4, A8, A11, A13)

Each of these countries is reporting substantial numbers of smallpox cases, a reflection in part of less efficient Services des Grandes Endemies. All, in the past two years, have received sufficient measles vaccine from AID to vaccinate half of their estimated susceptible childhood population.

In these countries a program involving simultaneous administration of measles and smallpox vaccines is highly desirable and can be implemented with reasonable facility. With the limited resources available in each of these countries, however, the program must be simplified if success is to be realized. For these countries, therefore, it is planned from the inception of the Project in FY 67 to implement a plan whereby all areas are visited for vaccination purposes once every three years. Sufficient smallpox vaccine to vaccinate one-third of the population annually has been planned (as in the other OCCGE countries) and adequate measles vaccine for previously unvaccinated measles susceptible children (quantity estimated at 5 percent of the total population as previously described). Although initial coverage of the population will require three years for completion, this plan of operation is more applicable for these countries than a more significant major effort to effect coverage in a shorter space of time.

In each of these areas, substantial training and supervision of local personnel will be required to bring them up to the standard of those described in the previous categories.

Gabon, Senegal (Tables A5, A15)

No vaccine or equipment has yet been provided by AID to either country. The pattern of the conduct of the programs in these two countries will be similar to that described for the countries in group 1. Vaccine sufficient

for about 50 percent of the estimated susceptible children will be provided to Gabon in both FY 67 and FY 68 and in Senegal in FY 68 and FY 69. Maintenance programs will follow the mass vaccination efforts.

Service des Grandes Endemies activities in Senegal are comparatively advanced such that the principal efforts in this Project will be directed toward surveillance and assessment activities. In sparsely populated Gabon, all facets of the program will require substantial strengthening.

6. Nigeria (Table A14)

The program in Nigeria will involve the simultaneous administration of smallpox and measles vaccines. The operational plan has previously been commented upon and implementation will follow along the general lines already evolved by the Federal Ministry of Health. It is anticipated that about 20 percent of the population can be covered during FY 67 if pilot projects are developed beginning in November and progressively expanded in an orderly manner.

At present, it is anticipated that smallpox vaccination maintenance programs for the English speaking countries, including Nigeria will differ from those in the Francophone countries. It is probable that maintenance programs providing vaccination for the newborns only plus limited periodic mass programs in major urban areas will provide adequate protection for the population if continent-wide eradication can be achieved within the next 10 years. This must, of course, be assessed. Thus, smallpox vaccine for about 5 percent of the population annually has been estimated as a continuing need. Although a similar program should also be effective in the Francophone areas, the concept of annual vaccination of one-third of the population is deeply ingrained in the French speaking areas and within the context of the established Services des Grandes Endemies can probably be realized with reasonable facility.

The maintenance program will be multi-faceted in approach employing both permanent health units and mobile teams which will visit each area in the country every three years.

Ghana (Table A7)

Although it has not yet been possible to discuss the program in detail with Ghanian officials, it can be anticipated that the general type of program conducted in Nigeria will be applicable to Ghana since both countries have reasonably similar health structures. Specific plans for initiating a program in FY 68 will be developed by staff of the Regional Project Office when permission is given by the State Department to initiate discussions.

8. Gambia (Table A6)

The mass campaign phase of the program in this very small enclave can easily be completed over a one year's period if some advance planning is done during FY 67 by the Regional Project Office staff. Maintenance programs for newborns for measles and smallpox vaccines would be carried out subsequently in the pattern of Nigeria.

9. Liberia, Sierra Leone (Tables A10, A16)

In both countries, combined programs in measles and smallpox vaccination will be conducted with approximately 40 percent coverage planned in FY 68 and 60 percent coverage in FY 69. The status of health services in these countries is such, however, that some local cost support may have to be sought from WHO or other sources. The maintenance program will be conducted as in Nigeria.

10. Congo Brazzaville

Since the United States has no diplomatic relationships with this country, the conceptualization of plans requires further clarification of the political climate. No projections have been made.

Summary of Needs and Costs

Table A summarizes the presently estimated overall needs of the Project for the individual country programs by year. The cost estimate of these needs is presented in Table B.

D. Alternate Courses of Action

As in any international program of this character which involves the participation of a number of different countries, various problems may arise which involve a delay in implementation of specific programs in the different countries. It is highly doubtful, however, that this program would experience more than a temporary delay in implementation in any of the countries. As pointed out by the Director-General of WHO in a meeting with Mr. Hutcheson in November, 1965, the political, economic and quarantine pressures exerted by adjacent countries on a neighboring country with endemic smallpox would soon cause it to respond with an active program of its own.

Should there be a delay in the signing of project agreements for FY 67 with any of the 12 Francophone countries, personnel otherwise programmed for these countries would be assigned temporarily to the Regional Project Office. They would assist in whatever manner was appropriate in facilitating the signing of agreements with the countries in which delays were being experienced and would serve as additional technical resource personnel for the development of programs in alternate areas. Should a protracted delay be anticipated, these technical people would be appropriately reassigned to programs in need of additional support; supplies and equipment intended for the country in question would be diverted to the Regional Project supply pool.

If it were not possible, because of civil strife, to embark upon the Nigerian project during FY 67, a more radical alternation in the Project plan of action would be required. Immediate steps would be taken to implement project agreements for FY 67 with Liberia, Sierra Leone, Gambia and Senegal. From present knowledge, it would be feasible to consumate agreements with these countries within a comparatively brief span of time. Personnel and supplies intended for the Nigerian country program would be diverted to these areas. It would not, however, be possible to carry out the mass vaccination programs in either Liberia or Sierra Leone in the two-year period, FY 68-FY 69, as presently planned. Realistically, a 20 percent coverage during the first year would be maximum with completion of the mass program over the subsequent two-year period.

So far as alternate locations for the Regional Project Office, no other site represents better than a third choice. Even if the Nigerian program were to be delayed a year, the advantages of the Lagos site are so compelling as to dictate the establishment of the Regional Office in Lagos from the inception of the Project. If civil strife precluded the establishment of the Office in Lagos, the Liberian Institute of Tropical Medicine would be the best alternate. Adequate buildings for offices, laboratories and housing are now available and unoccupied. The Government of Liberia has informally indicated its interest in making this available to the Project.

O. Estimates of Cost for Regional and Headquarters Offices

Estimates of cost for the Regional and Headquarters Office are presented in Tables C and D, respectively. The cost estimates for the Regional Office are derived from detailed budget estimates kindly provided by the Assistant Executive Officer of the AID Mission in Lagos at the time of the visit of Communicable Disease Center consultant personnel in December, 1965. Provision has, in addition, been made for an emergency and contingency pool of supplies and equipment. Only a very rough approximation of needs can be provided, of course, beyond the first year. Appendices to each of these tables provide a more detailed explanation as to the derivation of these estimates.

The overall cost of the entire project by year is presented in Table E.

P. Local Country Contributions to the Project

To assess the extent of local costs to be contributed by each country to this Project is difficult for, as pointed out, many of the programs will incorporate certain of the vaccination activities into present multi-purpose functioning programs. Cost accounting under such circumstances is difficult.

In countries somewhat more advanced than those in Africa, the WHO calculates that local costs for a mass vaccination program are approximately $.07 per dose of smallpox vaccine administered by the multiple puncture method. In Africa, because of transportation problems and less adequate personnel, this cost would normally be expected to be greater. However, with jet injection equipment, a compensatory saving would be anticipated. Recent AID measles vaccination programs suggest that a figure of

approximately $.06 per dose of vaccine administered represents the approximate magnitude of local costs in a mass program using jet injectors.

In programs in which both measles and smallpox vaccines are administered at the same time, or in which smallpox is administered as part of a multi-purpose mobile team activity, a substantial saving is realized in transport, personnel and supporting service costs in relation to the costs involved if each vaccine were administered as an individual separate program. The proportionate saving, however, is not known. For purposes of deriving an estimate of local costs for this Project, the cost of administering a vaccine as a second procedure or as part of another program is estimated to be $.02.

Table I presents the best available approximation of local costs for each country for each year. It should be recognized, of course, that within the present context of the Services des Grandes Endemies of the Francophone countries and the yaws eradication projects in Nigeria, a variable but frequently substantial portion of these costs already being budgeted by the individual countries.

IV. Progress to Date

A. Measles Program - AID

In 1961, the Division of Biologic Standards, Public Health Service, conducted a limited trial of measles vaccination in 200 African children. The results were so successful that Dr. Lambin, Minister of Health, Upper Volta, requested AID's assistance in performing a mass measles vaccination campaign throughout Upper Volta. Two scientists were provided to this project by the Division of Biologics Standards; the Merck Company donated the then unlicensed, experimental vaccine; and AID funded (FY 61) $43,000 for vehicles, jet guns, supplies and equipment. The campaign was carried out in the autumn of 1962; 732,000 children were vaccinated.

The success of the program in Upper Volta led six additional countries (Dahomey, Guinea, Ivory Coast, Mali, Mauritania and Niger) to request assistance in conducting similar programs. In FY 63, AID allotted $230,000 for demonstration and training projects in these countries. These were conducted as a regional project in collaboration with the CCCCS. In FY 64, AID allocated $1,479,000 for mass vaccination programs in these countries; sufficient vaccine was provided to vaccinate 25 percent of the estimated susceptible childhood population.

In FY 65, programs were continued in each of these countries and assistance was extended to five other countries, Cameroon, Central African Republic, Chad, Togo and Upper Volta, to vaccinate a portion of their susceptible populations. No program, however, was carried out in the Central African Republic because of an unanticipated delay in delivery of the necessary commodities.

Of the 11 programs in FY 65, seven are being serviced in part through the OCCGE, an organization composed of eight West African countries and France (Guinea, formerly a ninth member is regarded by the Organization as a member but does not so regard itself). The OCCGE serves to provide a forum for the exchange of information regarding endemic disease control and as an informal coordinating mechanism for disease control campaigns. This year a similar organization, the OCCGEAC (OCCGE for Afrique Centrale) has been formed (see previous). Presently, however, arrangements for AID measles programs in the OCCGEAC countries, Chad, Cameroons, and Central African Republic, are being carried out on a bilateral basis.

During FY 64 and FY 65, the Communicable Disease Center, Public Health Service, has provided technical assistance to AID for programs in each of the countries where measles vaccine was offered. Thirteen medical officers will have spent a total of over 36 months in all in West Africa during FY 64 and FY 65 on technical consultant missions.

Smallpox-Measles Program

As noted under the Project Justification Section, the President of the United States at the World Health Assembly in May, 1965, pledged the support of this country "for an international program to eradicate smallpox completely from the earth within the next decade."

The possibility was subsequently explored that the West Africameasles vaccine programs sponsored by AID might be extended to include smallpox vaccination and eventually smallpox eradication. A series of exploratory meetings were held between representatives of the Public Health Service and AID which led to the presentation on August 20, 1965 of a formal proposal to the Administrator by Dr. Luther Terry, then Surgeon General of the Public Health Service. Dr. Terry indicated that the Public Health Service was willing to undertake, through a Participating Agency Service Agreement, a program for the eradication of smallpox and the control of measles in 18 West African countries.

During the week of August 30, 1965, Mr. Milton Segal, Assistant Director-General of WHO, and Dr. Karel Raska, Director, Communicable Disease Division, WHO, visited Washington and discussed the proposed Project at length with AID and Public Health Service officials. In early November, 1965, Dr. Marcelino Candau, Director-General, WHO, also discussed this Project at length with AID and Public Health Service officials in Washington. Dr. Candau stated that smallpox eradication activities were wanted and would be acceptable to the governments to whom assistance was offered.

From these various meetings, it was concluded that a Project for smallpox eradication and measles control in the 18 countries of West Africa was a feasible undertaking. The 18 countries, representing a cohesive entity, were felt to be susceptible both technically and administratively to complete eradication of smallpox.

This project was submitted to and subsequently approved by the President of the United States in late November. An announcement of this offer of assistance was made to each of the 18 countries in

late November. In late December, 1965, following the announcement of the President offering assistance to 18 countries, a special request was made to AID and subsequently agreed to that Congo Brazzaville would also be included in the overall Project.

Over a four-week period in late November and early December, two Communicable Disease Center medical staff, and AID official and a special consultant discussed the Project at length with representatives of the countries concerned (except for Ghana, Congo Brazzaville and Gambia) at a ministerial meeting of the OCCGE at Ouagadougou, Upper Volta; at a technical staff conference of the OCCGSAC in Yaounde; and through separate discussions with health officials in Nigeria, Liberia, Sierra Leone and Guinea. The team also discussed the Project at length with WHO staff from the African Regional Office, the West African Area Smallpox Eradication Office and with Dr. Candau and his staff in Geneva.

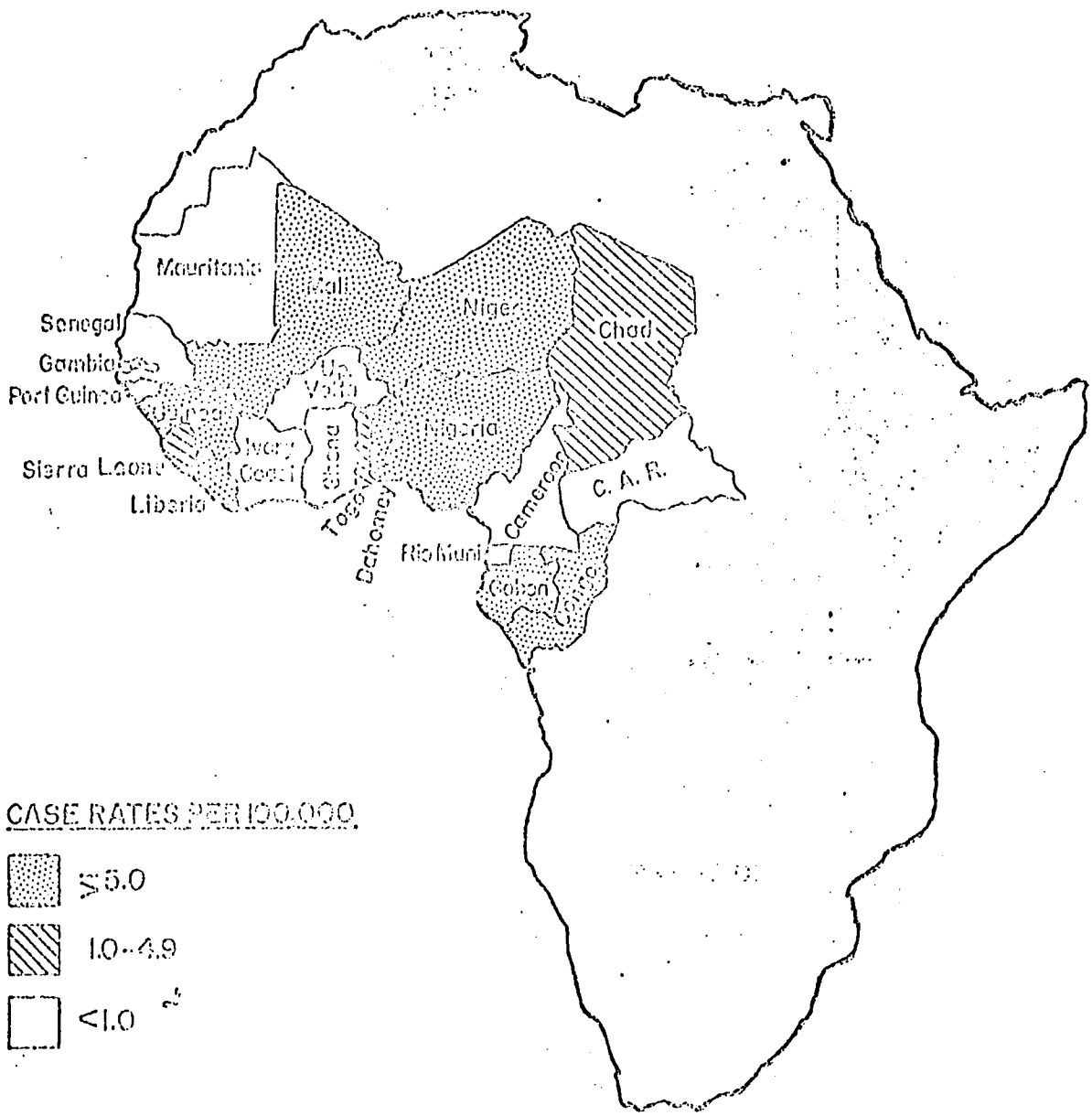
A PIO/T was issued on January 1, 1966, to the Communicable Disease Center providing funds for a headquarters staff which would be responsible for determining requirements of the Project, establishing guidelines and program plans for the conduct of the program, assisting the USAID Missions in the preparation and negotiation of project agreements with the respective countries, etc.

In late December and early January, a proposed plan for implementation of the Project as a whole was evolved at the Communicable Disease Center based on the considerable experience of the technical consultants to the AID measles programs over the past two years, advice and information provided by WHO Headquarters Regional Office and West African Area Smallpox Advisors, and the month-long series of discussions with representatives of the individual countries. This plan was discussed in detail in a special week-long program planning conference in Atlanta attended by CDC staff, special consultants and a member of the WHO Smallpox Eradication Unit from Geneva and presented for comment at a meeting with various AID staff members at a special meeting in Washington on January 13.

The plan of operation described in this Project is based on a now substantial body of information and experience tempered by the views and opinions of a great many persons with considerable expertise and a broad background of personal knowledge of immunization and West African problems. As such, it represents a best appraisal and forecast as of today. The plan, however, is not regarded as a final blueprint to be followed irrevocably over the next five years. Constant modification to adapt and to improve must proceed throughout the program.

Figure 1

REPORTED SMALLPOX MORBIDITY - WEST AFRICA
AVERAGE ANNUAL CASE RATE, 1964-65*

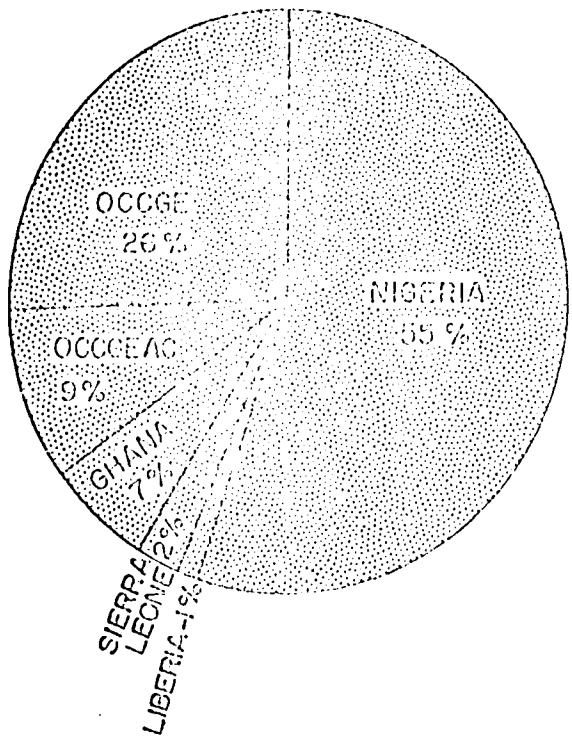


*FROM WHO REPORTS THROUGH DECEMBER 31, 1965

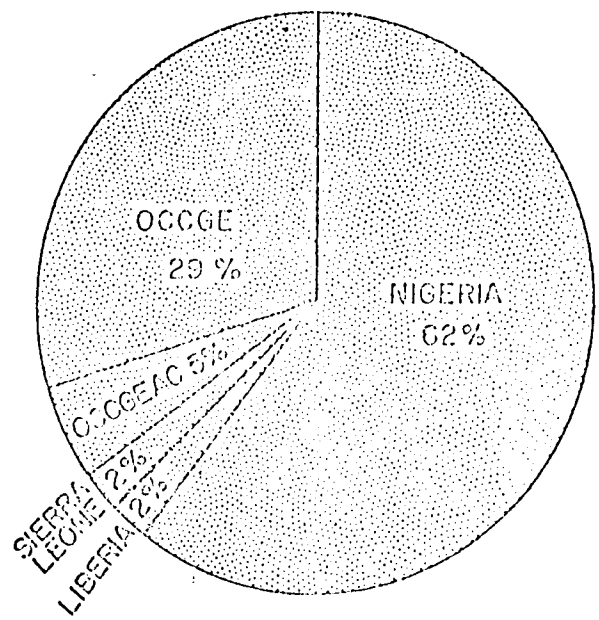
Figure 2

BACKGROUND DATA
19-COUNTRY SPE/MC PROGRAM, WEST AFRICA

POPULATION*
PER CENT DISTRIBUTION



REPORTED SMALLPOX MORBIDITY**
PER CENT DISTRIBUTION



* LATEST AVAILABLE WHO ESTIMATE. (GAMBIA NOT SHOWN AS IT COMPRISES <1% OF THE POPULATION)

** LATEST AVAILABLE WHO REPORTS FOR 1964-65. (GHANA AND GAMBIA NOT SHOWN AS THEY COMPRISE <1% OF THE REPORTED SMALLPOX MORBIDITY)

NOTE: OCCGE COUNTRIES INCLUDE DAHOMEY, GUINEA, IVORY COAST, MALI, MAURITANIA, NIGER, SENEGAL, TOGO, AND UPPER VOLTA.

OCCGEAC COUNTRIES INCLUDE CAMEROON, CENTRAL AFRICAN REPUBLIC, CHAD, CONGO, AND GABON.

Figure 3

WEST AFRICA SPE/MC PROGRAM
PLAN OF OPERATION - FY 1967

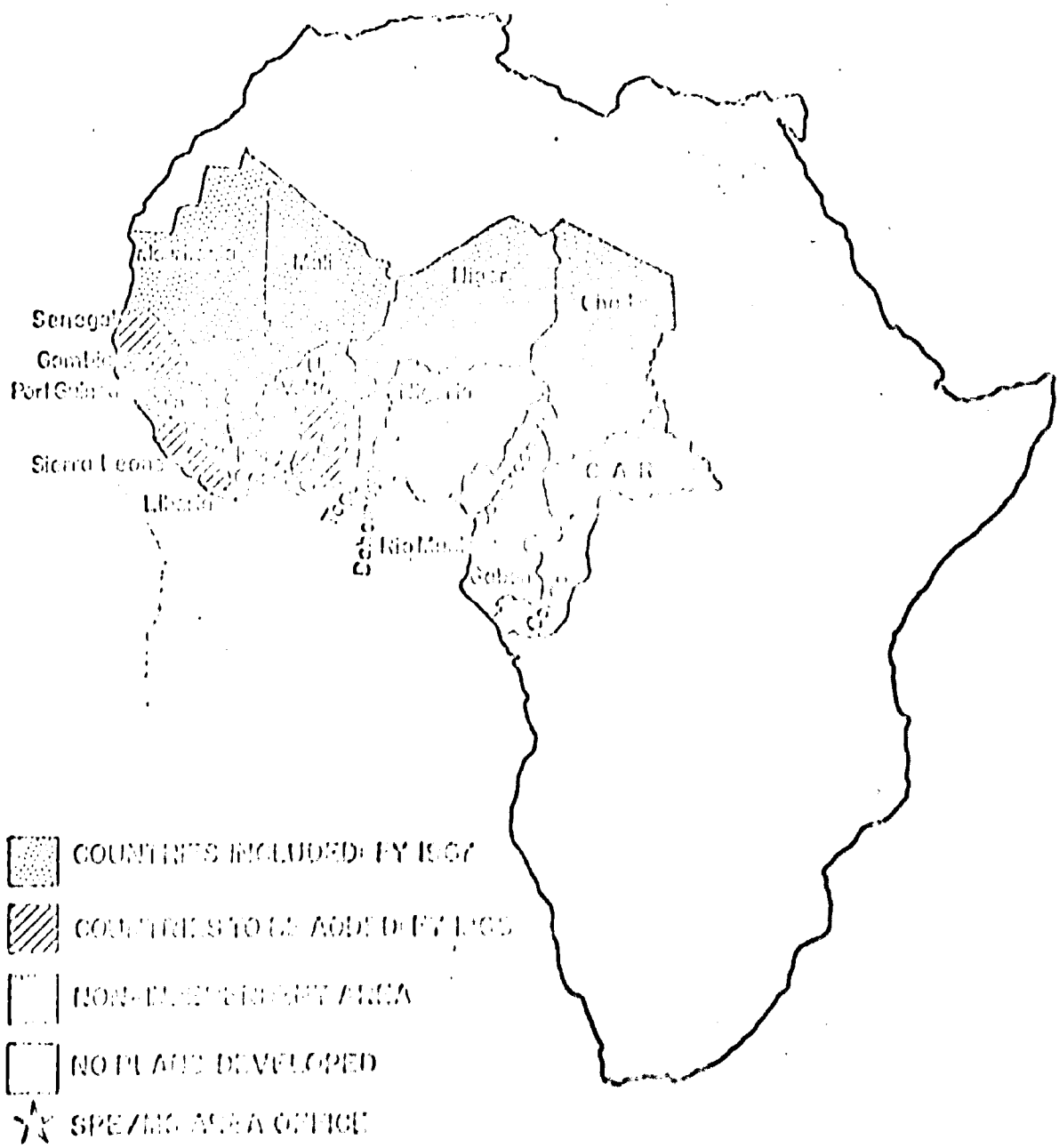


Figure 4

WEST AFRICA SPE/MC PROGRAM
ALTERNATE PLAN OF OPERATION - FY 1967

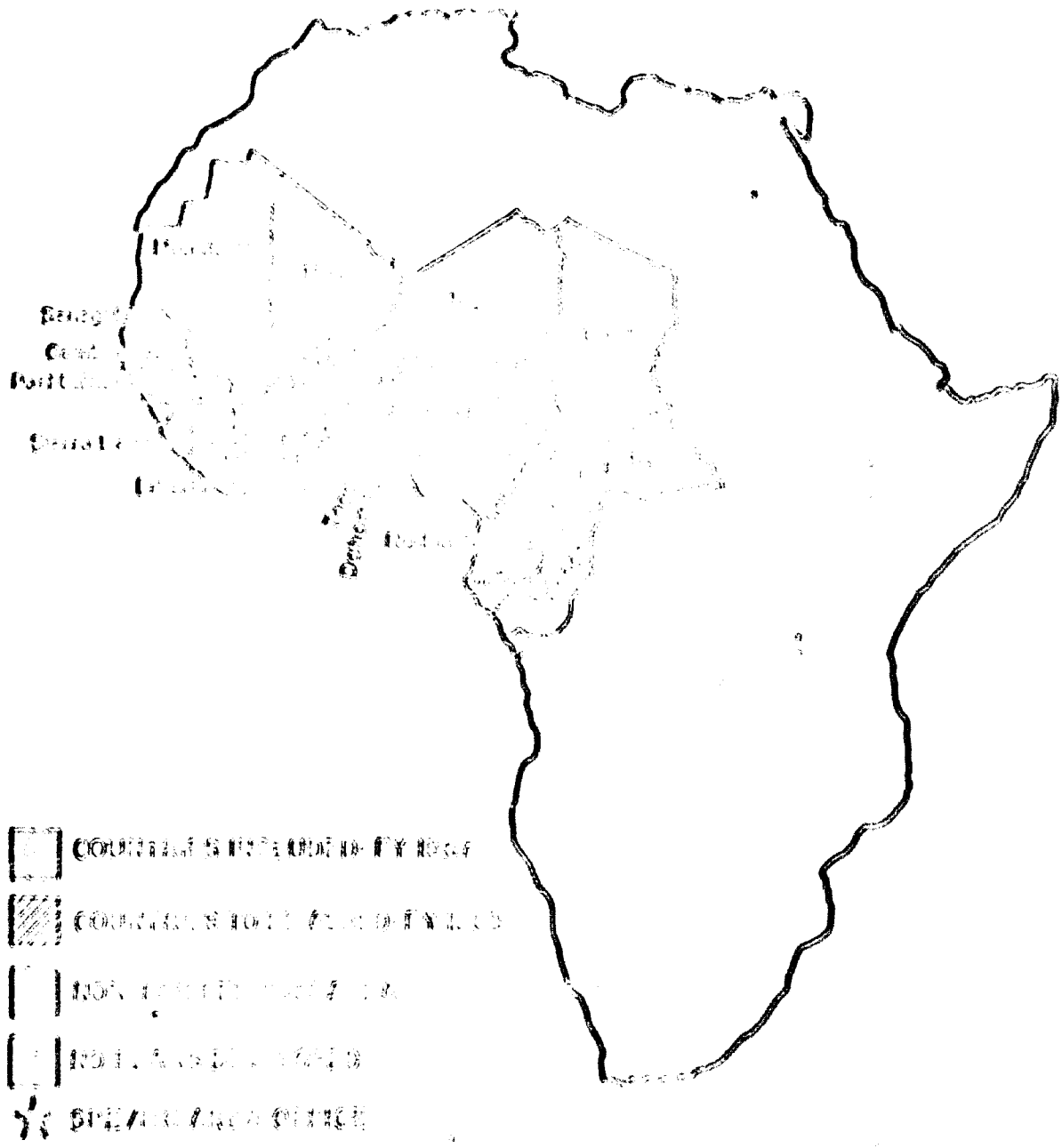


Table 1

West Africa - Hospital and Medical Center Establishments

Country	Total Hospitals	Number Medical Centers*
Cameroon (1962)	458	336
Central African Republic (1960)	106	35
Chad (1961)	128	124
Dahomey (1960)	34	?
Gabon (1962)	34	?
Gambia (1961)	8	2
Ghana (1960)	39	?
Guinea (1960)	57	33
Ivory Coast (1958)	427	326
Liberia (1960)	31	?
Mali (1961)	42	36
Mauritania (1961)	24	14
Niger (1961)	?	?
Nigeria (1961)	1217	908
Senegal (1961)	38	31
Sierra Leone (1961)	?	?
Togo (1961)	38	?
Upper Volta (1962)	93	87

*These are small medical units not provided with hospital equipment but nevertheless with some beds for the treatment of patients (dispensaries, infirmaries, etc.).

Source: Annual Epidemiological and Vital Statistics Report - 1961 (WHO)

Corrected Table A

Composite Table - Estimate of Needs
for 18 Countries (excluding Congo Brazzaville)
By Item and Fiscal Year

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine (000's)	5,264	8,472	8,600	5,715	5,435	33,486
Doses of Smallpox Vaccine (000's)	25,281	43,541	45,476	19,421	16,541	150,260
Vaccination Certificates (000's)	27,129	45,261	46,921	20,656	17,776	157,743
Vehicles						
Carryalls (No.)	79	68	81	25	77	330
Transport Vehicles (No.)	32	9	32	8	27	108
Vehicle Spare Parts (units)	124	187	190	146	137	784
Jet Injectors (No.)	194	333	344	184	168	1,223
Jet Injector Spare Parts (units)	194	333	344	184	168	1,223
Refrigerators (No.)	125	77	113	33	104	452
Field Equipment (units)	125	77	113	33	104	452
TECHNICAL ASSISTANCE						
Medical Officers (No.)	14	18	18	17	12	79
Operations Officers (No.)	18	23	23	23	23	110
Local Supporting Services ($)	192,000	214,000	205,000	200,000	175,000	986,000

Table A

Explanatory Notes

Vaccination Certificates - The number of vaccination certificates has been determined on the basis of the number of persons vaccinated. In those programs in which measles vaccine and smallpox vaccine are simultaneously given to an individual only one vaccination certificate has been provided for.

Vehicles - In general, one vehicle per 100,000 planned measles vaccinations has been provided with an additional vehicle in reserve for every two operative in the field. In countries in which smallpox vaccination will be carried out by the multi-purpose teams of the Service des Grandes Endemies, limited additional vehicles have been provided to strengthen this Service. The estimated life span of a vehicle is estimated to be two years. Transport vehicles (probably station wagons) are provided for each Technical advisor.

Vehicle Spare Parts - A "unit" is defined as approximately $1,000 worth of spare parts including tires. This figure is based on experience of AID measles programs during the past two years. One "unit" per operating vehicle is provided annually.

Jet Injectors - Two guns per 100,000 measles vaccinations and two guns per 500,000 smallpox vaccinations are provided. It is estimated that the life span of these guns will average one year. In countries in which smallpox vaccination will be carried out mainly by multiple puncture by the Services des Grandes Endemies, a couple of guns have been provided for epidemic control and occasional mass campaign use.

Jet Injector Spare Parts - A "unit" is defined as approximately $400 worth of spare parts. This estimate of annual need is based on the experience of the AID measles campaigns of the past two years.

Refrigerators - In general, one refrigerator is provided for each vehicle. The life span of the refrigerator is estimated to be two years.

Field Equipment - A "unit" is defined as approximately $1,000 worth of equipment. This will include tents, cots, mosquito netting, miscellaneous camping gear, uniforms, and some ancillary equipment for the vehicles such as "bull horns". In general one unit is provided for each new vehicle added.

Local Supporting Services - This has been estimated to be about $6,000 per year per country assignee for the first year and $5,000 per year thereafter. This will provide expenses for secretarial, driver and translator office equipment, emergency and miscellaneous technical support costs.

Table A1.

CAMEROON — Population: 4.6 million (1966 Estimate)

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine*(000's)	506	230	230	230	230	1,426
Doses of Smallpox Vaccine (000's)	1,530	1,530	1,530	1,530	1,530	7,650
Vaccination Certificates (000's)	2,000	1,800	1,800	1,800	1,800	9,200
Vehicles						
Carryalls (No.)**	5	0	5	0	5	15
Transport Vehicles (No.)	2	0	2	0	2	6
Vehicle Spare Parts (units)	11	7	7	7	7	39
Jet Injectors (No.)	11	7	7	7	7	39
Jet Injector Spare Parts (units)	11	7	7	7	7	39
Refrigerators (No.)	11	0	7	0	7	25
Field Equipment (units)	11	0	7	0	7	25
TECHNICAL ASSISTANCE						
Medical Officers (No.)***	1	1	1	1	1	5
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	12,000	10,000	10,000	10,000	10,000	52,000

*50% of susceptible population scheduled for vaccination prior to FY 1967
**4 vehicles sent in FY 1966.
***Will also have responsibility for Gabon.

CENTRAL AFRICAN REPUBLIC — Population: 1.3 million (1966 Estimate)

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine* (000's)	71	142	65	65	65	408
Doses of Smallpox Vaccine (000's)	433	433	433	433	433	2,165
Vaccination Certificates (000's)	504	575	498	498	498	2,573
Vehicles						
Carryalls (No.)**	0	3	0	3	0	6
Transport Vehicles (No.)	2	0	2	0	1	5
Vehicle Spare Parts (units)	5	5	5	5	4	24
Jet Injectors (No.)	3	5	3	3	3	17
Jet Injector Spare Parts (units)	3	5	3	3	3	17
Refrigerators (No.)	5	3	2	3	1	14
Field Equipment (units)	5	3	2	3	1	14
TECHNICAL ASSISTANCE						
Medical Officers (No.)	1	1	1	1	0	4
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	12,000	10,000	10,000	10,000	5,000	47,000

*Vaccine for 25% of susceptible population purchased in FY 1966.
**3 vehicles sent in FY 1966.

Table A3

CHAD — Population: 2.8 million (1966 Estimate)

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine* (000's)	198	198	140	140	140	816
Doses of Smallpox Vaccine (000's)	932	932	932	932	932	4,660
Vaccination Certificates (000's)	130	1,130	1,072	1,072	1,072	5,476
Vehicles						
Carryalls (No.)**	0	4	0	4	0	8
Transport Vehicles (No.)	2	0	2	0	1	5
Vehicle Spare Parts (units)	6	6	6	6	5	29
Jet Injectors (No.)	5	5	5	5	5	25
Jet Injector Spare Parts (units)	5	5	5	5	5	25
Refrigerators (No.)	6	4	2	4	1	17
Field Equipment (units)	6	4	2	4	1	17
TECHNICAL ASSISTANCE						
Medical Officers (No.)	1	1	1	1	0	4
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	12,000	10,000	10,000	10,000	5,000	47,000

*33% of susceptible population scheduled for vaccination prior to FY 1967.
**4 vehicles sent in FY 1966.

Table A4

DAHOMEY

Population: 2.3 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine* (000's)	115	115	115	115	115	575
Doses of Smallpox Vaccine (000's)	842	842	842	842	842	4,210
Vaccination Certificates (000's)	842	842	842	842	842	4,210
Vehicles						
Carryalls (No.)	3	0	3	0	3	9
Transport Vehicles (No.)	2	0	2	0	2	6
Vehicle Spare Parts (units)	5	5	5	5	5	25
Jet Injectors (No.)	7	7	7	7	7	35
Jet Injector Spare Parts (units)	7	7	7	7	7	35
Refrigerators (No.)	5	0	5	0	5	15
Field Equipment (units)	5	0	5	0	5	15
TECHNICAL ASSISTANCE						
Medical Officers (No.)	1	1	1	1	1	5
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services	12,000	10,000	10,000	10,000	10,000	52,000

*50% of susceptible population scheduled for vaccination prior to FY 1967.

Table A5

GABON

Population: 0.5 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine (000's)	55	55	25	25	25	185
Doses of Smallpox Vaccine (000's)	167	167	167	167	167	835
Vaccination Certificates (000's)	222	222	192	192	192	1,020
Vehicles						
Carryalls (No.)	2	0	2	0	2	6
Transport Vehicles(No.)	1	0	1	0	1	3
Vehicle Spare Parts (units)	3	3	3	3	3	15
Jet Injectors (No.)	3	3	2	2	2	12
Jet Injector Spare Parts (units)	3	3	2	2	2	12
Refrigerators (No.)	3	0	3	0	3	9
Field Equipment (units)	3	0	3	0	3	9
TECHNICAL ASSISTANCE						
Medical Officers (No.)	0	0	0	0	0	0
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services($)	6,000	5,000	5,000	5,000	5,000	26,000

Table A6

GAMBIA — Population: 0.4 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine (000's)	0	90	20	20	20	150
Doses of Smallpox Vaccine (000's)	0	450	20	20	20	510
Vaccination Certificates (000's)	0	450	20	20	20	510
Vehicles						
Carryalls (No.)	0	1	0	1	0	2
Transport Vehicles (No.)	0	1	0	1	0	2
Vehicle Spare Parts (units)	0	2	2	2	2	8
Jet Injectors (No.)	0	4	2	2	2	10
Jet Injector Spare Parts (units)	0	4	2	2	2	10
Refrigerators (No.)	0	2	0	2	0	4
Field Equipment (units)	0	2	0	2	0	4
TECHNICAL ASSISTANCE						
Medical Officers (No.)	0	0	0	0	0	0
Operations Officers (No.)	0	1	1	1	1	4
Local Supporting Services ($)	0	6,000	5,000	5,000	5,000	21,000

Table A7

GHANA

Population: 7.4 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine (000's)	0	325	650	650	370	1,995
Doses of Smallpox Vaccine (000's)	0	1,625	3,250	3,250	370	8,495
Vaccination Certificates (000's)	0	1,625	3,250	3,250	370	8,495
Vehicles						
Carryalls (No.)	0	5	5	5	1	16
Transport Vehicles (No.)	0	2	0	2	0	4
Vehicle Spare Parts (units)	0	7	12	12	8	39
Jet Injectors (No.)	0	14	26	26	10	76
Jet Injector Spare Parts (units)	0	14	26	26	10	76
Refrigerators (No.)	0	7	5	7	1	20
Field Equipment (units)	0	7	5	7	1	20
TECHNICAL ASSISTANCE						
Medical Officers (No.)	0	1	1	1	1	4
Operations Officers (No.)	0	1	1	1	1	4
Local Supporting Services ($)	0	12,000	10,000	10,000	10,000	42,000

Table A8

GUINEA — Population: 3.5 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine*(000's)	175	175	175	175	175	875
Doses of Smallpox Vaccine (000's)	1,283	1,283	1,283	1,283	1,283	6,415
Vaccination Certificates (000's)	1,283	1,283	1,283	1,283	1,283	6,415
Vehicles						
Carryalls (No.)	3	0	3	0	3	9
Transport Vehicles (No.)	2	0	2	0	2	6
Vehicle Spare Parts (units)	5	5	5	5	5	25
Jet Injectors (No.)	9	9	9	9	9	45
Jet Injector Spare Parts (units)	9	9	9	9	9	45
Refrigerators (No.)	5	0	5	0	5	15
Field Equipment (units)	5	0	5	0	5	15
TECHNICAL ASSISTANCE						
Medical Officers (No.)	1	1	1	1	1	5
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	12,000	10,000	10,000	10,000	10,000	52,000

*50% of susceptible population scheduled for vaccination prior to FY 1967.

Corrected Table A9

IVORY COAST — Population: 3.7 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine*(000's)	407	185	185	185	185	1,147
Doses of Smallpox Vaccine (000's)	1,233	1,233	1,233	1,233	1,233	6,165
Vaccination Certificates (000's)	1,640	1,418	1,418	1,418	1,418	7,312
Vehicles						
Carryalls (No.)	7	0	4	0	4	15
Transport Vehicles (No.)	1	0	1	0	1	3
Vehicle Spare Parts (units)	7	7	5	5	5	29
Jet Injectors (No.)	9	5	5	5	5	29
Jet Injector Spare Parts (units)	9	5	5	5	5	29
Refrigerators (No.)	8	0	5	0	5	18
Field Equipment (units)	8	0	5	0	5	18
TECHNICAL ASSISTANCE						
Medical Officers (No.)	0	0	0	0	0	0
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	6,000	5,000	5,000	5,000	5,000	26,000

*50% of susceptibles scheduled for vaccination prior to FY 1967.

Table A10

LIBERIA — Population: 1.1 million (1966 Estimate).

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine (000's)	0	97	145	55	55	352
Doses of Smallpox Vaccine (000's)	0	485	725	55	55	1,320
Vaccination Certificates (000's)	0	485	725	55	55	1,320
Vehicles						
Carryalls (No.)	0	2	0	1	0	3
Transport Vehicles (No.)	0	2	0	2	0	4
Vehicle Spare Parts (units)	0	4	4	3	3	14
Jet Injectors (No.)	0	4	6	2	2	14
Jet Injector Spare Parts (units)	0	4	6	2	2	14
Refrigerators (No.)	0	4	0	3	0	7
Field Equipment (units)	0	4	0	3	0	7
TECHNICAL ASSISTANCE						
Medical Officers (No.)	0	1	1	1	1	4
Operations Officers (No.)	0	1	1	1	1	4
Local Supporting Services ($)	0	12,000	10,000	10,000	10,000	42,000

Table A11

MALI — Population: 4.7 million (1966 Estimate)

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine[a] (000's)	235	235	235	235	235	1,175
Doses of Smallpox Vaccine (000's)	1,722	1,722	1,722	1,722	1,722	8,610
Vaccination Certificates (000's)	1,722	1,722	1,722	1,722	1,722	8,610
Vehicles						
Carryalls (No.)	5	0	5	0	5	15
Transport Vehicles (No.)	2	0	2	0	2	6
Vehicle Spare Parts (units)	7	7	7	7	7	35
Jet Injectors (No.)	13	13	13	13	13	65
Jet Injector Spare Parts (units)	13	13	13	13	13	65
Refrigerators (No.)	7	0	7	0	7	21
Field Equipment (units)	7	0	7	0	7	21
TECHNICAL ASSISTANCE						
Medical Officers (No.)	1	1	1	1	1	5
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	12,000	10,000	10,000	10,000	10,000	50,000

[a] 50% of susceptible population scheduled for vaccination prior to FY 1967.

Corrected Table A12

PARAGUAY

Population: 1.0 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	Post	Total
COMMODITIES						
Doses of Measles Vaccine[a] (000's)	110	50	50	50	50	310
Doses of Smallpox Vaccine (000's)	333	333	333	333	333	1,665
Vaccination Certification (000's)	883	383	383	383	383	1,915
Vehicle Spare Parts (units)						
Carryalls (No.)	3	0	2	0	2	7
Transport Vehicles (No.)	1	0	1	0	1	3
Vehicle Spare Parts (units)	4	4	3	3	3	17
Refrigerators (No.)	3	3	3	3	3	15
Cold Chain Spare Parts (units)	3	3	3	3	3	15
Refrigerators (No.)	4	0	3	0	1	8
Field Equipment (units)	4	0	3	0	3	240
TECHNICAL ASSISTANCE						
Medical Officers (No.)	0	0	0	0	0	0
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	6,000	5,000	5,000	5,000	5,000	26,000

[a] 50% of susceptibles scheduled for vaccination prior to FY 1967.

Table A13

NIGER — Population: 3.1 million (1966 Estimate)

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine* (000's)	155	155	155	155	155	775
Doses of Smallpox Vaccine (000's)	1,136	1,136	1,136	1,136	1,136	5,680
Vaccination Certificates (000's)	1,136	1,136	1,136	1,136	1,136	5,680
Vehicles						
Carryalls (No.)	3	0	3	0	3	9
Transport Vehicles (No.)	2	0	2	0	2	6
Vehicle Spare Parts (units)	5	5	5	5	5	25
Jet Injectors (No.)	9	9	9	9	9	45
Jet Injector Spare Parts (units)	9	9	9	9	9	45
Refrigerators (No.)	5	0	5	0	5	15
Field Equipment (units)	5	0	5	0	5	15
TECHNICAL ASSISTANCE						
Medical Officers (No.)	1	1	1	1	1	5
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	12,000	10,000	10,000	10,000	10,000	52,000

* 50% of susceptible population scheduled for vaccination prior to FY 1967.

Table A14

NIGERIA — Population: 60.0 million (1966 Estimate)

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine (000's)	2,700	5,400	5,400	3,000	3,000	19,500
Doses of Smallpox Vaccine (000's)	13,500	27,000	27,000	3,000	3,000	73,500
Vaccination Certificates (000's)	13,500	27,000	27,000	3,000	3,000	73,500
Vehicle Spare Parts (units)						
Carryalls (No.)	40	41	40	5	40	166
Transport Vehicles (No.)	11	0	11	0	9	31
Vehicle Spare Parts (units)	51	92	92	56	54	345
Jet Injectors (No.)	108	216	216	72	72	684
Jet Injectors Spare Parts (units)	108	216	216	72	72	684
Refrigerators (No.)	51	41	51	5	49	197
Field Equipment (units)	51	41	51	5	49	197
TECHNICAL ASSISTANCE						
Medical Officers (No.)	5	5	5	5	3	23
Operations Officers (No.)	6	6	6	6	6	30
Local Supporting Services	66,000	55,000	55,000	55,000	45,000	276,000

Corrected Table A15

SENEGAL. Population: 3.5 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine (000's)	0	385	385	175	175	1,120
Doses of Smallpox Vaccine (000's)	0	1,200	1,200	1,200	1,200	4,800
Vaccination Certificates (000's)	0	1,585	1,585	1,375	1,375	5,920
Vehicles						
Carryalls (No.)	0	7	0	4	0	11
Transport Vehicles (No.)	0	2	0	1	0	3
Vehicle Spare Parts (units)	0	9	9	5	5	28
Jet Injectors (No.)	0	9	9	5	5	28
Jet Injector Spare Parts (units)	0	9	9	5	5	28
Refrigerators (No.)	0	9	0	5	0	14
Field Equipment (units)	0	9	0	5	0	14
TECHNICAL ASSISTANCE						
Medical Officers (No.)	0	1	1	0	0	2
Operations Officers (No.)	0	1	1	1	1	4
Local Supporting Services ($)	0	12,000	10,000	5,000	5,000	32,000

Table A16

SIERRA LEONE

Population: 2.3 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine (000's)	0	200	300	115	115	730
Doses of Smallpox Vaccine (000's)	0	1,000	1,500	115	115	2,730
Vaccination Certificates (000's)	0	1,000	1,500	115	115	2,730
Vehicles						
Carryalls (No.)	0	3	2	0	2	7
Transport Vehicles (No.)	0	2	0	2	0	4
Vehicle Spare Parts (units)	0	5	7	4	4	20
Jet Injectors (No.)	0	8	12	4	4	28
Jet Injector Spare Parts (units)	0	8	12	4	4	28
Refrigerators (No.)	0	5	2	2	2	11
Field Equipment (units)	0	5	2	2	2	11
TECHNICAL ASSISTANCE						
Medical Officers (No.)	0	1	1	1	1	4
Operations Officers (No.)	0	1	1	1	1	4
Local Supporting Services ($)	0	12,000	10,000	10,000	10,000	48,000

Corrected Table A17

TOGO — Population: 1.7 million (1966 Estimate)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine* (000's)	187	85	85	85	85	527
Doses of Smallpox Vaccine (000's)	570	570	570	570	570	2,850
Vaccination Certificates (000's)	757	655	655	655	655	3,377
Vehicles						
Carryalls (No.)**	1	2	1	2	1	7
Transport Vehicles (No.)	2	0	2	0	1	5
Vehicle Spare Parts (units)	6	5	5	5	4	25
Jet Injectors (No.)	5	3	3	3	3	17
Jet Injector Spare Parts (units)	5	3	3	3	3	17
Refrigerators (No.)	6	2	3	2	2	15
Field Equipment (units)	6	2	3	2	2	15
TECHNICAL ASSISTANCE						
Medical Officers (No.)	1	1	1	1	0	4
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	12,000	10,000	10,000	10,000	5,000	47,000

*50% of susceptibles scheduled for vaccination prior to FY 1967.
**3 vehicles sent in FY 1966.

Table A18

UPPER VOLTA — Population: 4.8 million (1966 Estimate)

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
Doses of Measles Vaccine*(000's)	350	350	240	240	240	1,420
Doses of Smallpox Vaccine (000's)	1,600	1,600	1,600	1,600	1,600	8,000
Vaccination Certificates (000's)	1,950	1,950	1,840	1,840	1,840	9,420
Vehicles						
Carryalls (No.)	7	0	6	0	6	19
Transport Vehicles (No.)	2	0	2	0	2	6
Vehicle Spare Parts (units)	9	9	8	8	8	42
Jet Injectors (No.)	9	9	7	7	7	39
Jet Injector Spare Parts (units)	9	9	7	7	7	39
Refrigerators (No.)	9	0	8	0	8	25
Field Equipment (units)	9	0	8	0	8	25
TECHNICAL ASSISTANCE						
Medical Officers (No.)	1	1	1	1	1	5
Operations Officers (No.)	1	1	1	1	1	5
Local Supporting Services ($)	12,000	10,000	10,000	10,000	10,000	52,000

*33% of susceptible population scheduled for vaccination prior to FY 1967.

Corrected Table B

Composite Table
Cost Estimates for 13 Countries*
By Item and Fiscal Year
($ Shown in Thousands)

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
COMMODITIES						
1. Measles Vaccine	$2,106	$3,389	$3,440	$2,286	$2,174	$13,395
2. Smallpox Vaccine	506	871	910	388	331	
Less multiple pressure vaccine supplied by Yaba Laboratories:	(0)	(174)	(182)	(78)	(66)	
Tot. cost smallpox vaccine	506	697	728	310	265	2,506
3. Vaccination Certificates	271	453	469	207	178	1,578
4. Vehicles - Carryall	395	340	405	125	385	1,650
Transport	112	32	112	28	95	379
5. Vehicle spare parts	128	187	190	146	137	784
6. Jet Injectors	133	228	236	126	115	838
7. Jet Injector Spare Parts	78	133	139	74	67	490
8. Refrigerators	38	23	34	10	31	136
9. Field Equipment	125	77	113	33	104	452
TECHNICAL ASSISTANCE						
10. Salaries	1,056	1,353	1,353	1,320	1,155	6,237
11. Local supporting services	192	214	205	200	175	986
TOTALS	$5,136	$7,126	$7,423	$5,355	$4,891	$29,431

* Excludes Congo (Brazzaville)

Table B .

Explanatory Notes (See also Table A Explanatory Notes)

Measles Vaccine - Calculated to be $.40 per dose delivered.

Smallpox Vaccine - Calculated to be $.02 per dose delivered. From the second through the fifth years, it is estimated that the Yaba and Dakar Laboratories will supply 20 percent of the needs for vaccine for multiple puncture use.

Vaccination Certificates - Calculated to cost $.01 each.

Vehicles - Carryall - Calculated to cost $5,000 each delivered.
Transport - Calculated to cost $3,500 each delivered.

Jet Injectors - Calculated to cost $685 each delivered.

Refrigerators - Calculated to cost $300 each delivered.

Salaries - Calculated at $33,000 per man per year. This figure is estimated to cover basic pay, movement of household goods, travel, housing and other benefits.

Table C

Cost Estimate
By Item and Fiscal Year
Regional Office - Lagos

	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
DIRECT COSTS						
1. Personnel (8)	$280,000	$280,000	$280,000	$280,000	$280,000	$1,400,000
2. Non-Personnel Costs	200,000	125,000	125,000	125,000	125,000	700,000
3. Vehicles (4)	14,000	0	14,000	0	14,000	42.000
BACKUP RESERVE						
4. Measles Vaccine	200,000	20,000	20,000	20,000	20,000	280,000
5. Smallpox Vaccine	30,000	3,000	3,000	3,000	3,000	42,000
6. Vehicles (Carryalls)	25,000	25,000	25,000	25,000	25,000	125,000
7. Vehicles-Spare Parts	24,000	37,000	38,000	30,000	28,000	157,000
8. Refrigerators	1,800	1,200	1,800	600	600	6,000
9. Jet Injectors	13,000	22,600	23,300	13,000	600	83,500
10. Jet Injectors-spare parts	15,000	26,400	27,400	14,800	13,600	97,200
11. Boats	60,000	0	0	60,000	0	120,000
ADDITIONAL						
12. Annual Meeting	20,000	20,000	20,000	20,000	20,000	100,000
13. Lab. Supplies and Equipment	20,000	30,000	30,000	20,000	20,000	120,000
14. Short-term training costs	10,000	10,000	10,000	10,000	10,000	50,000
TOTALS	$912,800	$600,200	$617,500	$621,400	$570,800	$3,322,700

Table C

Explanatory Notes

Personnel - Calculated at $35,000 per man per year. This figure is estimated to cover basic pay, movement of household goods, travel, housing and other benefits.

Non-personnel Costs - Includes costs of local hire, office rent, communications and utilities, printing and reproduction services, supplies and materials, equipment and other services. Estimate based on costs provided by AID Mission, Lagos.

Vehicles - Four transport vehicles at $3500 each for use of local staff.

Backup Reserve - (Supplies to be rotated through arrangement with Nigerian program)

Measles Vaccine - 500,000 doses reserve with replacement at rate of 10 percent per year.

Smallpox Vaccine - 1,500,000 dose reserve with provision for replacement at rate of 10 percent per year.

Carryall Vehicles - 5 vehicles for emergency and other problem situations.

Vehicle Spare Parts - 20 percent reserve of all vehicle spare parts shipped.

Refrigerators - 5 percent reserve for all refrigerators shipped.

Jet Injectors - 10 percent reserve for all jet injectors shipped.

Jet Injector Spare Parts - 10 percent reserve for all jet injector spare parts shipped.

Boat - Provides 10 boats costing about $6,000 each for use in coastal areas of different countries.

Annual Meeting - Transport and per diem cost for regional meeting in Africa for review, assessment and program planning with Project technical staff and country representatives.

Lab. Supplies and Equipment - For development and support of vaccine production center and diagnostic facilities.

Short-term Training Costs - For short-term training of limited numbers of country nationals, principally at Regional Project Office, in laboratory diagnostic techniques, surveillance and assessment methods.

Table D

Cost Estimate
By Item and Fiscal Year
Atlanta Headquarters

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
Personnel (15)	$181,636	$190,718	$200,254	$210,267	$220,780	$1,003,655
International Travel	30,000	30,000	30,000	30,000	30,000	150,000
Local Travel (U.S.)	25,000	20,000	15,000	15,000	15,000	90,000
Consultants	30,000	30,000	30,000	30,000	20,000	140,000
Security Clearances	16,400	4,100	13,120	4,100	15,170	52,890
Professional and Technical Training	60,000	20,000	60,000	20,000	20,000	180,000
Language Training	15,000	5,000	15,000	5,000	5,000	45,000
Manuals (Laboratory, procedural and diagnostic)	30,000	20,000	0	0	0	50,000
Lab. Equipment	15,000	10,000	10,000	10,000	7,500	52,500
Office Equipment, supplies, materials and audiovisual services	12,000	12,000	12,000	12,000	10,000	58,000
Rent, communications, utilities	16,000	16,000	16,000	16,000	16,000	80,000
Procurement Charges (3%)	123,834	170,856	180,195	108,222	111,069	694,176
Overhead*	239,000	284,000	285,000	281,000	258,000	1,347,000
TOTALS	$793,870	$812,674	$866,569	$741,589	$728,519	$3,943,221

*15% on all personnel, travel and annual meeting.

Table D

Explanatory Notes

Personnel - Actual costs derived from present year's PASA. Includes additionally, during FY 67, one procurement and supply officer (GS-15), and three laboratory supporting staff (GS-12; GS-9; GS-5).

Consultants - For short-term program, statistical and laboratory appraisal.

Professional and Technical Training - Per diem and instructional costs for two-month preparatory training course for all Project participants.

Laboratory Equipment - For expendable supplies and equipment for principal laboratory.

Corrected Table E

Total Cost Estimates by Fiscal Year
West Africa SIE/IC Program
($ Shown in Thousands)

	Fiscal Year					
	1967	1968	1969	1970	1971	TOTAL
18 Country Programs*	$5,136	$7,126	$7,423	$4,865	$4,881	$29,431
Regional Ofc.-Lagos	913	600	618	621	571	3,323
Atlanta Headquarters	794	813	867	742	729	3,945
TOTALS	$6,843	$8,539	$8,908	$6,228	$6,181	$36,699

* Congo (Brazzaville) not included.

Table F

Approximation of Local Costs
For Vaccination Programs
By Country and Fiscal Year

Country	Fiscal Year 1967	1968	1969	1970	1971	TOTAL
Cameroon	$61,000	$44,400	$44,400	$44,400	$44,400	$ 238,600
Central African Republic	12,900	17,200	12,600	12,600	12,600	67,900
Chad	30,500	30,500	27,000	27,000	27,000	142,000
Dahomey	52,800	52,800	52,800	52,800	52,800	264,000
Gabon	6,600	6,600	4,800	4,800	4,800	27,600
Gambia	0	28,800	1,600	1,600	1,600	33,600
Ghana	0	104,000	208,000	208,000	29,600	549,600
Guinea	80,500	80,500	80,500	80,500	80,500	402,500
Ivory Coast	36,900	36,900	35,800	35,800	35,800	181,200
Liberia	0	31,000	46,400	4,400	4,400	86,200
Mali	108,000	108,000	108,000	108,000	108,000	540,000
Mauritania	10,000	10,000	9,700	9,700	9,700	49,100
Niger	71,300	71,300	71,300	71,300	71,300	356,500
Nigeria	864,000	1,728,000	1,728,000	240,000	240,000	4,800,000
Senegal	0	39,300	39,300	39,300	34,500	152,400
Sierra Leone	0	64,000	96,000	9,200	9,200	178,400
Togo	16,500	16,500	16,500	16,500	16,500	82,500
Upper Volta	53,000	53,000	46,400	46,400	46,400	245,200
TOTALS	$1,404,000	$2,522,800	$2,629,100	$1,012,300	$ 829,100	$8,397,300

UNITED STATES GOVERNMENT

Memorandum

TO : The Record

DATE: January 11, 1966

FROM : Henry M. Gelfand, M.D.

SUBJECT: Tour Report: West Africa, 18 November-17 December, 1965

INTRODUCTION:

(1) Purpose of the tour was to acquaint 18 West African countries (Cameroon, Central African Republic, Chad, Dahomey, Gabon, Gambia, Ghana, Guinea, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, and Upper Volta) with the proposed USAID supported 5-year program for smallpox eradication and measles control, to determine their interest in participating, and to meet and become personally acquainted with the principal responsible authorities.

(2) In addition to the writer, the tour team consisted of Dr. D. A. Henderson of CDC, Dr. A. Clayton Curtis of AID Washington, and Dr. Warren Winkelstein of the University of Buffalo Medical School.

(3) The team toured together for the majority of the time but separated on occasion. The first principal stop was at Ouagadougou, Upper Volta, to participate in the Ministerial Meeting of the OCCGE nations (Dahomey, Ivory Coast, Mali, Mauritania, Niger, Senegal, Togo, and Upper Volta), 20-28 November. From there Drs. Curtis (CC), Henderson (DAH), and Gelfand (HG) proceeded to Lagos, Nigeria, while Dr. Winkelstein (WW) went to Liberia. After these visits, the four team members rejoined in Yaounde, Cameroon to participate in the first Technical Meeting of the OCCGEAC nations (Cameroon, Central African Republic, Chad, Congo, and Gabon), 7-11 December. From there CC returned to Washington via Paris, DAH went to Geneva and London, WW visited Guinea, and HG visited Sierra Leone. WW and HG departed Dakar for the United States on December 17. In summary, during the course of this trip 16 countries were contacted, either directly or through their representatives at the two meetings. Only Gambia and Ghana were not approached.

(4) Attached is a list of all significant persons contacted by team members during the course of this trip. Tour reports on Liberia and Guinea by Dr. Winkelstein are appended as Attachment 2.

GENERAL IMPRESSIONS:

(1) This trip was a preliminary reconnaissance to acquaint governments with a proposed program and to determine their interest in participating, and to develop some basic impressions and understanding of this part of

the world of the political situation, of the organization of preventive medical services, of the people responsible for administering those services, and of the American Mission personnel in the various countries. In addition, more definitive plans for proceeding in the development of the overall program could be developed in the context of the actual country situations. As a result of this trip, many misconceptions of ours have had to be corrected and ideas about programs and their scheduling have had to be changed.

(2) The tour was highly successful in providing the type of background necessary for planning future activities and in the invaluable personal contacts that were made. The team was hospitably received by everyone, and the proposed program was well received everywhere.

(3) In those countries where measles vaccination programs are being or have been approved, past experience has been somewhat prejudicial to future program activities. Delays in receipt of vaccine and equipment, the provision of vehicles and some equipment inappropriate to the African environment and not infrequent failures in communication of plans and intentions have raised doubts as to our ability to manage effectively in the future. There is still confusion in the minds of many about the relationship, and the differences, between the old ad hoc measles vaccination program and the proposed long-range program.

(4) Smallpox eradication in the area is feasible and the proposed program can be successful. The political decision to achieve continental eradication has been made repeatedly by the African nations and it remains only to implement this decision. Not unexpectedly, theoretical plans, conceived in Atlanta and Washington, will have to be modified. Time given for the preparatory phase will have to be extended, country priorities may have to be changed, and the modus operandi will have to be more specifically adapted to individual countries.

(5) Measles vaccination is very popular and eagerly sought by most of the West African countries. There is considerable concern, however, about the strain of measles vaccine to be used and about the AID position that the recipient nation may not specify its choice of either Edmonston B or Schwarz strain. Furthermore, questions have been raised about the continuation of measles vaccination after termination of the 5-year program.

(6) It is apparent that there will be great need for flexibility in the program and adaptability to the different conditions in different countries. There are differences in the organization and operation of the preventive medical services among the various nations, particularly as between the francophone and anglophone countries. Furthermore, there

are vast differences in the effectiveness, sophistication, and the geographical extent of coverage of these preventive medical organizations. In many countries it may not be possible to take full advantage of the economy introduced by jet gun vaccination technology; continued dependence on the multiple pressure technique may be required to a varying extent.

(7) Technical assistance must be provided to each of the individual countries participating in the program. Assessment and surveillance activities, as we expected, are universally lacking, and must be introduced; for many countries this will be the principal function of the technical assistant, of greater importance than his general role as an adviser. In some countries, however, the technical assistant will actually operate the program, in practice if not in name. Under all of these varying circumstances, great tact and diplomacy will be necessary. Technical assistance will also be required for many administrative purposes, particularly in the area of equipment maintenance.

(8) The training of U.S. personnel to be assigned to West Africa must be very carefully considered. Perhaps the first 6 months of the assignment will have to be considered as training and orientation before we can expect substantial operational returns from our personnel. Proficiency in French by those assigned to the francophone countries has been emphasized repeatedly. In addition to technical knowledge, U.S. personnel will have to develop an understanding of local social mores and official protocol.

(9) Regionalization of the program as a principal is absolutely necessary. In order to support this concept, an area office in Lagos must be strongly supported and the personnel assigned there will have to be carefully selected on the basis of professional ability, experience and maturity. The area office must provide support to our personnel assigned to the individual countries, both professionally and administratively. It must also be possible to shift personnel and equipment from country to country as circumstances indicate.

(10) A strong support organization in Atlanta is also a necessity. Many of the difficulties and embarrassments presently encountered in the measles program in West Africa result from the lack of a simple and responsive administrative mechanism for answering the requests of field personnel. An attitude must be developed in Atlanta that it is not just "headquarters" but that more importantly, it exists for the purpose of supporting the field.

(11) Specifications for equipment of all kinds, including vehicles, inoculation equipment and field accessories, must be very carefully considered.

(12) Coordination between the PHS, WHO, UNICEF and other organizations must be assured.

CONCLUSIONS AND RECOMMENDATIONS

(1) Prospects for Future Programs:

(a) The OCCGE and the OCCGEAC countries may be considered as a unit since they have similar organizations of the preventive medical services, i.e., the Services des Grandes Endemies, a mobile team disease control service frequently under direct control by expatriates. In these countries, the Service des Grandes Endemies is organized into autonomous Secteurs each under the direction of a doctor. In each Secteur mobile teams perform the functions of investigation and surveillance as well as of treatment and vaccination. In addition there are fixed installations, whose principal function is the treatment of leprosy but which also play a large role in morbidity reporting. The Secteurs cover the entire country in each instance, but they vary greatly in extent and population and, therefore, in the intimacy of contact with the people. The goal is to have a mobile team visit each village once annually but this is often impossible, and in some places the visits are no more than once in two or three years. In practice, very isolated areas are often untouched.

The program of Service des Grandes Endemies normally is organized far in advance, sometimes for a three year period. There is reluctance on the part of the Directors to modify this program since it has a long tradition and a well-developed method of operation that is understood by their workers and by the public. This reluctance is particularly great in those countries where the service is best developed and coverage most complete, such as in Ivory Coast, Upper Volta, Chad, and Cameroon. In these countries the Directors cannot see how they can change their programs for the purpose of smallpox eradication; they are convinced that they are doing everything possible at the present time within the limits imposed by budget and personnel. Specifically, they cannot see how jet gun technology can add anything. It was pointed out by one Director, for example, that when a team visits a village and has the capability of examining 400 people for leprosy, 400 is the limit for vaccination; the capacity to vaccinate 1,000 or 2,000 with a jet gun is immaterial. Furthermore, reluctance was expressed to divorcing smallpox immuniation from the polyvalent program of the mobile teams. In some areas smallpox vaccination is popular and sought by the people. If 400 people come out for smallpox vaccination, they can simultaneously be examined for leprosy. If vaccination were not offered perhaps only 200 would appear for leprosy examination.

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Our program in such countries, therefore, may have to be limited to strengthening the existing services, and principal dependence on the multiple pressure technique may have to be retained. In some instances, our material support might best be applied to the developing of additional mobile teams for more frequent and systematic coverage with jet guns introduced for local epidemic control.

In such countries as Mali, Mauritania, and Niger, where the G.E.'s are weakest and preventive medical services are poorest, mas vaccination activities have the greatest applicability. The principal difficulty in these countries, however, will be reaching the large nomad groups. These are very isolated, have no permanent headquarters, and are very difficult to reach. Their extensive travels make them a continuing source of transmission. They are probably sufficiently extensive in numbers to provide an endemic focus of smallpox.

Our relations with OCCGE are very good and we should have the active cooperation of that organization. However, it should be noted that just prior to our departure from Dakar we were informed that Dr. Lambin, Minister of Health of Upper Volta and President of the OCCGE, was removed. It cannot be stated at this time what this implies with respect to our future relations with the organization.

A specific problem arose at the OCCGEAC meeting. Mr. Gokana, Minister of Public Health of Congo (Brazzaville), objected strenuously to the exclusion of Congo (B) from our proposed program for "reasons other than medical." He declared that the OCEAC must reject the American proposal, or he would recommend to his government the withdrawal of his country from the organization. This might lead to its breakup. After a great deal of discussion, a compromise resolution was passed recommending that the organization appeal through diplomatic channels to USAID to request the inclusion of Congo (B). After this has been circulated and approved by the ministerial members of the OCEAC, it will be transmitted to the United States. Since it is very unlikely that assistance will be offered by USAID to Congo (B), it is very possible that we will be unable to work with OCEAC as an organization, but will have to restrict ourselves to bilateral relations with the individual four countries where we hope to have programs.

In general, in the nations comprising the OCCGE and OCCEAC areas there exists well-developed public health organizations with long traditions. Many of them are directed by expatriate Frenchmen. Some provide very complete and efficient coverage of their populations but some are much less well developed. In all instances, however, these are the organizations with which we will have to work. We shall have to adapt our programs to theirs.

(b) Nigeria

Prior to our departure on this tour, Nigeria was considered to be the focal point of the future smallpox eradication effort and a particular problem because of its size and large population. We were very pleasantly surprised, therefore, to meet Dr. Ademola, Senior Health Officer in the Nigerian Federal Ministry of Health, in Ouagadougou and to learn from him of the very advanced state of planning for a smallpox eradication program in Nigeria. He had, in fact, composed a letter addressed to USAID, CDC, and WHO which was awaiting only his return to Lagos before mailing. This letter stated Nigeria's intentions, indicated Nigeria's financial limitations, and appealed for material and technical assistance. The Nigerian government was fully prepared to fund all necessary local costs. Furthermore, a specific problem, which we had discussed in Atlanta, had already been considered and in large part automonous in health matters, and have their own very independent Ministries of Health. However, they have now formed a loose association called the National Health Council which is composed of the four Regional and the Federal Ministers of Health. This group has acknowledged that communicable disease control, and smallpox eradication specifically, is essentially a federal responsibility and have granted, in principle, the federal government authority to direct such programs if they are also federally supported.

Detailed discussions in Lagos with Dr. Ademola and other Ministry of Health officials, and Dr. Nugent, WHO country representative, substantially confirmed these statements. The Nigerian authorities appeared to be eager for our early return to work with them on the development of a collaborative program and a Project Agreement, and are anxious for the actual vaccination operations to start as quickly as possible. Dr. Ademola concurs in the proposed schedule to be described below. The Nigerian authorities are also in complete accord with our tentative plans to establish our Area Office in Lagos, as discussed below.

(c) Liberia

Liberia was visited by Dr. Warren Winkelstein. This country now is engaged in a smallpox control program assisted by WHO. Very little could be learned about it in detail, and it appears likely that it is disorganized and ineffective. The authorities are, however, very interested in our possible support and will probably agree with any reasonable suggestions that we make. It is probable that technical personnel that we assign to Liberia will, to all intents and purposes, run the program themselves.

(d) Sierra Leone

Sierra Leone was visited by the writer. The preventive medical activities of this country are organized on the basis of a network of fixed installations to which are assigned health inspectors who are responsible for a specific area surrounding each installation. Coverage of the Hinterland is admittedly poor. The smallpox vaccination program is not well organized, and even good approximations of coverage are not available. The Sierra Leone authorities are eager to accept our assistance and to embark on a program as quickly as possible. They were disappointed when informed that planning and preparations would occupy a considerable amount of time and that vaccination could not possibly start before sometime in 1967. Only very reluctantly do they appreciate the need for this delay for planning purposes, and it will be necessary, but difficult, to restrain their enthusiasm next year. As in Liberia, technical assistance will be greatly welcomed, and our personnel will probably, in effect, direct the program themselves.

(e) Guinea

The preventive health services in Guinea are organized along the same lines as in the other francophone countries. The nature of our relationship to them will also be similar but greatly complicated by the very difficult political situation. Guinea is under strong Communist influence, and although our assistance will be welcomed it will fall under many restrictions. A high level of tact and diplomacy will be necessary.

(f) Gambia and Ghana

These two countries were not visited on this trip. Visits should be made as early as possible, certainly before the 18 nation conclave in association with the next World Health Assembly.

(2) Measles Vaccination Programs

In most of the OCCGE and OCEAC countries measles vaccination programs are in progress at the present time. Guinea also has a current measles program, but Senegal had opted not to have such a program and Gabon was delayed and will not be able to start until the five-year program is begun. All countries which presently have measles programs desire that they be continued. They have reluctantly accepted the principle that they may not specify the type of vaccine (Edmonston B or Schwarz) that will be provided. The measles programs have been accepted as special mass efforts. In many instances this has resulted in the temporary suspension of all other activities of the Service des Grandes Endemies.

In Nigeria, a dispute still rages locally as to the acceptability of Edmonston B vaccine for mass use in the country. Many people would, therefore, not find our program acceptable if we could not guarantee that Schwarz strain was to be provided. A proposal was made for a pilot study in Lagos in which the Edmonston, Schwarz, and Beckenham strains would be compared. Even this suggestion was rejected by Drs. Montefiore and Hendrickse who are very influential advisors. Dr. Ademola is continuing to investigate the possibility of putting on such a field trial, and, if he is successful, CDC assistance, in the form of an advisor, the loan of jet guns, and the donation of necessary vaccines, has been promised. A large-scale measles program in Nigeria is, therefore, a completely open question at the present time.

A similar disagreement exists in Sierra Leone and the authorities are also interested in putting on a pilot comparative program. The writer undertook to inquire whether CDC could give assistance similar to that offered to Nigeria, but no promise was made. It is my opinion that even without a pilot study Sierra Leone eventually will request a measles program.

(3) Attitude of American Embassies and AID Missions

In several of the American Missions, the proposed program was not enthusiastically received. Health activities have been played down almost everywhere, not because there is objection to them as such, but because it is felt that they could absorb all of the U.S. assistance resources available. The Ambassadors and AID Mission directors were, therefore, concerned first about the effect of our program itself and second about the precedent it may set for future programs in the health area. They were all very considerably relieved to learn that our proposed program would be funded completely independently and would be a contract-type activity that would impose no great administrative burden.

One point of difficulty, strongly expressed by each American mission, remained unsolved, and will continue to plague us in the future. There was uniform objection to the established AID principle that technical assistance programs must not include payment of local costs. It was strongly emphasized that in each of the West African countries local resources were extremely limited. This limitation is often without regard to foreign exchange problems; they simply don't have the financial resources, in either local or foreign currency. Whenever a new program is introduced it must get its local support at the expense of some other program; it is often not possible to increase the total amount of local funding. The support of the measles/smallpox program, therefore,

is most likely to result in the diversion of funds from other health programs, or even the diversion of funds from agriculture, industry, transportation, etc. The Ambassadors emphasized, therefore, that it is essential for us to construct our programs in such a way that there will be minimum penalty imposed on other programs. In fact, several stated that they would be carefully scrutinizing our activities to insure that we do not interfere with other economic development programs.

Other than for these general concerns, we found the American Mission personnel to be cordial and cooperative. I think we can expect every assistance from them in the future. It was pointed out, however, that, as a PASA activity, we were independent. We may take advantage of assistance that is offered to us, but on the other hand neither are the missions required to provide it nor are we obligated to accept it. Our personnel may procure their own housing or they may utilize embassy housing arrangements, our vehicles may be maintained (upon payment of a contract fee) at mission garages or we may make our own private arrangements, etc. Our only legal limitations, therefore, are those related to the overall authority of the Ambassador to establish political policy guidelines.

(4) Relations with WHO and UNICEF

Because of the need to maintain confidentiality regarding the proposed program prior to its formal announcement, the WHO regional office in Brazzaville, and its personnel in the field in different West African countries, knew nothing about our program prior to our arrival. We met and talked with the WHO country representative to Upper Volta in Ouagadougou, Dr. Paes-Leme, and Dr. Geller, Public Health Adviser to Togo. Dr. Geller cabled Brazzaville to inform the Regional Office of the nature of our business and to request that either Dr. Trosse or Dr. Blanc, both Communicable Disease Advisors, should meet us in Yaounde, Cameroon for more detailed discussions. Subsequently, we were met by Dr. Blanc in Yaounde and spent several pleasant hours discussing the separate PHS and WHO programs. In brief, WHO activities consist of the following: In about May of this year Brazzaville was instructed to prepare detailed eradication plans for each of the countries in the West African area, including cost estimates. In order to do this a very theoretical prototype program was developed for a hypothetical country of one million population. The personnel, vehicles, vaccine, and miscellaneous supplies required for that population were calculated. Thereafter, this rather rigid formula has been applied successively to a number of countries, and, taking into consideration existing health structures, programs have been recommended. These have been submitted to Geneva. The Regional Office has assigned a single individual, Dr. [illegible] Mayer, to this task. He is stationed in

Monrovia, Liberia. On questioning Dr. Blanc about such details as the method of assessment, the provision for "mopping up", the action to be taken in the event that an emergency interrupts routine activiti of the teams, etc., it became apparent that very little thought had been given to such matters. It appeared that the programming that is being done is largely an exercise in cost estimating. However, in addition the Regional Office is attempting to get as much detailed and up-to-date data as possible on the occurrence of smallpox in recent years in the countries of this area.

We suggested to Dr. Blanc that it would be very desirable for me to meet with Dr. Mayer at my next stop in Sierra Leone. He cabled this recommendation to Brazzaville. The Regional Office agreed, Dr. Mayer was notified, and he met me in Freetown several days later. We spent many hours together and were able to exchange information and views. Dr. Mayer is an experienced public health worker in Africa but is new to the West Coast having arrived only in March 1965. Thus far, he has prepared estimates for eradication programs in Sierra Leone, Upper Volta, Ivory Coast, Liberia, Guinea, Mali, and Nigeria. He has spent several weeks in all of these countries and has become reasonably acquainted with their health programs and facilities. Dr. Mayer appeared to be genuinely distressed with the thought that we were proceeding independently with the same goal in mind, and felt that this was not only wasteful but would also be very confusing to the country concerned. He appeared to be very anxious to cooperate with us or even to consolidate our two efforts if he were authorized to do so by the Regional Office. He was anxious that we make use of all of the information that he has accumulated, but said that it was against Brazzaville regulations for him to make any of his reports available to us without permission. However, if I were to visit him at his office in Monrovia, he would informally permit me to examine these reports and would discuss their contents with me. He urged that I do visit him at the beginning of my return tour next year, and hoped that we would be able to get clarification at the highest level of the relations between PHS and WHO so that we could work together in the future.

In Freetown also, I met with Mr. Gobbe, an area representative of UNICEF stationed in Dakar. A very friendly and cooperative person, he discussed the very large experience that UNICEF has had in the provision of vehicles, and other equipment, to countries in West Africa and of the difficulties in maintenance and repair. He suggested that it would be very useful for us to establish a liaison with UNICEF headquarters in New York and with the various UNICEF representatives in West Africa.

(5) Area Office

The suggestion that we establish an area office in Lagos, staffed by medical epidemiologists, administrators, an equipment specialist, a statistician, a public health educator, and a virologist, was discussed with the American Mission in Lagos, with Nigerian officials, and with Dr. Nugent, WHO country representative in Nigeria. All agreed that this was not merely a desirable thing to do, but was probably absolutely essential to the success of the entire mission. Also, all agreed that Lagos was the logical site for such an office because of its central location, its airline connections with many of the other countries in the area, its numerous and well-developed physical facilities, and because it is the capital of the focal country of the area. There were no administrative objections on the part of the American Mission or of the Nigerian officials with which the suggestion was discussed.

Lagos is a booming city, very crowded, and very expensive. It was suggested, therefore, that we consider a site in the suburban community of Yaba. This is the location of the Smallpox Vaccination Laboratory, the Lagos Medical College and Hospital, and the laboratory of WACMR (West African Council of Medical Research). The latter is a large, government-owned compound, originally established by the Rockefeller Foundation, and is largely unused at the present time. Dr. Ademola has had his eye on this site for some time as a potential location for the development of a Communicable Disease Center of Nigeria. There are empty buildings here that could be used for offices, and empty residences that could be made available to our staff. The possibility of establishing our Area Office in this compound must be further explored. Mr. Edward Sheridan, Assistant Executive Officer of the AID Mission, suggested for housing a site known as Palm Grove, located a few miles north of Yaba and between the latter and Ikeja Airport. There are many Americans living here since all of the staff of WACASC, a regional supply depot of the State Department, are housed here.

Mr. Sheridan kindly prepared for us a detailed cost estimate for the establishment and support of our Regional Office for the first year in Lagos. His estimate is based on local knowledge and can authoritatively be used in the development of the PASA. He emphasized the many complicated arrangements that will have to be investigated and negotiated before we can expect to move in staff and establish a working headquarters. He urged that we assign a competent and experienced administrator to Lagos as quickly as possible in order to give him 3 to 6 months to work on many of these detailed arrangements.

(6) Vaccine Production in West Africa

We visited the Smallpox Vaccine Laboratory in Lagos on a number of occasions. It is a modest but entirely adequate facility, reasonably well equipped, and run in a reasonably competent fashion by an experienced senior technician, with the assistance of a newly assigned virologist, and under the overall supervision of Dr. Uku, pathologist for the Central Medical Laboratories. It is producing both a lanolated product in 20-dose tubes and lyophilized vaccine in 20- and 100-dose ampoules. They hope to achieve a production rate of 20 million multiple pressure doses per year and are close to this level now; the current packaged stockpile is between 15 and 20 million doses. The vaccine is produced on sheep, potency is tested on chick embryos, and rabbits are used for testing for pathogenic contamination. Local records indicate an average virus titer of 10^8 pock-producing units per ml. and an average of 200 bacteria per ml. -- well within minimum WHO requirements. Potency and sterility are said to be checked by the Lister Institute in London, with agreement. The high level of bacterial contamination may be mainly the result of dust particles carrying gram-positive spore-bearing rods. The area around the laboratory is unpaved and vehicles driving by raise clouds of dust. Some of the rooms are air conditioned but the windows are not air-tight, but some of the rooms are not air conditioned and windows are kept open. With a fairly moderate expenditure, the walkways surrounding the laboratory rooms could be enclosed and made dust-free. Dr. Henderson is exploring with WHO the possibility of their financing such structural improvements.

Because of its relatively high bacterial contamination, vaccine produced in Lagos is not suitable for jet injection use. At the present time this vaccine is used for multiple pressure vaccination in Nigeria and, by purchase, in several other West African countries. If we provide jet gun vaccine, Nigerian-produced vaccine would presumably be available for use elsewhere in the program where multiple pressure technique is to be employed. The question of bartering American vaccine for Nigerian for use elsewhere was not discussed with Nigerian officials. Dr. Nugent of WHO indicated, however, that there would be no objection on the part of WHO.

A large facility for the production of freeze-dried smallpox vaccine has been established at the Pasteur Institute in Dakar. To the best of our knowledge, however, production is not yet underway. Authorities in Guinea are unhappy about the facility in Dakar, since they were promised a number of years ago by WHO that the latter organization would support the development of a production facility in Conakry. Guinea is still quite insistent that it produce its own vaccine and this may represent a problem in the future.

(7) Jet Guns

Reference has been made above to problems related to the potential use of jet guns for smallpox vaccination. Mass campaigns, where jet guns can easily be employed, at least for large population concentrations, will probably be readily acceptable in Nigeria, Liberia, Sierra Leone, Mali, and Niger. Even in these countries, there is probably an important role for multiple pressure technique in many of the smaller, isolated communities, for mop-up vaccination, and for maintenance vaccination of the newborns. In many of the other countries, jet gun technology may play a more limited role. The authorities in these countries have organized programs which include routine smallpox vaccination, which they may be very reluctant to disband or interfere with. With tact and patience, it may be possible to modify their stand somewhat and to find a useful, though limited, role for the gun. This should not be unduly pushed, however, and we should not make a fetish of the jet gun.

Experience with the measles program in many countries has indicated that training has often been inadequate and that maintenance has not been sufficiently emphasized nor practiced. The guns have often gone rapidly out of order as a result of mishandling, and little attempt has been made to put them back into service by major repair. Another important difficulty has been the limited availability of replacement parts. A careful study of past experience should be made and a record of replacement needs, in the past and in the future, should be maintained. A fully adequate depot of replacement parts should be available in each country and in the Lagos Area Office.

It is probably necessary that we decide upon and provide only a single model of the jet gun, preferably the Ped-O-Jet. Electric generator-operated guns are impractical and their use should definitely be abandoned.

(8) Vehicles and Their Maintenance

Vehicles have represented one of the major frustrations and embarrassments in the past Measles Vaccination Program. Difficulties have been encountered in several major areas.

Mass programs in the field cannot be conducted without vehicles. Delivery at the scheduled time is absolutely essential; we must be very careful not to make promises that cannot be kept and to qualify all of our promises as appropriate.

The type of vehicle provided is of the utmost importance. The large International Harvester trucks provided in the past have been fraught with problems. Where diesel engine vehicles were provided, there has been no one available with the knowledge to maintain and repair them. Where gasoline engine IH trucks have been provided, there has been frequent complaints about their heavy fuel consumption (about 8 miles per gallon). These trucks are often too large and heavy for the roads in the countries where they have been used. They are not strong enough for the conditions of use, and the rear of the chassis has frequently become detached, necessitating major structural repair and improvement. Much of the built-in equipment has been of improper design, the refrigerator not working while the vehicle is in motion, the reserve fuel cans badly placed and susceptible to ignition and explosion, the fixed mounting of the loud-speakers making them useless, etc., etc. Some of the remaining equipment has been wasteful because it is useless under field conditions; the built-in sinks and the windshield water squirters are not used. This vehicle was universally condemned in the strongest terms, and its procurement and provision should be stopped immediately. The model of vehicle to be provided must be determined by careful canvas of the desires, needs, and facilities in each individual country. In some places small jeep-type vehicles would be suitable, in others jeep station wagons, in others larger trucks. In some countries, and in the area as a whole, several models may be necessary.

There is no ideal American manufacturer of vehicles for African use, but care can be exercised to choose the least undesirable make. (The most universally wanted vehicle is the Land Rover. An attempt should be made to see if there is any possible way of getting around the requirement that only American-manufactured articles may be procured.) In Nigeria we were told the Chevrolet was the most common American make and maintenance and repair facilities and spare parts were most readily available. In Cameroon we were told that Chevrolets were rare, and that Ford might be the least of all evils.

Spare parts for any American-made vehicles will not be found locally. It is, therefore, essential that depots of spare parts be established in each individual country and in the Area Office in Lagos. A best guess will have to be made for the prestocking of such depots, because we were informed that manufacturer suggestions often do not match West African experience. The planning of such spare parts stocks must, therefore, be kept flexible and we must be prepared to modify the inventory by experience.

Maintenance and repair of vehicles is very poor under the best of circumstances in West Africa. It is necessary, therefore, that we provide training and supervision for minor maintenance and for major repair facilities. The latter will probably have to be set up with our financing and direction. It might also be desirable for us to provide training for the drivers.

(9) Other Equipment

Built-in refrigerators have not proved to be desirable in the past. Removable refrigerators with brackets for securing them to vehicles would be most desirable. Refrigerators must be kerosene operated. Since these are not available from American manufacturers, they may be procured elsewhere. Field equipment, tents, cots, stoves, eating utensils, etc., provided for the measles programs in the past, have been characterized as being more appropriate for tourists than for rugged field use. This inventory must be carefully reviewed and developed in consultation with people experienced in the West African bush. We must also remain flexible and modify our inventory as dictated by experience.

Vaccination certificates have been found to be desirable; people cherish them and they are a valuable inducement to vaccination. The large gaudy design used in the past is very good. However, if vaccination certificates are used, it is essential that they be sufficient in number. In Chad only one fourth as many certificates were provided as vaccine doses, resulting in marked and openly expressed disappointment.

(10) Personnel

Of the many important facets of the personnel problem, only a few of the more general can be discussed here.

It has been repeatedly emphasized that our people in the field must be hard working, adaptable, ingenious, technically competent, self-effacing diplomats. It is probably more important that they be ingenious, adaptable, and tactful than that they be professionally brilliant. It is essential that they be patient and relatively resistant to frustration. Youth may be a handicap, but it may be overcome by the demonstration of the characteristics mentioned above.

The training of our personnel in the U.S. prior to shipment to West Africa must be comprehensive, and sufficient times must be devoted to it. Training is required in several areas: 1. Professional: This includes the epidemiology of smallpox and measles, diagnosis, vaccines, methods of vaccination, jet gun maintenance and repair, assessment, surveillance, etc. 2. Administrative: relations with Atlanta headquarters, Lagos Area Office, AID, American Missions, WHO, UNICEF, national governments (including instructions in tact and diplomacy), records and reports, travel, housing and other personal affairs, salary and per diem arrangement, etc. 3. Language: For those assigned to French speaking countries, knowledge of the language sufficient to participate in all ordinary and technical conversations.

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UNITED STATES GOVERNMENT

Memorandum

TO : GC, Mr. Stephen B. Ives

DATE: JAN 27 [illegible]

FROM : AA/A, Lane Dwinell

SUBJECT: Utilization of Telex Services in A.I.D.

We appreciate your memorandum of December 17 regarding the possible use of Telex Service to reduce the volume of message traffic. We have given serious consideration to your suggestion and were interested to learn that other Government agencies utilize Telex satisfactorily. The State Department and presumably the joint ARA-LA Bureau now makes limited use of Telex Service; however, the State Department has decreased its usage since determining that Telex is more expensive than using its own leased channels. Our investigation of Telex service has lead to the conclusion that it should not be adopted for Agency-wide use for the following reasons:

1. Cost of training A.I.D. personnel to operate equipment.

2. Cost of renting Telex Service. Specialized equipment would be required in each A.I.D. transmitting office as well as each A.I.D. receiving office.

3. Telex service can be used for unclassified messages only.

4. Telex Service is not as fast as State Department channels due to delays in making connections.

5. Telex Service is not available in some areas of the world and is limited to only a few hours daily in others.

6. Increased possibility of garbles; resultant need for personnel to service them.

7. No provision for reproduction and distribution of message information copies.

cc: GC, Mary Mickens

4. Social and cultural: West African history and political development, the rudiments of West African social anthropology, geography, personal relations with Africans, expatriate Americans, and third nationals.

Training in the U.S. will take a minimum of 2 months for those not needing French training, and as much longer as necessary for those requiring the latter.

The Operations Officer member of our country teams will be an extremely important person. Undoubtedly, a large part of his activities will have to do with equipment-supply, maintenance, maintaining spare part depots, training and trouble,shooting. It would be very useful if this man were a mechanical Jack-of-all trades, knowing something about automotive vehicles, refrigeration, and electrical generators, as well as jet guns. He may also be required to be responsible for the housekeeping functions of our missions--rental and maintenance of personal and business housing. These individuals must be exceptionally stable types; they must be carefully selected.

Secretarial assistance may be locally obtained, but obviously provision for such must be included in our PASA. Wives of local American or other expatriate Europeans with secretarial experience can usually be found, and these can be supplemented with African clerical staff for typing and other tasks under supervision.

(11) Program Planning and Scheduling

The development and effective launching of a program of the magnitude envisaged in a period of 6 months is an heroic undertaking. To develop fully detailed plans of operations for each of these diverse countries would require a year or more of work by a fairly substantial team. A general plan and direction, however, can be evolved within the comparatively brief period allowed which can then be elaborated upon by personnel assigned to the separate countries. The present impetus can thus be maintained. However, the PASA to be written by AID must be as general and flexible as possible, allowing for maximum latitude in timing, funding, and personnel. Also, our commitments to the individual countries must be kept general; we must avoid as much as possible specific promises and specific demands.

The following is presented as a tentative program for determining requirements and writing project agreements in West Africa during the next four months. It must be emphasized that this is the shortest possible schedule; it is quite possible that actual experience will force a longer period of time.

Week Beginning		Action
Jan. 17, 24, 31	*HG, RH, #3	Dahomey (Togo Alternate)
Feb. 7	HG	Nigeria
	RH	Ivory Coast
	#3	Chad
Feb. 14	HG	Nigeria
	RH	Upper Volta
	#3	Chad
Feb. 21	HG	Nigeria
	RH	Mali
	#3	Central African Republic
Feb. 28	HG, RH, #3	Confer in Lagos
March 7	HG	Confer in USA
	RH	Togo (or Dahomey)
	#3	Comeroon
March 14	HG	USA
	RH	Niger
	#3	Gabon
March 21	HG	OCCGE Meeting in Upper Volta
	RH	Mauritania
	#3	Senegal
March 28	HG, RH, #3	Confer in Dakar
	HG	Ghana, Gambia
	RH	Return to USA
	#3	Guinea
April 4, 11, 18	HG, #3	Return visits as required
April 25	HG, #3	Return to USA

* HG - Henry Gelfand, RH - Ralph Henderson, #3 - to be recruited.

The initial three weeks in Dahomey would permit us to acquire a reasonably detailed understanding of the operations of the Grandes Endemics, all 3 members of the field team working together in order to agree on a common approach, and to write a prototype Project Agreement for that country. Thereafter, the three persons would separate, Gelfand spending 3 weeks in Nigeria because of its size and geographic variations, and the other 2 spending lesser times (usually one week) in a number of countries. They would confer in Lagos during the week of February 28 in order to discuss the problems that had appeared during the preceding 3 weeks and in order to prepare a consolidated statement for Gelfand to carry back for consultations in Atlanta and Washington. This document would provide a beginning basis for constructing the PIO/T and PASA. Meanwhile Henderson and #3 would continue country visits, Gelfand returning and attending the OCCGE meeting in Bobo Dioulasso during the week of March 21. On March 28, after a brief conference in Dakar among all three, Henderson would return to the U.S. and Gelfand and #3 would complete the roster of countries. Gelfand's visits to Ghana and Gambia would be brief ones, for the purpose of initial contact with the authorities in those two countries to acquaint them with the program and to give them notice of the meeting we hope to call in April. For three weeks beginning the week of April 4, Gelfand and #3 would make return visits to individual countries as required for the purpose of answering questions that had developed in the writing of the Pro Ags. On April 25 Gelfand and #3 would return to the USA.

During the visits made on the above schedule, Pro Ags would be drafted for each of the countries. Hopefully, these would be in such a form that further negotiations would be the responsibility of the AID Missions or the AID Affairs Officer of the embassies, and that they could be signed promptly after the PASA is approved. The final PIO/T and PASA would be written on the basis of the information accumulated, and we could appear at the World Health Assembly meeting in Geneva armed with an almost completely formulated provisional program.

It has been mentioned above that a senior administrative officer should be detailed to Lagos to start work on the project of creating an Area Office. It would be most useful if this person could be in Lagos during the week of February 28 in order to participate in the conference of the team at that time. He could then start his administrative inquiries and arrangements with greater understanding of the overall problem.

Attachment 1

Significant Persons in West Africa

A. NATIONALS (including expatriates)

1. CAMEROUN

HAPPI, Dr. C. - Commissaire General a la Sante Publique

GARRIGUE, Dr. S. (Fr.) - Chef du Service des Grandes Endemies

ELOM, Dr. - Adjoint au Chef du Services des G.E.

BROTTES, Dr. (Fr.) - Directeur del' Institut Pasteur

LABUSQUIRE, Med. Lt. Col. (Dr.) - Secretaire General del' OCCGEAC

2. CENTRAL AFRICAN REPUBLIC (CAR)

MOUSSA, Dr. B. - Directeur de la Sante Publique

JONCOUR, Dr. (Fr.) - Directeur du Service des G.E.

CHIPPAUX, Dr. (Fr.) - Directeur del' Institut Pasteur

3. CHAD

ZIEGLER, Dr. (Fr.) - Directeur du Service des G.E.

GRUVEL, Dr. (Fr.) - Veterinaire a l'Institut Veterinair de Farcha

4. CONGO (BRAZZAVILLE)

GOKANA, - Ministre de la Sante Publique

LOEMBE, Dr. - Directeur des Affaires Sociales

DEMARCHI, Dr. - Directeur del' Institut Pasteur

5. DAHOMEY

BIO, Daniel - Ministre de la Sante Publique et des Aff. Soc.

GANGBO, Dr. S. - Directeur du Service National des G.E.

Attachment 1

6. GABON

MARTINAZZO, Dr. (Fr.) - Directeur du Service des G.E.

7. GUINEA

KAROUNA BABA - Inspecteur General, Ministere de la Santé Publique

SOUMAH, Dr. Roger - Director, American Division, Bureau of Cooperation, Ministry of Foreign Affairs

8. IVORY COAST

KOFFI, Dr. N'dia - Ministre de la Sante'

SERIE, Dr. - Premier Ministre Technique

RIVES, Dr. (Fr.) - Directeur des G.E.

9. LIBERIA

BARCLAY, Dr. Edwin M. - Director General, National Public Health Service

HOFF, W. H. - Dpt. Director, General, Nat'l Public Health Service

TITUS, Dr. J. B. - Publ. Hlth. Advisor, Nat'l PHS

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11. MAURITANIA

SIDI, Mohamed Diagana - Ministre de la Santé

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13. NIGERIA

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WRIGHT, Dr. Robt. D. (Amer.) - Prof. Prev. Med., Lagos Med. Coll.

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IKU, Dr. - Pathologist, Central Medical Laboratory

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ALOZIE, Dr. - Virologist; " " "

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AUDU, Dr. - Assoc. " " " " "

OGUNBI, Dr. O. - Lecturer in Microbiology, " " "

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15. SIERRA LEONE

ROGERS-WRIGHT, C. B. - Minister of Health

WARRICE-JONES, - Permanent Secretary, MOH

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16. TOGO

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17. UPPER VOLTA

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POILTOCK, Albert (Fr.) - Adjt. Administratif del' OCCGE

RIDET, Med. Col. (Fr.) - Directeur du Centre Muraz

GATTEF, Med. Capt. (Fr.) - Chef de la Section documentation, Centre Muraz

V. AMERICAN MISSIONS

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ATWELL, Donald - Program Officer

LEPINSKI, Felix - AID Affairs Officer

QUINTERO, Donald -

PETERS, Dr. Gerald - Peace Corps Physician

DAYTON, Henry - Asst. Consul, Douala

2. CHAD

NOWICKI, Dr. - AID School Health Advisor

MILLS, Miss Mary - AID Nursing Advisor

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3. GHANA

PINDER, Frank - Chief of AID Mission

4. GUINEA

SALES, Pierre L. - Acting Director, AID

DICKERSON, Peter - Program Analyst, AID

5. LIBERIA

BROWN, Dan Hill - Ambassador

KOOTER, Robert H. - Director, U.S.O.M.

HERRON, Noom H. - Health Education Advisor

WATSON, Dr. Wm. - Director, Peace Corps

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GULLICK, Clarence - Asst. Mission Director (Program)

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7. SIERRA LEONE

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8. UPPER VOLTA

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SHERWIN, Walter - AID Affairs O.

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NEWCOMER, Richard - USIS

C. WHO -- UNICEF

1. REGIONAL OFFICE

QUENUM, DR. Alfred (Dah.) - Director

AKWEI, Dr. (Ghana) - Asst. Director

TROSSE, Dr. Frederick (Austrian) - Reg. C.D. Advisor (Incl. SP)

BLANC, Dr. Michel (Fr.) - Reg. C. D. Advisor (Incl. Quarantine)

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3. GHANA

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4. IVORY COAST

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KARUNARATHE, Dr. V. J. - WR for Lib., S.L., Guinea

MAYER, Hans J. - Intercountry SP Advisor

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6. NIGER

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9. SIERRA LEONE

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WONG, Dr. T. H. - Yaws and Smallpox Campaign

10. TOGO

FLAHAUT, Dr. - WR for Togo, Dah.

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11. UPPER VOLTA

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FREIDEL, Dr. - Institut Merieux, Lyons

LEKIN, Dr. - (Public Health Officer) Congo (Leopoldville)

For each address check one ACTION | INFO

TO - AIDTO CIRCULAR XA 774

MAR 15 1966

3a

AFR

FROM - AID/W

SUBJECT -

REFERENCE -

Attached are the general terms of reference applicable to all count[illegible] for the measles control/smallpox eradication program in West Afric[illegible]

CABLE ROOM SEND TO: RUSK

YAOUNDE DAKAR

BANGUI BAMAKO

FORT LAMY NOUAKCHOTT

CONAKRY NIAMEY

COTONOU LAGOS

[illegible] [illegible]

[illegible] [illegible]

ACCRA LOME

ABIDJAN

MONROVIA

BEST AVAILABLE COPY

1

DRAFTED BY: [illegible] | OFFICE: AFR/ID | PHONE NO: [illegible] | DATE: 3/11/66 | APPROVED BY: [illegible]

CLEARANCES: [illegible], AA/AFR (Draft); [illegible], AFR/[illegible]; [illegible], AFR/DP (Substance); [illegible], AFR/[illegible] (Substance); [illegible], AFR/CA (Substance); [illegible], AFR/CA (Substance); [illegible] CONTROL, USN

MEASLES CONTROL AND SMALLPOX ERADICATION PROGRAM
General Terms of Reference
Applicable to all Countries

I. OBJECTIVE

In support of President Johnson's pledge that "This Government is ready to work with other interested countries to see to it that smallpox is a thing of the past by 1975", the United States has offered to assist Af.L/West African countries in programs aimed at the eradication of smallpox within ten years. It has also offered assistance in combating measles control programs to be run simultaneously with the smallpox programs.

II. U. S. CONTRIBUTION

AID will provide:

A. Smallpox Vaccine

1) U. S. freeze dried vaccine especially prepared for use in jet injectors.

2) U.S. freeze dried vaccine for inoculation by multiple pressure method in special circumstances.

Since the "jet injector method" costs less, is faster and more efficient, U.S. vaccine for the multiple pressure method will only be supplied under special conditions described below.

B. Measles Vaccine

Live virus measles vaccine licensed for sale in the U.S. and used without gamma globulin. Specific guidance on strain of vaccine will be supplied subsequently.

C. Vehicles

U.S. manufactured vehicles principally of the carryall type, with spare parts.

1/ Subsequently A.I.D. agreed to furnish vaccine and equipment to CCT [illegible] for use in Ghana (1) provided satisfactory arrangements were made for technical assistance from other sources, such as WHO

D. Equipment

1) U. S. manufactured jet injectors.

2) U. S. manufactured medical supplies required for field operations.

3) U. S. manufactured refrigeration equipment, unless waived.

4) U. S. manufactured field supplies.

E. Technical Assistance

U. S. medical and operational personnel to assist National Health Services in the planning and conduct of country programs, including as necessary training and demonstration in disease control and eradication procedures. Personnel will be assigned to country programs, a Regional Office in Accra and Abidjan. A description of administrative relationships and functions of the headquarters and regional offices will be transmitted later.

III. COUNTRY CONTRIBUTIONS

Country programs will be carried out by the National Health Services in each country.

National governments will assume all operating costs of their services and staff them at the level required to conduct the [illegible] in accordance with a mutually agreed upon plan of operation. In addition, as agreed between AID and country they will finance local costs in support of U. S. personnel, (e.g. drivers, interpreters, secretaries, gasoline and auto maintenance), in accordance with arrangements in individual countries for the provision of this type of support to AID non-construction-oriented projects. Where costs may exceed funding availability, the country will request assistance from AID or plans will be adjusted to fit availabilities.

IV. PLAN OF OPERATION

A. PASA

Under a PASA agreement the PHS/CDC will assume responsibility for the U.S. assistance provided by AID.

7. [illegible]

Prior to [illegible] approach to embark on a program in an individual country, [illegible] will undertake jointly with the country and [illegible] initial assessment of the country's requirements and capabilities for control of measles and eradication of smallpox. [illegible] will [illegible] the required country [illegible] documentation (project activity description) for AID project review and approval which, when approved, will [illegible] the basis for [illegible] a Pro[illegible].

In planning and operating programs special consideration will [illegible] given to strengthening the capabilities of the two regional [illegible] OCCGE and [illegible] in providing technical guidance and administration and/or coordination of [illegible] programs in their respective member countries.

In most instances grants for the provision of vaccine and equipment will be made to the OCCGE or [illegible] for use in member countries. Individual country agreements will be executed with non-member countries financed from Regional Funds.

Priority will be given to 1) expanding the present program [illegible] the OCCGE and [illegible] countries, and 2) initiating programs [illegible] [illegible] in Senegal and Gabon. The question of Congo (B), [illegible] as possibly the [illegible] country, needs further study.

The question of inclusion of Nigeria, Liberia, Sierra Leone and Gambia in [illegible] rather than initiation in [illegible], will await results of further exploration [illegible] country [illegible], information on requirements for [illegible] countries and development of [illegible] project proposal for Nigeria.

The decision with respect to Nigeria will be [illegible] the Nigerians, [illegible] that of CDC [illegible] [illegible]

VIII. [illegible]

[illegible]

dosed in U. S. costs. These factors of cost and efficiency cannot be ignored. They were important factors in the decision to offer U.S. assistance. However, it is recognized countries may not be willing to immediately switch from a traditionally acceptable method. Therefore, some leeway will be permitted initially in providing limited quantities U. S. vaccine to be administered by the multiple-puncture method, along with jet injectors and its vaccine as countries gain experience in its use and understand the benefits. Projects will normally provide that AID assistance for smallpox eradication is conditioned on the use of jet gun type administration and jet gun vaccine with supporting transport and field equipment. Only in certain circumstances will AID consider financing programs confined solely to the "traditional" method. Such circumstances could include, for example:

a) The country requires only technical assistance in, for example, setting up the surveillance system.

b) An additional limited increment of vaccine for multiple puncture administration is required to round out an ongoing program which can achieve eradication.

c) A greater impact toward eradication can be achieved than is possible with available resources.

Technical assistance and U.S. financed multiple pressure vaccine would be provided.

In those instances where multiple puncture vaccine is provided, it must be clear that the U.S. contribution is not merely supplementing national programs but is providing that extra input required for eradication.

PROCUREMENT

As part of strengthening the capabilities of African governments to supply their needs, the AFGO was established with AID assistance to serve as a channel for these governments to U.S. suppliers. The principal portion of procurement for the EU '66 program has been handled through AFGO. It is the intent that this procedure should continue (i.e. a grant either to a regional organization or country with AFGO serving as its agent to procure U. S. material.) It should be noted that [illegible] reduced the lead time since AFGO can help

several actions simultaneously and does not have to have each action documented before moving to the next as is the case with CDS.

CDS is to ensure the AID direction for determining requirements, review of specifications, and conformance with U. S. regulations, guidance to AID and monitoring the entire procurement cycle.

VIII. BASIC DATA REQUIRED FOR PROJECT PAPER AND APPROVAL

Information required is that normally required for AID project review and approval following approval in principle.

See the following documents for specific instructions for preparation of project activity description and related information:

AIDTO Circular XA 58, Attachment B, July 23, 1965.

M. O. Series 1330 "Description, Submission, Review and Approval of Technical Assistance Projects".

For information and background on framework for technical assistance activities, see:

M. O. Series 1300 "Technical Assistance Activities, General".

M. O. Series 1310 "Planning Technical Assistance"

M. O. Series "Design, Authorization, Negotiation and Execution".

WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTÉ

NINETEENTH WORLD HEALTH ASSEMBLY

Provisional agenda item 2.4

A19/P&B/2
28 March 1966

ORIGINAL: ENGLISH

SMALLPOX ERADICATION PROGRAMME

Page

SMALLPOX ERADICATION PROGRAMME

1. INTRODUCTION

The urgency and desirability of a global programme for smallpox eradication wa unanimously affirmed by resolution at the Eleventh World Health Assembly[1] in 1958. Intensified vaccination programme followed in many of the countries with endemic sm pox. Technical assistance and support in the conduct of many programmes and for t establishment of vaccine production facilities was provided by the Organization, on request, within the resources available to the Director-General. However, as note in the resolution taken by the Eighteenth World Health Assembly,[2] progress has been slow and major endemic foci remain in Asia, Africa and the Americas. It is now apparent that without a greatly intensified, well co-ordinated global effort, with substantial additional resources, global eradication is not a realizable goal in the foreseeable future.

It is abundantly clear from the results of successful programmes in Central an South America, South-East Asia, the Middle Eastern countries and North Africa, that intensified systematic vaccination programmes using potent vaccines can rapidly eradicate the disease. No insurmountable technical problems have been evident. Failure on the part of individual countries to develop programmes and on the part of those experiencing difficulties in achieving eradication have resulted principall from the lack of necessary funds for personnel, vaccine and supplies or from failure in the conduct of the vaccination campaigns or in the establishment of competent surveillance or maintenance vaccination activities.

Costs of vaccination programmes in the non-endemic countries are high. Czechoslovakia has estimated that it expends annually over US$ 1 million (US$ 0.07 per person) in maintenance vaccination; and the United States of America, US$ 2 million annually (US$ 0.112 per person). The United Kingdom has estimated that the

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[1] Resolution WHA11.54, Handbook of Resolutions and Decisions, 8th ed., p. 45.

[2] Resolution WHA16.38, Handbook of Resolutions and Decisions, 8th ed., p. 51.

( )

verage cost of a normal year is US$ 0.65 million (US$ 0.01 per person), but when a smallpox outbreak occurred in 1961 and 1966, additional expenditure incurred during the outbreak was estimated to be US$ 3.8 million. Despite recognition of the fact that countries would realize a substantial long-term saving after smallpox has been eradicated, a request for voluntary contribution to enable the Organization to provide needed assistance has met with a limited response only.

If the goal of global smallpox eradication is to be realized in a reasonable period, there is an immediate need to establish a soundly-based, adequately staffed and financed global programme capable of providing a continuing impetus and co-ordination and technical and material assistance throughout the smallpox endemic regions of the world.

The Eighteenth World Health Assembly, declaring the world-wide eradication of smallpox to be one of the major objectives of the Organization, requested that countries having smallpox and without eradication programmes to initiate them and the countries ith programmes to intensify them and requested the Director-General to make available he increased amount of technical guidance and advisory services in order to accelerate the programme as well as to assist the countries in obtaining the necessary vaccine, transport and other equipment.

At the thirty-seventh session of the Executive Board, financial and technical aspects of the smallpox eradication programme were reviewed and the Board[2] recommended the Nineteenth World Health Assembly to decide:

> "The participation of the Organization in the smallpox eradication programme should be financed from the regular budget of the Organization . . ."

and to request

> "The Director-General in co-operation with all members to initiate action to carry out a worldwide smallpox eradication programme . . ."

In accordance with the resolution of the thirty-seventh session of the Executive Board,[2] the following proposal for the eradication of smallpox is presented.

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[1] Resolution WHA18.54, Handbook of Resolutions and Decisions, p. 51.

[2] Resolution EB37.R16, Off. Rec. Wld Hlth Org., No. 147.

2. TECHNICAL CONSIDERATIONS

2.1 General considerations

Of all the infectious diseases, smallpox, in its epidemiological behaviour, lends itself uniquely to an eradication effort. Directly transmitted from person to person, without known insect or animal reservoirs, rarely occurring in sub-clinical form, smallpox may quickly be detected in an area. The victim of the disease is generally incapable of transmitting the virus for more than two weeks and is rendered essentially permanently immune against a subsequent attack. Since the disease has a two-week incubation period, prompt identification of a case permits the initiation of effective containment measures.

Eradication can be accomplished in a comparatively simple and straightforward manner by rendering immune, through vaccination, a sufficiently large proportion of the population so that transmission is interrupted. In a highly endemic area this requires almost 100 per cent. protection of the population.

Measurement of the proportion of a population vaccinated may be useful as a guide with respect to the conduct of a programme. However, it must be kept in mind that such measurement represents a guide only and the actual success of the programme must be appraised in terms of its success in the disappearance of the disease. Although a certain high proportion of the population may have been mechanically vaccinated, it must be recognized that substantially less are actually successfully vaccinated. Further, an over-all value of coverage rate says nothing regarding the distribution of vaccination. The Expert Committee on Smallpox[1] stated that follow-up assessments in a country have shown that although the number of vaccinations made represented 80 per cent. or more of the estimated population, there were often sections where the population vaccinated was only 30 per cent.

In densely crowded areas where infected individuals may contact a large number of persons, a very high proportion of the population should be successfully vaccinated to interrupt transmission. In sparsely settled areas with comparatively little crowding, the disease may, in fact, spontaneously disappear until imported subsequently from more distant infected areas. More definitive studies of this phenomenon are required.

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[1] Wld Hlth Org. techn. Rep. Ser., 283.

Cities, towns and villages, although reasonably accessible geographically for vaccination, appear to represent the most important reservoirs of the disease and sites of transmission. In large urban areas particularly, crowding is greatest and infected individuals normally come into contact with the largest numbers of persons. A fertile soil is provided especially in the lowest socio-economic sectors, where response to vaccination is normally poor; where unprotected individuals from unvaccinated rural areas commonly migrate, where maintenance vaccination programmes are difficult to carry out and where birth rates are high.

From limited evidence it would seem probable that intensive vaccination programmes in cities, towns and villages throughout a country with the establishment of active maintenance vaccination programmes, particularly for the new born and migrants in the lowest socio-economic strata could effectively terminate transmission.

2.2 Vaccine

The infinitely greater stability of freeze-dried smallpox vaccine unqualifiedly recommends this preparation over the glycerinated form in field vaccination programmes, especially in tropical areas. Although under some circumstances the glycerinated vaccine is preferred because of lower cost and its availability in single-dose containers it is well recognized that even in the best managed medical facilities, storage procedures are frequently inadequate.

Supplies of freeze-dried vaccine for the global eradication programme have been inadequate to date to meet immediate needs. Further, the quality, particularly the potency, of the vaccine has not infrequently failed to meet recommended standards. As pointed out in past reports to the World Health Assembly, the production of freeze-dried vaccine demands high standards of skill and responsibility in the professional and technical staff employed. Routine assessment of each lot of vaccine produced must be systematically carried out.

The costs and difficulties involved in establishing effective vaccine production facilities are considerable. Further, consultant staff available from established facilities, capable of rendering necessary assistance, is limited.

These considerations dictate the necessity of limiting the number of vaccine production facilities to a few comparatively large, efficient institutions capable of supplying several countries rather than many small ones, the efficiency of which would be dubious.

Because of the urgent and continuing need for large quantities of vaccine of known high potency a substantial supply of vaccine from the non-endemic countries by donation or on a bilateral assistance basis is required on a yearly basis for the next three years at least.

2.3 Surveillance

It is necessary for the eradication programmes to develop a systematic plan for the detection of possible cases and the concurrent investigation regarding the source and site of acquisition of the disease, their vaccination status and the prompt instigation of containment measures. Detailed epidemiological investigation of all cases as to the reasons for their occurrence and the means by which they are being spread can be one of the most effective instruments to provide continuing guidance and direction in the vaccination programme. In the simplest terms, each case which occurs suggests the possibility of flaws in the programme. An outbreak, however small, demands a full critical review with appropriate revisions of the programme.

The ultimate measure of any eradication programme is its success in reducing the number of cases to zero. So long as cases of the disease are endemically transmitted, an eradication programme has failed to achieve its goal whatever the proportion of the population ostensibly successfully vaccinated.

Even in countries with a limited local health structure, a systematic surveillance plan can and must be developed as an essential component of the eradication programme. The simplest type of approach might consist of a weekly report from each hospital and dispensary noting whether suspect cases of smallpox had or had not been seen. Simple basic information should be requested for each suspect case, consisting of name, age, sex, residence of patient and date of onset. Hospitals or dispensaries failing to submit a report should be contacted promptly to ascertain specifically whether or not cases were observed.

This portion of the surveillance activity should be initiated concomitantly with the development of any systematic vaccination programme. Even where cases are comparatively few at the inception of the programme, detailed investigative and containment efforts should be initiated promptly. The discovery of apparent indigenous transmission should be accompanied by a two- or three-day intensive mass programme of vaccination in the immediate area. In highly endemic countries, such detailed field appraisal may be impractical until a vaccination campaign in the immediate areas has been completed. It should not, however, be delayed until a country-wide programme has been completed.

Accurate diagnosis of individual cases may prove vexing in some instances. Not uncommonly, smallpox cases are confused with varicella (chickenpox) or disseminated herpes simplex, for example. To facilitate accurate diagnosis, it is desirable that simple pictorial field manuals pertaining to clinical diagnosis are developed. Provision must be made for the establishment of a number of virus diagnostic laboratories and the training of competent technical staff. Since facilities and competence in virological diagnosis are limited in many parts of the world, consideration must be given to centralized facilities. The stability of smallpox virus lends itself well to the utilization of such centralized facilities. Specimens from lesions of cases can be shipped without refrigeration with a high expectation of virus recovery even though many days have elapsed.

A regional surveillance programme is an important component part of the eradication scheme. Increasing facilities for travel plus continuing major population migrations across national borders permit ready dissemination of infection from country to country. Strengthening of the advisory staff at regional and country level to assist individual countries in the development of adequate surveillance programmes, able to render assistance promptly both in the field investigative phases and in direct containment operations and serving to integrate information obtained from the separate countries would ensure greater success of the over-all programme.

It should be realized that the surveillance system thus being developed will be utilized not only for smallpox services but also as a valuable service for other communicable diseases.

2.4 Approaches to intensive country-wide vaccination programmes

Several possible approaches to intensive vaccination programmes have been employed. Their relative merits and demerits must be carefully weighed.

1. Vaccination conducted in established local health service dispensaries, etc

2. Vaccination on a systematic house-by-house basis.

3. Vaccination of large groups collected at a series of different locations.

2.4.1 Vaccination conducted in established local health service dispensaries etc.

Being useful to provide protection to those willing or able to avail themselves of existing facilities, experience has shown that only limited coverage in a population can normally be achieved by this approach, even in countries with a comparative plethora of available local health services. The least well educated in the most densely crowded areas normally respond poorly although, as previously noted, it is in this group specifically that the highest levels of immunity are required. Intensive utilization of this approach should be explored and well organized because the participation of the local health services is essential to develop the systematic programme in the most efficient way.

2.4.2 Vaccination on a systematic house-by-house basis

Many campaigns have been and are being carried out on a house-to-house basis. If done competently, the over-all coverage which can be achieved is highest by this method. A substantial number of personnel is required, however, since experience shows that the individual vaccinator normally can vaccinate by this house-to-house method an average of only 50 to 70 persons per day in rural areas. It should be noted that one of the main difficulties so far recognized in the present projects is a serious shortage of field personnel. If household rosters are obtained, they should be simple and practical. Also, recording of the field work should include minimum items necessary for the systematic operation. The maintenance of detailed family rosters, although excellent in principle, has proved difficult in practice, especially in the areas where population movement is quite rapid.

In brief, this system of coverage can provide more effective total coverage if a large staff can be mobilized and carefully supervised.

2.4.3 Vaccination of large groups collected at a series of different locations

Mass vaccination employing intensive publicity and the establishment of vaccination sites on a village-by-village basis, on street corners, in markets and other places of congregation in major cities permits a more efficient utilization of personnel. Simple recording procedures should be all that are necessary for this campaign. A concurrent assessment scheme too is necessary. One of the methods used is a sample survey of the population seven days following the campaign at which time those selected for survey are asked whether they have been vaccinated and, if so, their reactions are read.

In contrast with the house-by-house type campaign, a more detailed planning scheme, including intensive health education, adapted to the individual area is required if the programme is to be fully effective. This is particularly true in major population centres with less cohesive social structures. Thus, somewhat higher quality personnel are required. The operational complexities engendered by the large numbers of personnel necessary for the house-to-house type campaign would be vastly simplified in this method. If fewer vaccinators are needed, a higher quality of staff may be hired thus ensuring a higher proportion of successful vaccinations and more rigid adherence to procedures required for vaccine preservation.

This type of campaign permits utilization of mechanical jet injectors for vaccine which have the capacity of vaccinating as many as 500 to 1000 persons per hour. Adequate studies of two such devices have been reported. Successful vaccination rates with these have consistently been 10 per cent. higher than those achieved by trained vaccinators in the same area. Pilot mass vaccination programmes in Brazil conducted in a series of villages and towns ranging up to 35 000 population have demonstrated that population coverage as measured by successful vaccination has been approximately equivalent to that achieved by trained vaccinators in a house-to-house systematic programme. The costs, personnel and transport required were less than 25 per cent. of the house-to-house systematic programme.

2.4.4 Combined programme

The addition of smallpox vaccination to another programme employing systematic coverage of a population in a vaccination programme or other disease control activity has proved effective in some intensified campaigns. Since the costs of personnel

and transport are normally major expenses in a mass vaccination programme, the combination of several activities has a great deal of merit. If, however, the completeness of coverage must be compromised, the economy of the procedure could well prove to be a false saving necessitating repeat programme.

2.4.5 Summary

It is apparent that each of the approaches outlined, has advantages and disadvantages suggesting that, for most programmes, they should be combined in an appropriate manner. Careful advance planning is necessary but it must be recognized that for a fully effective programme, continuing adaptation is important. In addition, it should be stressed that the development of general health services can provide a valuable basis for the campaign and smallpox services will be carried out as far as possible within the framework of the general health services, which would be strengthened where necessary.

Provision must be made for continuing assessment of the completeness of vaccination coverage at appropriate local, country or national levels by individuals who are not themselves part of vaccination teams. The assessment aspect is an integral part of the programme and should serve to redirect operational plans. As previously pointed out, epidemiological investigations pertaining to the occurrence of smallpox cases represents another form of assessment and similarly should serve to provide programme guidance.

2.5 Maintenance programmes

Until all endemic countries have completed valid eradication programmes and until at least a three-year period has elapsed without documented cases anywhere in the world maintenance programmes of vaccination will be required in each of the countries. Methods for the conduct of maintenance programmes are expected to vary widely from country to country. Certain specific groups, however, will require particular emphasis:

(1) Urban populations, especially those in densely crowded lower socio-economic areas.

(2) Migrants who might be expected to transmit the disease widely and those recently entering urban areas from less well vaccinated rural districts.

(3) School children among whom disease may pass quickly and thence to the community at large.

(4) Newborn babies, if not adequately vaccinated: a large proportion of fully susceptible individuals can accumulate in a community within a comparatively short time.

(5) Dispensary and hospital staffs including laundry personnel. The high risk of disease spreading to these groups has repeatedly been demonstrated.

Some countries may elect to carry out intensified programmes augmented by continuing vaccination programmes in health centres and elsewhere; others may incorporate vaccination into other types of immunization and disease control programmes. Whatever the approach, it is most important to reach specifically the groups noted above and achieve as near total coverage of the population as possible. Finally, it should be noted that the development of the general health services is of the utmost importance to carry out the effective maintenance programme.

3. THE SMALLPOX ERADICATION PROGRAMME AT PRESENT

During 1959, when the global eradication programme was initiated, 61 444 cases of smallpox were reported (Table 1). The number of cases reported since this time has fluctuated reaching a maximum of 99 599 cases in 1963, but declining to half this number in 1964 and again in 1965, according to provisional figures. Eradication and control measures have been partly responsible for this decline. However, incomplete reporting in certain areas and delayed reports of cases are known to have influenced these figures. Further, a natural, long-term cyclical variation in the incidence of smallpox is well recognized.

Eradication of the disease appears to have been achieved in North and Central America, Europe, North Africa, the Middle East and Pacific and Western Pacific countries, as well as in some countries in South America.

Endemic areas now include six countries in Asia (India, Burma, Indonesia, Pakistan, Afghanistan and Nepal), essentially all African countries in the Sub-Sahara region and three countries in South America (Brazil, Peru and Colombia). Although the great majority of cases are reported from the far more populous Asian countries, the incidence of disease is probably at least as high or higher in many areas of Africa and South America.

Transmission of disease from the endemic countries to smallpox-free areas remains a problem. Peru and Colombia, for example, both previously free from endemic smallpox, have experienced the reintroduction and establishment of endemic foci. Multiple imported cases continue to be reported annually to WHO from various countries throughout the world.

At the present time, eradication and control programmes are at various stages of development in Asia, Africa and South America with problems of differing character in each of the areas.

Africa

In Table 2 is shown smallpox incidence in individual countries. Smallpox control programmes, of a more or less intensive nature are now being conducted in all of the endemic African countries.

TABLE 1 SMALLPOX CASES REPORTED BY CONTINENT
1959-1965

	1959	1960	1961	1962	1963	1964	1965
Africa	15 781	16 127	24 182	24 837	16 723	12 962	15 875
America	4 899	5 531	8 168	7 860	7 126	3 051	1 529
Asia	60 749	39 251	53 217	49 579	75 621	34 543	33 145
Europe	15	47	27	137	129	-	1
World total	81 444	60 956	85 594	82 413	99 599	49 956	50 550

WHO-assisted eradication or control projects have been, or are being, carried out in eight African countries. Two of these countries report having completed systematic mass vaccination campaigns.

In the Ivory Coast and Upper Volta, systematic coverage of the total population has been achieved by mobile teams. Reported cases in both countries have shown a marked decrease. In the Ivory Coast, 4650 cases were recorded in 1961 and eight cases in 1965; in Upper Volta, 2360 cases were reported in 1961, 14 in 1965. To maintain immunity levels, repeat mass vaccination campaigns every three to four years are being considered. Population movement from adjacent endemic countries is a significant problem. The surveillance systems in both countries need strengthening.

Projects in the remaining six countries have encountered a variety of problems which have prevented their effective development. In Liberia, the WHO-assisted project was started in 1962 but so far only less than 20 per cent. of the population has been covered. Shortages of field personnel and transport are the main obstacles hampering the project.

In Mali the WHO-assisted eradication project was agreed upon in 1962. Serious shortages of transport and field equipment, adverse weather and inadequate numbers of supervisory staff and field personnel have permitted coverage of only one-third of the population so far.

In Nigeria, Sierra Leone and Togo combined projects of yaws control and smallpox vaccination are now under way. However, with the possible exception of the Togo project the programmes are not expected to effect eradication because of the extended time necessary to reach the entire population. In Nigeria and Sierra Leone intensive mass smallpox vaccination campaigns would be preferable but shortages of personnel, transport, vaccine and field equipment have precluded this possibility.

In Sudan, the WHO-assisted project was started late in 1962; half of the population has been vaccinated so far. However, very few provinces included in the campaign have shown satisfactory results and the immunity level is decreasing rapidly. Sufficient planning, supervisory staff and field personnel are necessary to intensify the project.

TABLE 2. SMALLPOX INCIDENCE IN THE CONTINENT OF AFRICA

Africa	1961	1962	1963	1964	1965
South Africa	8	112	163	329	62
Algeria	8	1	-	-	-
Angola	-	23	38	1	-
Basutoland	89	52	-	-	-
Bechuanaland	16	4	-	174	-
Burundi	-	26	3	-	1 209
Cameroon	1 345	792	133	81	-
Congo (Brazzaville)	22	1 513	1 515	196	80
Congo, Dem. Rep.	2 251	3 785	5 496	2 302	1 045
Ivory Coast	4 656	2 066	219	11	3
Dahomey	119	124	228	795	167
Ethiopia	761	360	232	103	58
Gabon	-	1	111	49	1
Gambia	12	4	52	6	6
Ghana	75	135	23	9	7
Guinea	96	2 948	224	300	69
Port. Guinea	7	2	-	-	-
Upper Volta	2 360	1 335	339	8	14
Kenya	289	96	254	266	271
Liberia	1 119	323	57	128	40
Malawi	1 465	634	455	704	233
Mali	1 706	1 668	1 096	321	815
Mauritania	12	40	1	-	-
Mozambique	51	67	85	250	111
Niger	1 740	1 928	445	29	509
Nigeria	3 538	3 863	1 774	1 415	4 566
Uganda	396	628	419	523	1 515
United Arab Rep	1	4	2	-	-
Central African Rep.	-	57	3	-	-
Southern Rhodesia	3	15	44	200	40
Rwanda	18	30	-	-	5
Senegal	201	231	97	2	-
Sierra Leone	6	78	14	89	60
Sudan	104	76	26	-	79
Swaziland	-	-	182	517	89
Tanzania	925	973	837	1 405	2 916
Chad	273	1 157	10	5	72
Togo	281	172	274	4	13
Zambia	235	210	1 882	2 [illegible]	328
Total	24 182	24 837	16 725	12 362	15 375

In Zambia, the smallpox programme is being intensified. The USSR provided 2.5 million doses of freeze-dried vaccine for the programme in the first quarter of 1966.

Smallpox freeze-dried vaccine production facilities in Nigeria are partially operative but will require additional direct and advisory technical assistance. WHO/UNICEF assistance is being provided to Kenya in the development of vaccine production.

In brief, lack of adequate technical assistance, personnel, equipment, vaccine and supply have hampered most of the African programmes initiated to date. Co-ordination of the programme on a regional basis has not yet been achieved; efficient surveillance systems have not yet been developed. It is felt, however that the principal difficulties can be remedied if the countries concerned place a greater emphasis on the programme and if additional assistance in the form of assigned WHO technical staff at the country and regional level in addition to adequate vehicles and supplies are provided. If mass campaign techniques employing mechanical equipment (jet injectors) can be employed a major difficulty, the lack of sufficient local personnel, could largely be surmounted in some of the programmes.

Americas

In Table 3 is shown smallpox incidence in individual countries. In the Americas, a regional eradication effort was started in 1950 and eradication was achieved in many countries. Recently, however, the disease has become re-established in Colombia and Peru. Notably, endemic smallpox in Peru recurred eight years following an effective eradication programme.

In Argentina, the national vaccination campaign started in 1961 when 4.4 million vaccinations were performed. 1.3 million, 0.6 million and 0.3 million vaccinations were carried out in 1962, 1963 and 1964 respectively. Twelve cases occurred in 1964 and there was an outbreak in the province near the border with Paraguay in the latter half of 1965. A national vaccination campaign is planned and the surveillance system will be strengthened.

Although reporting is incomplete in Brazil, it would appear that smallpox is currently endemic throughout the country. An eradication programme was initiated in [illegible] and more than 40 million persons have been vaccinated during 1963, 1964 and 1965. However, the programme has been hampered by the topographical conditions of the country

TABLE 3 SMALLPOX INCIDENCE IN THE AMERICAS

America	1961	1962	1963	1964	1965
Argentina	4	2	-	12	15
Bolivia	-	-	-	4	-
Brazil	7 666	7 589	6 211	2 505	1 319
Canada	-	1	-	-	-
Colombia	16	41	4	24	146
Ecuador	491	205	45	42	-
Paraguay	-	-	-	7	32
Peru	-	-	865	454	13
Uruguay	1	11	1	3	-
Venezuela	-	11	-	-	-
Total	8 168	7 860	7 126	3 051	1 529

area by the lack of communication and qualified staff. Three laboratories in Brazil equipped by the PAHO are producing good quality smallpox freeze-dried vaccine in quantities adequate for the programme. National authorities are presently engaged in revising plans for the programme and developing a more effective administrative structur

Colombia completed a well-organized eradication programme in 1961 but experienced a reintroduction of the disease, apparently from Brazil, in 1965. The disease has once again become moderately widespread. The Government is now considering a repeat programme of mass vaccination to be completed over a three-year period. External assistance will be required.

Peru, free of endemic smallpox since 1955, reported 665 cases in 1965, a result of disease reintroduction in north-eastern areas bordering Brazil. A mass vaccination programme has again been initiated. In 1964 more than three million vaccinations were performed.

Bolivia and Paraguay, neither of which is at present believed to be harbouring endemic smallpox, are at great risk of disease reintroduction because of their proximity to Brazil and relatively inadequate vaccination status and surveillance programme. A vaccination programme in Bolivia is in progress with assistance from an assigned WHO health inspector but a variety of administrative, economic and political factors have hampered the programme.

The need for a regional eradication scheme is only too apparent in the South American programme. The persistence of endemic smallpox in Brazil has necessitated the reinitiation of national campaigns in adjacent countries. Failure to establish adequate surveillance schemes prevented Peru and Colombia from detecting imported cases sufficiently early to permit containment; maintenance immunization programmes were ineffective and widespread transmission soon resulted.

Of the principal endemic areas of the world, South America is most easily subject to smallpox eradication. The key to the problem is Brazil. Some assistance in the form of technical aid and equipment will be required in several countries; and a vastly more effective programme of surveillance, nationally and regionally, will be required throughout the Americas.

Asia

In Table 4 is shown smallpox incidence in individual countries. The status of smallpox eradication in Asia is intermediate between the relatively advanced situation in the Americas and the developing stages in Africa. Most of the endemic countries in this continent started mass vaccination campaigns in 1960-1962. However, progress has been irregular. Between 1959 and 1964 several countries, Ceylon, Malaysia, Singapore, Thailand and Viet-Nam became smallpox free. Six countries remain endemic, Afghanistan, Burma, India, Indonesia, Nepal and Pakistan.

In Afghanistan, although WHO-assisted projects were started in 1962, a systematic programme has not yet been developed. Only 20 per cent. of the total population has been vaccinated. Principal difficulties include the lack of national funds to provide sufficient supervisory and field personnel, transport for the project, difficult terrain, and problems in vaccinating the comparatively secluded female population in many areas. WHO [illegible] the USSR have supplied sufficient freeze-dried vaccine for the project so far.

Burma has conducted a successful campaign and is expected to complete the mass campaign phase by 1966. The project is based mainly on existing basic health services with planned coverage of the total population once every three years. Twenty-eight cases were reported in [illegible] and eight cases in 1965. Vaccine production is in the developing stage with WHO/UNICEF assistance and most of the vaccine is still being supplied by the USSR and WHO.

India started a campaign in 1962 and hopes to complete it by the middle of 1966. So far [illegible]20 million vaccinations have been performed. There has been a downward trend in smallpox incidence during the past few years. In November 1965, the Indian Advisory Committee of the National Smallpox Eradication Programme met and reviewed the programme in terms of up-to-date progress of the campaign, steps necessary to improve the regular coverage, epidemiological criteria to permit the programme to enter the maintenance phase and the progress of freeze-dried vaccine production. The committee recommended a further study on the method of maintenance programme in relation to the basic health services. The USSR has provided a large amount of freeze-dried vaccine (over [illegible] million doses) to the project on a bilateral basis and, in addition, vaccine has been donated through WHO by other countries. Four vaccine production plants were started in 1962

TABLE 4. SMALLPOX INCIDENCE IN ASIA

Asia	1961	1962	1963	1964	1965
Aden: Col.	1	-	-	-	-
Prot.	-	-	-	-	-
Afghanistan	174	303	571	157	72
Saudi Arabia	17	1	-	-	-
Burma	88	21	193	28	8
Cambodia	1	-	-	-	-
Ceylon	34	12	1	-	1
Korea, Rep.	1	-	-	-	-
India[a]	45 195	42 231	60 901	31 587	27 658
Indonesia	4 677	3 340	7 966	1 874	3 985
Iraq	-	-	-	-	-
Iran	123	29	6	12	-
Qatar	1	-	-	-	-
Kuwait	-	1	-	-	-
Muscat & Oman	-	8	-	-	-
Nepal	5	-	779	99	84
Trucial Oman	-	17	-	-	-
Pakistan	2 742	3 614	5 199	781	1 337
of which:					
East Pakistan	421	523	3 724	43	259
West Pakistan	2 321	3 091	1 475	738	1 078
Singapore	-	-	-	-	-
Thailand	33	2	-	-	-
USSR (Asiatic part)	1	-	-	-	-
Viet-Nam	-	-	-	-	-
Yemen	-	-	5	5	-
Total	53 217*	49 579	75 621	34 543	33 145**

[a] Based on the provisional figures in WHO Weekly Epidemiological Record. Recently, Indian Smallpox Campaign Office stated that the smallpox cases reported to them are: 45 380 in 1961, 55 579 in 1962; 83 423 in 1963; 39 886 in 1964, and 26 817 in 1965.

* 124 cases from Port India inclusive.

** 1 case from Laccadive, Miniccy, and Amindivi Island inclusive.

and 1963 with the assistance of WHO and UNICEF and serious consideration is now being given to the development of the production capacity, sufficient to meet annual national demands of the programme (170 million doses).

In Indonesia an eradication plan has been drawn up but the nation-wide programme has not yet been implemented. Adequate freeze-dried vaccine is produced locally.

In Nepal, a WHO-assisted programme was started in 1961 but the project was limited mainly to the Katmandu Valley. The project has been suffering from a serious shortage of field personnel, lack of transport under extremely difficult geographical conditions and some resistance on the part of the people against vaccination. An intensive effort, supported by substantial external assistance, employing mobile teams with adequate transport, probably could achieve proper coverage within a three-year period. At present, the Government is considering intensifying the project by vaccinating a population of two to three million each year. Vaccine must be supplied from outside sources.

East Pakistan completed a mass vaccination programme in 1964, providing coverage to over 60 per cent. of the population, and entered the maintenance programme. Twenty million and 14 million vaccinations were carried out in 1964 and 1965 (up to September) respectively. Reports of cases decreased substantially from 3704 in 1963 to 43 in 1964. However, in 1965, 259 cases were reported. A repeat mass programme may be necessary in some particular areas; at the very least, an intensified maintenance and surveillance programme must be developed. Adequate vaccine can be produced locally. In West Pakistan, 12 million and 10 million vaccinations were performed in 1964 and 1965 (up to September) respectively. The programme is being intensified, but still a substantial number of cases (1075 cases) were reported in 1965.

In Asia, vaccine must be supplied to all countries for mass campaigns except Indonesia and Pakistan. Within one or two years however local vaccine production in India and Burma is expected to meet national demands for maintenance vaccination programmes. Nationally, substantial quantities of transport and equipment will be required for all programmes. Supplementary technical personnel for assessment, planning of eradication and the development of surveillance are required to a greater or lesser extent for all countries. The development of effective maintenance programmes on surveillance on a regional basis are needed. Methods to increase coverage of groups resistant to vaccination in Afghanistan and Nepal must be explored.

[illegible]

In Table 5 is shown smallpox incidence in Europe. Several countries have reported imported or secondary cases during recent years. There were no imported cases in 1964 and only one case in 1965.

TABLE 5. SMALLPOX INCIDENCE IN EUROPE

Europe	1961	1962	1963	1964	1965
Germany, Fed. Rep.	5	38	-	-	1
Eastern Germany	-	-	1	-	-
Belgium	1	-	-	-	-
Spain	17	-	-	-	-
Hungary	-	-	1	-	-
Poland	-	32	99	-	-
United Kingdom	3	66	-	-	-
Sweden	-	-	27	-	-
Switzerland	-	1	1	-	-
USSR (Moscow)	1	-	-	-	-
Total	27	137	129	-	1

4. PROPOSED PROGRAMME FOR THE GLOBAL ERADICATION OF SMALLPOX

4.1 General considerations

Of the utmost importance and urgency is the development of eradication programmes in all endemic countries at the earliest possible date. In some countries, eradication programmes have been or are being completed; maintenance programmes are in progress. Maintenance programmes, however, are reasonably difficult to carry out effectively; each year they must be continued only serves to augment the over-all costs of the global programme. At all times during this period, of course, the possibility of reintroduction and re-establishment of virulent smallpox is real.

To initiate and execute the programme calls for a maximum effort on the part of the individual endemic countries, aided appropriately by technical assistance, equipment, vaccine and other supplies. Of major importance is the evolution of maximally effecti programmes for surveillance, field investigation and disease containment.

To provide the necessary impetus, direction, co-ordination and supervision requisite for a unified global effort, strengthening of the headquarters and regional staff is proposed. In addition, technical advisers at the country level are considere necessary.

It is expected that early action will be necessary to obtain the large amounts of freeze-dried vaccine requisite for this major undertaking.

For purposes of over-all planning, it is necessary to assume that support for an intensified global eradication effort will be forthcoming from each of the endemic countries. A simultaneous intensified global effort would be technically desirable although logistically impracticable. It is proposed, therefore, that eradication efforts be developed or continued in selected countries during 1967 with the extension of the programme to all endemic countries in 1968 onwards. Although in the smaller countries, nation-wide campaigns can sometimes be achieved in a single year, it is believed that most countries from the standpoint of transport and personnel will find it more convenient to extend the intensified phase of the programme over a three- to four-year period. Assuming this phase to be successful, maintenance programmes covering [illegible], [illegible], specific age groups, etc. of the population would follow each year thereafter.

Also, in the planning it is desirable to outline a long-term programme over the next 10 years in order to envisage future development of the global eradication activities

It is believed that in the Americas, Africa and perhaps some countries in Asia intensified vaccination campaigns will partly rely upon the jet injectors for vaccination supplemented appropriately by the multiple pressure method, varying the extent of its use according to the operation areas.

Since each country necessarily poses unique problems in transport and operational and field personnel capabilities, it is possible to estimate only approximately the overall costs required to supplement the possible maximum effort in each country.

4.2 Proposed programme for 1967

For the WHO assistance programme in 1967, as mentioned above, attention has been directed to those countries with programmes fully or partially operative, those already prepared to embark on eradication programmes and selected countries strategically located geographically. Proposed for assistance in 1967 are continuing programmes in Asia (Burma, India, Pakistan, Nepal and Afghanistan); Africa (Mali, Sudan, Liberia, Ivory Coast, Togo and Upper Volta); and South America (Bolivia and Peru). Additionally, in South America, Brazil has indicated that it is planning to embark on a more vigorous programme; because of geographical reasons, programmes in Paraguay and Colombia should parallel the Brazilian effort; in Argentina re-establishment of the programme is being considered. In Africa, Nigeria and Sierra Leone have expressed interest in embarking on eradication programmes at an early date. A geographically continuous programme should be initiated in Africa and all countries in that area should participate.

4.2.1 Vaccine required

The three main sources of supply of freeze-dried vaccine to the programme are from local production, donation through WHO and contribution to countries on a bilateral basis. Vaccine is available in ample quantity in all South American countries and Pakistan. It is hoped that the USSR will be able to continue its bilateral assistance by providing requisite supplies of vaccine to Burma, India and Afghanistan. Burma needs seven million doses for the 1967 programme, India 170 million doses and Afghanistan three million doses.

The needs of the remaining countries should be estimated by taking into consideration the target population coverage of individual projects, vaccination for a maintenance programme, an additional stock of vaccine for emergency use (epidemics and gaps between regular supply), wastage of vaccine etc. It is assumed that approximately 35 million doses of vaccine will be necessary for supplying during 1967 to other countries from outside sources either through WHO or on a bilateral basis, presuming that the existing bilateral arrangements for vaccine supply will continue in the future.

Smallpox freeze-dried vaccine for the eradication programme should conform with the WHO requirements for biological substances.[1] The requirements were newly revised in 1963. In the new requirements[2] the potency of the freeze-dried vaccine should exceed 1×10^6 pock-forming units using chick embryo (5×10^7 in the old requirements) and the total bacterial content should not exceed 500 per ml of reconstituted vaccine (1000 in the old requirements). The new requirements for the vaccine will take effect from 1967.

Part of the vaccine supply may be used in jet injectors. Freeze-dried vaccine prepared for multiple pressure use and that proposed for use in the jet injectors differs in that the latter is supplied in quantities in vials which, when reconstituted, results in a tenfold more dilute suspension than that for multiple pressure application. The bacterial content per ml should be almost nil for the purpose of intradermal injection. The rationale of a more dilute material for the injectors is based on the fact that essentially all of the virus particles are inoculated as contrasted to multiple pressure or similar methods in which comparatively few particles are actually inoculated with most of the vaccine remaining on the skin surface. Experimental studies have validated this assumption.

It is believed that this approach with a jet injector is to be preferred for use generally in South America, partly supplemented by multiple pressure vaccination for "mop-up" operations and for vaccination in remote areas. In African countries, where programmes have been severely hindered by a lack of personnel, it is likely that jet

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[1] Wld Hlth Org. Techn. Rep. Ser., No. 169 - Requirements for Biological Substances. Requirements for Smallpox Vaccine.

[2] Wld Hlth Org. Techn. Rep. Ser., No. 325 - Requirements for Biological Substances. Smallpox Vaccine.

injectors are also to be preferred especially in densely populated areas. The experience to date in mass measles vaccination programmes in West Africa tends to substantiate this belief. In Asian countries, variable use may be made of this tool, contingent upon evaluative studies

4.2.2 [illegible]

Requirements adjudged to be needed have been estimated on the basis of communication from a number of countries. This includes transport, refrigerators, jet guns, camping equipment, vaccine kits etc.

4.2.3 WHO staff

Integrated, well co-ordinated programmes require the formation of an adequately staffed headquarters unit and regional offices. Three medical officers are proposed for headquarters. Headquarters will be expected to assume principal responsibility which will include planning and continuous assessment of the world-wide programme as a whole; co-ordination of regional activities towards global eradication, development of operational assessment, surveillance and diagnostic standards for field use; and planning, development and co-ordination of research programmes of concern to the continuing programmes.

It is planned to provide a regional adviser for each region (Africa, the Americas, Eastern Mediterranean and South-East Asia). In addition, WHO technical personnel are proposed in the field. Regional offices will take the responsibility for providing close co-ordination, consultation, supervision and impetus to the separate programmes. As mentioned in Technical Considerations, since the method of operation should be flexible enough to develop reasonably efficient programmes in the different epidemiologic situations and health service structures in each country or area, regional offices will assist the eradication programmes in planning, implementation and assessment. The regional offices will also assist in the establishment of a surveillance system on a regional basis.

4.2.4 Consultant services

Since the provision of adequate supplies of freeze-dried vaccine of high quality is a basic key to the global programme, and since this has been a particularly problematic area, it is proposed to provide substantial consultant service to the several production facilities in the endemic countries and a regular testing service for vaccines produced.

Additional consultative services regarding the development of virus diagnostic facilities, assessment methods, surveillance procedures and operations in planning will also be required.

4.2.5 Training courses

It is proposed to hold inter-regional training courses for national and international programme staff for methods of operation, assessment, surveillance and laboratory procedures.

4.2.6 Research projects

A number of important technical areas demand intensive study, the results of which should serve further to guide the programme in the immediate years ahead. Among others, these should include epidemiological studies to assess the circumstances and factors necessary for the continued endemic propagation of the disease, the duration of immunity conferred by vaccination under circumstances of natural challenge, comparative studies of strains from different areas and evaluation of chemoprophylactic agents. It is hoped that total or partial financial support for many of these projects would be provided directly to responsible investigators from national funds.

4.2.7 Fellowships

The principal training in operational and surveillance procedures will be provided by WHO staff and consultants at regional and country levels. Several fellowships, however, will be required for training of national personnel in vaccine production and virus diagnostic work.

4.3 Assistance from the World Food Program

The World Food Program has expressed its interest in collaboration between the World Food Program and the WHO health programmes, especially in support of the smallpox eradication programme. As the smallpox programme in endemic countries is hampered by the shortage of field personnel, and adequate financial provision for expanding such personnel, it would be of great advantage if countries could utilize the World Food Program in providing partial payment of salaries with food made available by the World Food Program. The possibility for the use of this assistance in the smallpox eradication programme would be further explored.

4.4 Bilateral assistance

In a number of West African countries, the development of a smallpox eradication programme on a large area basis is being proposed through a United States of American bilateral programme. The assistance to the countries will include technical personnel, vaccine, transport and other equipment. A country in East Africa has similarly been assisted through bilateral aid from the USSR.

In accordance with its normal role, WHO will assist the endemic countries to plan national eradication programmes taking into account all available resources within the country and from outside sources and to co-ordinate and promote intercountry collaboration on a regional basis. To the extent substantial bilateral assistance becomes available for the endemic countries an acceleration of the proposed global eradication programme could be envisaged. Suitable adjustments in individual country plans can be effected in accordance with available resources to quicken the pace of implementation.

5. LONG-TERM PROGRAMME

In order to envisage the development of the smallpox eradication programme during the next 10 years from 1967 to 1976, a plan has been prepared.

There are several factors involved in this planning; namely, the continuation of the endemic countries in terms of synchronization of eradication activities on large area bases, the future assistance from non-endemic countries, the development of an efficient surveillance system on a regional basis, the development of basic health services in individual countries, progress of technology to increase the efficiency of the programmes, sudden severe epidemics in large areas which may require modification of the plan for the countries concerned, etc.

Obviously, many of these factors cannot be forecast at present. Therefore, this plan only gives the tentative phasing of the programmes in individual countries, broad estimates of the population to be vaccinated with assistance from outside sources, and general cost estimates of the programme each year in the world as a whole. It is hoped that the plan may supply the Member States with information on how to prepare and proceed with the programme towards the ultimate goal of the eradication of the disease.

5.1 The phasing of the programme

A plan for phasing has been prepared mainly according to the reassessed material received from the regional offices up to November 1965. It is proposed that the campaign should start with the three- to four-years' attack phase and the successive maintenance vaccination programme. The maintenance phase should continue until the disease has been eradicated. However, in this plan the duration of the maintenance phase, as an objective of international assistance, is considered to last four years because at the latter stage of the programme the incidence of smallpox will be considerably reduced, and it is expected that the programme will be carried out by the countries without substantial material assistance from outside sources.

African Region

The programme of the African Region is divided into West Africa and East Africa.

West Africa

In Table 6 is shown the phasing of the programme proposed in West African countries. Dahomey, Ivory Coast, Liberia, Mali, Nigeria, Sierra Leone, Togo and Upper Volta are included in the countries where the campaign will start with WHO assistance in or before 1967. In these countries the smallpox control or eradication programmes have been underway or are at preparatory stages at present. The periods of the programme in individual countries will vary depending upon the progress which has been made so far.

Relatively intensive smallpox control programmes have been carried out, mainly by the Services des Grandes Endemies, in French-speaking countries, including Cameroon, Central African Republic, Chad, Gabon, Guinea, Mauritania and Niger in recent years. Some of these countries have already proposed carrying out the programme in 1966 or 1967 (Central African Republic, Guinea, etc.). In the Congo (Democratic Republic) it was proposed that the pilot project should be carried out in 1966 and the campaign will start in 1967 in provinces where the situation is at the right stage for commencement of the programme. Little information is available from the remaining countries such as Congo (Brazzaville), Gambia, Ghana and Senegal. Assistance is proposed for all these countries from 1966 onwards, although some of these countries will start or continue the programmes in 1966 or 1967.

East Africa

In Table 7 is shown the phasing of the programme proposed for seven East African countries, Burundi, Kenya, Malawi, Rwanda, Tanzania, Uganda and Zambia. Uganda and Zambia are preparing to intensify the programmes. The projects are being discussed between Governments and WHO in Burundi, Kenya and Tanzania. In this plan, assistance is proposed for all these seven countries from 1968 onwards.

Region of the Americas

In Table 8 is shown the phasing of the programme planned for Latin American countries. Argentina and Peru are expected to carry out a two years' mass vaccination programme covering especially the population in the areas of the borders which are at risk of introduction of smallpox cases. In both these countries, after the campaign a one-year pro[illegible] the two mopping-up operations is proposed. In Bolivia, Colombia and Paraguay a

TABLE 6. PHASING OF THE PROGRAMMES - WEST AFRICAN COUNTRIES[a]

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Cameroon	*	**	**	**	***	***	***	***		
Central African Republic	*	**	**	**	***	***	***	***		
Chad	*	**	**	**	***	***	***	***		
Congo (Brazzaville)	*	**	**	**	***	***	***	***		
Congo (Democratic Republic)	*	**	**	**	**	***	***	***	***	
Dahomey	**	**	**	***	***	***	***			
Gabon	*	**	**	**	***	***	***	***		
Gambia	*	**	**	**	***	***	***	***		
Ghana	*	**	**	**	***	***	***	***		
Guinea	*	**	***	***	***	***				
Ivory Coast	***	***	***	***						
Liberia	**	**	**	***	***	***	***			
Mali	**	**	***	***	***	***				
Mauritania	*	**	**	**	***	***	***	***		
Niger	*	**	**	**	***	***	***	***		
Nigeria	**	**	**	***	***	***	***			
Senegal	*	**	**	**	***	***	***	***		
Sierra Leone	**	**	**	***	***	***	***			
Togo	**	***	***	***	***					
Upper Volta	***	***	***	***						

[a] Excluding Portuguese Guinea and the Spanish Equatorial region. It is anticipated that eradication programme can be carried out in these territories with national financing only.

* Preparatory stage or national control programme in operation.

** Attack phase.

*** Maintenance phase with international assistance.

three-years' attack phase programme is proposed starting in 1967. In Brazil a three-years' attack phase is planned to start in 1967 and the project will be continued to a maintenance programme as Brazil is the principal endemic country in America.

Eastern Mediterranean Region

In Table 9 is shown the phasing of the programmes proposed for the Eastern Mediterranean Region. In Ethiopia the project is being discussed with the Government. A pilot project is proposed to be held in 1966 and the campaign may start in 1967 but the main assistance is proposed from 1968 onwards. Sudan has been carrying out the vaccination campaign in recent years. However, it is considered that a three-years' attack phase should be carried out, starting in 1967. In both countries maintenance programmes will follow. In East Pakistan, a smallpox eradication programme is in progress. In West Pakistan the attack phase has been initiated in 1964 and is gradually being extended.

The phasing of the programmes in Ethiopia and Sudan should be considered on the same basis as the African programmes and Pakistan on the same basis as the South-East Asia programmes.

South-East Asia Region

In Table 10 is shown the phasing of the programmes proposed in South-East Asia. The WHO-assisted projects started in Afghanistan in 1962 and in Nepal in 1962. Since the period of the programme has been prolonged, the effective herd immunity has not yet been established in the population. Therefore, it is proposed that the attack phase should start in both countries in 1967 with three-years' duration in Afghanistan and four years' in Nepal. Burma is expected to complete the attack phase in 1966 and to start the maintenance programme in 1967 onwards. In India, the attack phase was expected to be completed in 1966 but it is assumed that the programme will have to be continued in 1967 in the form of mopping-up operations. In 1968 India is expected to enter the maintenance vaccination programme. In Indonesia the programme would be at a preparatory stage in 1967 and it is expected that Indonesia will start a campaign in 1968 and complete the attack phase within a three-year period in [illegible] of [illegible] relatively developed health services. The maintenance phase will [illegible]

TABLE 7. PHASING OF THE PROGRAMMES - EAST AFRICAN COUNTRIES[a]

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Burundi	*	**	**	**	***	***	***	***		
Kenya	*	**	**	**	***	***	***	***		
Malawi	*	**	**	**	***	***	***	***		
Rwanda	*	**	**	**	***	***	***	***		
Tanzania	*	**	**	**	***	***	***	***		
Uganda	*	**	**	**	***	***	***	***		
Zambia	*	**	**	**	***	***	***	***		

[a] Excluding Angola, Basutoland, Bechuanaland, Mozambique, Southern Rhodesia, Swaziland and the Union of South Africa. It is anticipated that eradication programme can be carried out in these countries and territories with national financing only.

* Preparatory stage or national vaccination programme in operation.

** Attack phase.

*** Maintenance phase with international assistance.

TABLE 8. PHASING OF THE PROGRAMMES - THE AMERICAS

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Argentina[a]	**	**	***							
Bolivia	**	**	**							
Brazil	**	**	**	***	***	***	***			
Colombia	**	**	**							
Paraguay	**	**	**							
Peru	**	**	***							

[a] Mainly mopping-up operation in maintenance phase.

** Attack phase.

*** Maintenance phase with international assistance.

TABLE 9. PHASING OF THE PROGRAMMES - EASTERN MEDITERRANEAN[a]

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Ethiopia	*	**	**	**	***	***	***	***		
Sudan	**	**	**	***	***	***	***			
East Pakistan	***	***	***	***						
West Pakistan	**	**	***	***	***	***				

[a] Smallpox vaccination programmes are in progress in Saudi Arabia, Somalia and Yemen. However, detailed information is not available at present.

* Preparatory stage.

** Attack phase.

*** Maintenance phase with international assistance.

TABLE 10. PHASING OF THE PROGRAMMES - SOUTH-EAST ASIA

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Afghanistan	**	**	**	***	***	***	***			
Burma	***	***	***	***						
India	**	***	***	***	***					
Indonesia	*	**	**	**	***	***	***	***		
Nepal	**	**	**	**	***	***	***	***		

* Preparatory stage.

** Attack phase.

*** Maintenance phase with international assistance.

5.2 Broad estimate of the population proposed for vaccination

In Table 11 is shown the broad estimate of the population proposed for vaccination with international assistance during the next 10 years, based on the phasing of the programme of individual countries in respect of the region.

The population in endemic countries is estimated as 1100 million in 1966, 1210 million in 1970 and 1350 million in 1974. In 1967, approximately 220 million people are planned to be vaccinated with international assistance. The number of vaccinations proposed will reach approximately 310 million in 1968. The programme is phased to develop to its height in 1969 when 350 million vaccinations are expected. From 1970 the number of vaccinations will gradually decrease since the programmes will be completing the attack phase and entering the maintenance phase. In the latter stages of this 10-year period, the vaccination figures for international assistance would be 2[illegible] million in 1971, 130 million in 1973 and 10 million in 1975.

5.3 General cost of the programme

Several attempts have been made to obtain specific information on the cost of the programme. These include theoretical assumption of the cost in African countries, information regarding the reassessed support proposed from the present programme in such countries as India, Afghanistan, Burma and Nepal and also reviewing the past experience of the programmes of several countries in Latin America and parts of Africa. It is reaffirmed that the cost of the campaign should be broadly estimated on the basis of US 10 cents per vaccination and the general cost for each campaign can be distributed as 70 per cent. for the expenditure of national sources and 30 per cent. for external technical assistance, vaccine, transport, supplies and equipment. From past experience it is considered that a 30 per cent. share of the general cost from outside would enable the endemic countries to establish and implement a successful vaccination programme. In addition, it is proposed that although the international assistance will [illegible] a four-year maintenance programme, the surveillance activities and urgent containment measures of possible outbreaks should be supported by international assistance on a global basis. For this purpose, an amount of [illegible] should be provided each year from 19[illegible] to 19[illegible]. The yearly cost from outside sources could be reduced by taking into consideration that India, Burma, Nigeria and Kenya may be able to produce the necessary amount of vaccine for the campaign from 1968 onward.

The cost of the programme in each year has been estimated as shown in Table 12. During the 10 years, it is expected that 1790 million vaccinations will be carried out, covering the entire population of endemic countries from the attack to the maintenance phase of the campaign. The cost is estimated at $ 180 million with a distribution of $ 22 million in 1967, $ 31 million in 1968 and $ 35 million in 1969. From 1970, along with the decrease of the number of vaccinations, the cost will decrease as indicated: $ 25 million in 1970, $ 19 million in 1973 and $ 1.5 million in 1975. With regard to the share of international assistance including WHO, it is estimated altogether as $ 48.5 million during the 10-year period, i.e. principally 30 per cent. of the general cost and costs for surveillance activities in the latter stage. This $ 48.5 million will be distributed as $ 6.5 million in 1967, $ 7.7 million in 1968 and will reach its height in 1969 with $ 8.9 million. From 1970, the cost will decrease, for example, to $ 5.9 million in 1971, $ 3.8 million in 1973 and $ 0.8 million in 1975.

With regard to the $ 1.5 million from outside sources in 1967, an amount of $ 0.4 million has been included under the Special Account for Smallpox Eradication to meet the first-year's costs, as presented in Annex 3, pages 321-327 of Official Records No. 144; and a further amount of approximately $ 0.2 million is expected to be provided from other funds administered directly or indirectly by the World Health Organization; the balance of $ 4.0 million is expected to be covered on a bilateral basis or by other international agencies.

Finally, it can be stated that if the implementation of the programme is delayed or prolonged, then it will result in a further increase of the over-all cost of the programmes. This is so because a greater number of the population than here estimated would need to be vaccinated.

TABLE 11. ESTIMATED NUMBER OF VACCINATIONS WITH INTERNATIONAL ASSISTANCE

WHO Region	Population estimated (millions)			Estimated number of vaccinations with international assistance (millions)										
	1966	1970	1974	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	Total
Africa	170	190	220	20	60	80	60	50	50	50	30	10	-	410
Americas	140	160	180	40	60	60	30	30	30	30	-	-	-	280
Eastern Mediterranean	140	150	170	30	40	40	50	20	20	10	10	-	-	220
South-East Asia	650	710	780	130	150	170	170	150	40	40	30	-	-	880
Total	1 100	1 210	1 350	220	310	350	310	250	140	130	70	10	-	1 790

TABLE 12. GENERAL COST ESTIMATE (US$ MILLION)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	Total
Total cost estimated	28.0	31.0	35.0	31.0	25.0	14.0	13.0	7.0	1.5	0.5	190.0
Share of international assistance	6.6	7.7	8.9	7.7	5.9	4.1	3.8	2.5	0.8	0.5	48.5

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
WASHINGTON, D.C. 20201

REFER TO:

APR 19 1966

Dear Mr. Hutchinson:

The question as to the preferred strain of measles vaccine to be used in the forthcoming West African smallpox eradication/measles control program has been considered at length by my staff. It is the considered opinion of the Public Health Service that, from a medical standpoint, the "further attenuated" (Schwarz) strain vaccine only should be employed.

At the inception of the AID supported measles vaccine programs in West Africa, only one vaccine strain (Edmonston B) was licensed for use. Without question, the reactions associated with this vaccine were comparatively minimal contrasted to the complications associated with the disease itself. However, fever exceeding 103° occurs in approximately 40 percent of those given this vaccine; convulsive episodes, apparently of the febrile type, have been reported in 2.0 percent of 1201 children tested in 14 different controlled trials conducted under WHO auspices. These observations led the WHO Measles Vaccine Expert Committee to state in 1963: "The development of a highly immunogenic vaccine giving slight reactions and conferring durable immunity with a single injection remains an important objective."

Although the Edmonston B strain vaccine has been employed in the United States, gamma globulin has usually been administered simultaneously to diminish the frequency of reactions. Unfortunately, gamma globulin, because of its viscosity, cannot be readily administered by jet injection. Further, gamma globulin is in acutely short supply. It is thus not feasible to plan its use in mass campaigns.

In 1964, the "further attenuated" (Schwarz) strain of measles vaccine reached the stage of testing and

evaluation to permit its licensure in the United States. This vaccine, like the Edmonston B vaccine, induces a modified measles illness but the frequency of febrile responses is only half as frequent as observed after Edmonston B vaccine administration; associated convulsive episodes are rare. This vaccine, applicable without simultaneous administration of gamma globulin has been used increasingly in the United States and is now being produced in France, the United Kingdom and will soon be produced in Russia.

In Africa, there is an additional major consideration which emphasizes the importance of employing the "further attenuated" vaccine. Since medical facilities, personnel and funds are extremely limited in Africa, it is necessary for vaccination teams to administer simultaneously as many immunizing agents as possible whenever they are able to reach children. Particularly of concern are smallpox and, more recently, yellow fever. (Yellow fever vaccine in large quantity will soon be produced by the Pasteur Institute, Dakar, for application in these countries.) Both smallpox and yellow fever vaccine induce fever and other symptoms in a proportion of those vaccinated. Several vaccines administered simultaneously induce reactions of greater magnitude and severity than when only one is given. It is important, therefore, that the measles vaccine provided be the least reactogenic one available in order to minimize the frequency of complications in these multi-vaccine campaigns.

For these reasons, recognizing that both strains of measles vaccine are licensed for use, the Public Health Service believes that it is most important that the "further attenuated" vaccine only be provided for this program in West Africa.

Sincerely yours,

Surgeon General

Mr. Edmund C. Buschinson
Assistant Administrator for Africa
Agency for International Development
Washington, D.C.

SMALLPOX ERADICATION PROGRAMME

The Nineteenth World Health Assembly,

Having considered the report of the Director-General on smallpox eradication[1] and the recommendation of the Executive Board thereon; and

Noting that particular emphasis has been placed on the need for co-ordination of individual countries' smallpox eradication programmes,

1. DECIDES that the participation of the Organization in the smallpox eradication programme should be financed from the regular budget of the Organization;

2. URGES countries which plan to strengthen or initiate smallpox eradication programmes to take the necessary steps to begin the work as soon as possible;

3. REQUESTS Member States and multilateral and bilateral agencies to provide adequate material support for the realization of the programme;

4. DECIDES that, in the part of the programme financed by the Organization either from the regular budget or from the Special Account for Smallpox Eradication, the following costs may be met:

(a) such supplies and equipment as are necessary for the effective implementation of the programme in individual countries;

(b) such services as may be required in individual countries and cannot be made available by the governments of such countries; and

5. REQUESTS the Director-General, in co-operation with all Members, to initiate action to carry out a world-wide smallpox eradication programme and to submit a report to the Executive Board at its thirty-ninth session and to the Twentieth World Health Assembly.

Eleventh plenary meeting, 13 May 1966
A19/VR/11

Excerpt from "Public Health Problems in 14 French Speaking Countries in Africa and Madagascar." National Academy of Sciences, 1966

"Smallpox. Smallpox (and all air-borne epidemic diseases) resembles cerebrospinal meningitis in tending to be most violently epidemic in the dry season in dry areas. Unlike the latter, smallpox, measles, chickenpox and whooping cough are sufficiently infectious to become epidemic anywhere regardless of climate. Nevertheless, although smallpox has always been present and is still firmly established, there is no record of the occurrence of decimating epidemics as might be expected to have occurred in the past. Scars made by smallpox inoculation, before the era of Europeans, used to be seen on the wrists of old men in the savannah.

Smallpox vaccination was used in tropical Africa mainly to protect the towns, rather than in systematic campaigns in the rural areas, except when epidemics were discovered. It became the first extra activity taken on by sleeping sickness teams, so that rural vaccination was carried out in sleeping sickness foci before anywhere else. In 1945, an Anglo-French agreement was signed, providing for vaccination of everyone living within four miles of an international frontier. Since that time, it has become the ambition of most countries to vaccinate all their population every four years, and most have made great efforts to do this. Some of these figures are not very encouraging. There are many possible reasons:

(1) The dried vaccine that has been used since 1945 is potent for only an hour or two after being made up with glycerin. It is admitted that the job of vaccinator has often been given to the dullard of a team and that a day's supply may be made up before starting work. Better supervision would prevent this cause of failure.

(2) Even in the best regulated area of Africa, it is virtually impossible to find every individual--even every village. Few Africans never travel, and seasonal and other migrations (which are not stopped or completely regulated by frontiers) spread infectious diseases.

(3) The very presence of frontiers conduces to the spread of communicable diseases. Frontier areas seem always to show higher prevalence and/or obstinate persistence of sleeping sickness, yaws and leprosy; outbreaks of smallpox are not uncommon in roadless villages near frontiers.

(4) There are ritual objections to smallpox vaccination in some countries, e.g., the south of Dahomey. "Send us your vaccinators. We shall take pleasure in cutting their throats" was actually said to a WHO Smallpox Adviser in 1961. At best, it is never a popular measure, though purer vaccines and cleaner techniques could decrease its unpopularity.

Smallpox is such an infectious disease, capable of achieving epidemic status rapidly from a single carrier, that the above reasons are more than sufficient to account for its persistence.

Global smallpox eradication, resolved on in 1958, was declared by the World Health Assembly of 1965 to be one of the major objectives of WHO. In 1964, WHO launched an inter-country smallpox eradication project in Africa. Two consultants were assigned to the project, one for West African countries (stationed initially at Monrovia) and one for East and Central African countries (stationed at Nairobi). The report of the Director General of WHO to the World Health Assembly, May 1965, stated that "In virtually

all (African) countries, programs for the systematic vaccination and maintenance operations must yet be evolved. In the Ivory Coast the attack phase is reported to have been completed but very active maintenance phase operations will have to be conducted, since smallpox is endemic in the surrounding countries....With substantial assistance from outside the countries and an active interest on the part of the countries themselves, eradication of the disease by the end of 1974 is a conceivable target."

The U.S. Government made a five-year commitment as of July 1966 to support the eradication program in 19 countries of West Africa, including the countries under review.

If a campaign against smallpox is to succeed, the following are necessary:

(1) Genuine realization of the importance of the matter, by politicians as well as public health authorities. Money must be voted and highly placed officials seconded to direct affairs. Complete international coordination of the campaign--including English-speaking as well as French-speaking countries--must be realized to be essential.

(2) Ad hoc health education must precede the campaign.

(3) Supervision must be active and energetic throughout. (There is no lack of other, more interesting, work for men of the caliber required, and this will not be an easy consideration to put into effect.)

(4) A high quality, thermostable vaccine must be supplied in adequate quantities, and cheaply. This condition, apart perhaps from price, can most easily be put into effect. WHO opinion is that the laboratories at Lagos and Nairobi, and the Pasteur Institute at Dakar, can supply the needs of tropical Africa. WHO has reluctantly declined to supply assistance for reopening the laboratory at Kindia, Guinea, as a vaccine production center, on account of difficult living conditions there.

With all the other preoccupations of public health authorities in Africa, with the lack of liaison across certain frontiers, and with the extreme shortage of medical personnel of the type required for this exacting and relatively unenthralling work, it is hardly possible to be optimistic about the prospects for smallpox eradication. Nevertheless, the very facts that smallpox is being held in check, and is very seldom exported to the outside world from Africa, imply that the efforts being made are not wasted. They should be continued and encouraged."

SUMMARY OF CDC FIVE YEAR PROGRAM
for
NIGERIA

1. Country Situation

a. Incidence of Disease

Nigeria, with an estimated population of 60 million in 1966 (about half the total population in the 19 countries encompassed in this program) is the principal focus of smallpox in West Africa. The northern region is one of the most highly endemic in the world. Recorded cases of smallpox totalled 120,662 and smallpox deaths 17,501 in the years 1967 through 1966. In the four year period (1961-64) recorded measles cases totalled 201,241 and deaths 3,771. Measles incidence and deaths are notoriously underreported; victims require 20% of all clinic and hospital beds according to some estimates and the actual death rate is estimated at 5 to 10 per cent of incidence.

b. Defense Effort

Health protection and protection is a function of the regions in Nigeria. However less, the Federal Government is prepared to mount a nationwide smallpox eradication program. Smallpox detection is inadequate; vaccination has been widely practiced for many years but a planned campaign to eradicate the disease was several times deferred since 1962 because of financial difficulties. In early 1965 with help from WHO and UNICEF, Nigeria expanded and modernized its vaccine production laboratory and reached a production goal of 20 million doses per year for use in multiple pressure method. This vaccine, however is not up to U.S. standards for quality. A pilot program of measles vaccination was carried out among 12,000 children in the Eastern Region in 1965.

The Nigerian Government was in the process of seeking a solution of the second major problem--transport--in November, 1965 when President Johnson's offer of aid was received and immediately accepted.

c. Increases Required Over Ex-Cotton Programs

1. Smallpox Eradication: To replace the present random, poorly coordinated and often repetitive, vaccination program reaching about 10 million people a year, but which leave large segments of the population untouched, a nation-wide campaign is planned building up to a coverage of about 20 million people annually in the years from 1969 through 1971. This would result in mass vaccination of the entire population twice between November, 1966 and the end of the program in 1971 when virtual eradication should be achieved.

2. Measles Control: To expand present pilot projects into a nation-wide mass attack vaccination program reaching all children between 6 months and 4 years of age in the 1966-71 period--an estimated total of 23,537,00 vaccinations--and a maintenance program thereafter is proposed.

d. Increases Required for FY 1966-72

(1) A.I.D.

Commodities

Vaccine	$12,[illegible],000
Vehicles & Spares	1,[illegible],000
Jet Injectors	1,000,000
Refrigeration Units	60,000
Field Equipment	94,000
Other Items	135,000
	$15,[illegible],000

Technical Assistance

Technicians	$ 1,000,000
Logistical Support	495,000
	1,495,000
	$17,284,000

(2) GOI

Personnel	1,700,000
Gasoline, Oil	255,000
Travel	95,000
Smallpox Vaccine	367,000
Misc.	60,000
Housing for U.S. Tech.	104,000
	$2,731,000

(3) WHO

Public Health Laboratory Advisor

Yaws Advisor (will coordinate with smallpox program as will other WHO advisors throughout country.)

(4) UNICEF

Will continue to provide material support (vehicles and refrigerators) for development of public health facilities.

c. Indirect Support of U.S. Personnel

The GOI will fund the following local costs: local personnel, fuel, maintenance and repair of vehicles assigned to the project except for vehicles used by U.S. technicians for which AID will fund the fuel, maintenance, repair

and driver costs; multiple pressure vaccine, local travel of Nigerian personnel, office supplies, education materials and their distribution, housing and office space for U.S. technical personnel and local transit and storage costs of supplies and equipment.

AID will finance all support and travel of U.S. technicians with the exception of housing, office space and incidental costs noted above.

f. Method of Operation

Overall supervision will be exercised by a Smallpox Eradication/Measles Control Program Unit to be established in the Federal Ministry of Health under the Senior Health Officer. A U.S. medical officer will be assigned as an integral part of the Unit. Similar program units will be established in each Regional Ministry of Health including U.S. technicians.

The program will extend over a five year period in the three phases as follows:

Phase I - [illegible] - Development of plans, training, pilot programs beginning with 9 operational teams and expanding to 59, 4,000,000 smallpox and [illegible],000 measles vaccinations assessment and surveillance procedures instituted.

Phase II - Attack Phase FY [illegible] - Full field operations covering [illegible] of total population each year, 25,000,000 smallpox and 7,910,000 measles vaccinations. (Maintenance phase will be begun with vaccination of 1,[illegible],000 infants against both diseases.)

BEST AVAILABLE COPY

Phase III - Maintenance- FY 1970 and FY 1971 (to continue beyond five year AID program)- Mop up problem areas; revaccination of the entire population against smallpox, attain 100% vaccination against measles in susceptible group.

The 59 newly created specialized mobile teams, each consisting of five persons for smallpox alone or 7 for combined smallpox-measles, will work from schools, health centers, markets and other public places. They will be preceded by information propaganda campaigns. The teams will use the jet injector system of vaccination supplemented by the multiple pressure method where necessary. The average productivity of each team is estimated at 500,000 smallpox and 100,000 measles vaccinations per year. The teams will keep accurate records, make the initial assessment of the program and lay the basis for the surveillance program. Each team will be equipped with one vehicle, one motorbike for the leader, two jet injectors for each vaccine used, refrigeration or cooling equipment and miscellaneous field supplies.

B. National Government Activities

All levels of the Federal and Regional Governments support the program and are able and prepared to provide the funds, personnel and facilities necessary. The present military government gives indications of providing the central direction and coordination necessary for success of the program.

This program is expected to release for other health needs the 2/3 of all present hospital beds and a substantial percentage of health personnel now required for smallpox and measles patients. It will also improve the quality and capacity of the health services generally.

Terms of Reference
for
Preliminary Study to
Determine Possibility
of Initiating a Measles Control/Smallpox
Eradication Program in Nigeria in FY '67

Objective: On the assumption it is in the U.S. interest to provide some preparatory assistance to the Nigerian program during FY '67 (the first year of its shift from a smallpox control program to one of eradication), at the same time the U.S. is expanding the measles/smallpox programs in the present 11 countries and initiating programs in Gabon and Senegal and possibly Ghana, information on the status of the Nigerian plans and potential capabilities is required in order for AID to make a judgment as to initiating the Nigerian program in FY '67 rather than '68. AID needs the following specific information on the Nigerian plans as part of the preparation of the activity description and M-1:

1. Time period involved.

2. Schedule for coverage and plan of operation.

3. Personnel requirements and Nigerian availability.

4. Vaccine and equipment requirements and Nigerian availability. With respect to the smallpox vaccination method, when are Nigerians prepared to shift to the jet injector method? Does the present multiple pressure vaccine used by Nigerians prolong the time required? What are the plans for measles control program?

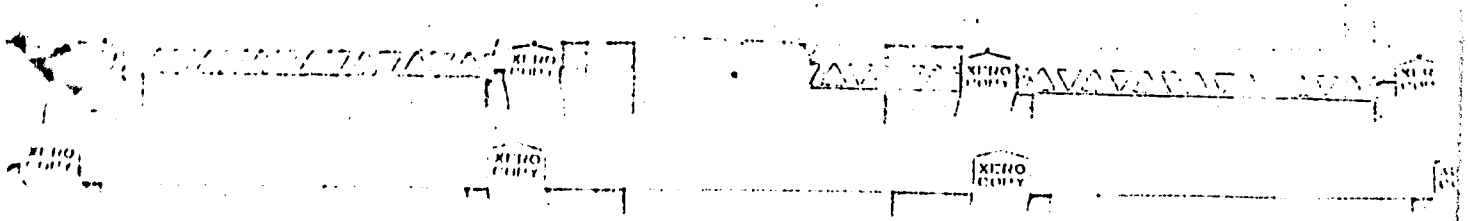
5. Funding in terms of Nigerian basic requirement plus the support cost component for U.S. assistance.

6. Assessment of Nigerian administrative and technical capability to undertake program planned.

7. What type of activity could the U.S. undertake of limited pilot and demonstration nature beginning in FY '67 which would give the U.S. the basis for determining feasibility and timing for moving into the full program. A "pilot" activity is intended in this instance as something considerably less than covering 13.5 million the initial year, and should be at a level which would not undercut Nigerian efforts if other Africa program priorities and limitations on technical personnel resources should necessitate less assistance than the magnitude planned in '68. It should represent enough of a sample to give a measure of how a large scale program would operate and the problems which would be encountered.

8. Details on timing and nature of advance procurement of vehicles and other equipment required for launching a full Nigerian program.

While the GON must be involved in this survey for AID, it should be understood by all it is a preliminary survey and represents no commitment on the part of either the GON or the USG. Any assistance to be provided will be in conformance with the general terms of reference which are applicable to all countries participating in the program.



AGENCY FOR INTERNATIONAL DEVELOPMENT (A.I.D.)

PROJECT AUTHORIZATION

1. PROJECT NUMBER	3. COUNTRY	4. AUTHORIZATION NUMBER
625-11-510-116	Central/West Africa Regional	0142

2. PROJECT TITLE

Measles Control/Smallpox Eradication

5. AUTHORIZATION DATE

December 15, 1970

6. PROP DATED

IA Paper Approved 7/29/66

7. LIFE OF PROJECT

a. Number of Years of Funding: 6
Starting FY 19 66 Terminal FY 19 71

b. Estimated Duration of Physical Work After Last Year of Funding (in Months): ____

FUNDING BY FISCAL YEAR (in U.S. $ or $ equivalent)	DOLLARS		P.L. 480	LOCAL CURRENCY Exchange Rate: $1 =			
				U.S. OWNED		HOST COUNTRY	
	GRANT	LOAN	CCC + FREIGHT	GRANT	LOAN	JOINTLY PROGRAMMED	OTHER
Prior through Actual FY	27,398,000						
Operational FY	2,000,000						
Budget FY							
BUDGET + 1							
BUDGET + 2 FY							
BUDGET + 3 FY							
All Subsequent FY's							
TOTAL							

9. DESCRIPTION OF SPECIAL FUNDING CONDITIONS OR RECOMMENDATIONS FOR IMPLEMENTATION, AND LIST KINDS AND QUANTITIES OF ANY P.L. 480 COMMODITIES

This PROP is to reflect prior approval given in action memos to AA/AFR dated 7/29/66 and 1/5/70.

10. CONDITIONS OF APPROVAL OF PROJECT

(Use continuation sheet if necessary)

11. Approved in substance for the life of the project as described in the PROP, subject to the conditions cited in Block 10 above, and the availability of funds. Detailed planning with cooperating country and drafting of implementation documents is authorized.

This authorization is contingent upon timely completion of the self-help and other conditions listed in the PROP or attached thereto.

This authorization will be reviewed at such time as the objectives, scope and nature of the project and/or the magnitudes and scheduling of any inputs or outputs deviate so significantly from the project as originally authorized as to warrant submission of a new or revised PROP.

A.I.D. APPROVAL	CLEARANCES	DATE
Richard Bumpers	AFR/CWR:HKLennon	
SIGNATURE	AFR/DP:DShear	12/15/70
AA/AFR, Acting Asst. Admin.	AFR/CWR:FJSpencer	12/15/70
TITLE	A/CONT	
12/15/70 DATE		

DECONTROLLED PER MEMORANDUM TO REFERENCE CENTER FROM FLOYD R. SPEARS, AFR/EMS DATED AUG. 2, 1977. (SEE ENCLOSED MEMO.)

Proj. No 6250116

625-116

JAN 5 1970

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR

A.I.D. Reference Center Room 1656 NS

THRU: AFR/DP, Mr. David Shear

FROM: AFR/CWA, W. Haven North

(w/attachments)

Problem: To approve a strategy based on a NCDC sample assessment of countries, a tentative level of funding of $7.0 million, and plan of action for Phase II of the measles/smallpox program, including exploration with the countries for follow-up action in the program (particularly for measles) to take effect at the end of Phase II in FY 1971.

Discussion: The aim of this memorandum is to highlight the major aspects of the project and to set forth recommendations for Phase II operations. (A resume of the background of the project is contained in TAB A.)

As soon at the time Phase I was approved, the principal issue for Phase II would be whether to proceed with a second mass vaccination or to shift into a maintenance program defined as vaccinating newborns, immigrants and those missed in the mass campaign. This issue has largely been overtaken by events in that NCDC, on the basis of experience and logic has already, in the final stages of Phase I, put into effect a plan of operations which it recommends for Phase II. A second mass vaccination is no longer being considered.

Our experience in Phase I, furthermore, has brought into sharper focus questions which include:

1. What national and regional operational structures are being developed by this project and to what degree will they be able technically to carry on this work with the termination of A. I. D. assistance after June 30, 1971?

2. As a corollary to the above question, to what extent will the individual countries and the regional organizations be able to finance continuation of these activities?

3. If, as expected, the answers to the above questions indicate that the countries and regional organizations require continued outside help, what should A. I. D.'s role be?

4. What is being planned and what needs to be done in the countries flanking the area of our project to protect that area from re-infection?

These questions are involved in the discussion which follows. In some cases we do not have the information to arrive at conclusions and in those cases we indicate the need for further study and analysis.

The immediate questions to be decided now are the Strategy and Funding Level for Phase II (roughly the final two years of the program) and the process of

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(w/attachments)

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JULY 1973 EDITION
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UNITED STATES GOVERNMENT

Memorandum

TO : Reference Center, Ms. Joanne Paskar

DATE: August 2, 1977

FROM : AFR/EMS, Floyd R. Spears

SUBJECT: Declassification of A.I.D. Documents

This memorandum addresses the following A.I.D. documents:

a. Measles Control and Smallpox Eradication Program dated Jan. 5, 1970

b. CAP on Trans-Cameroon Railroad (Phase II)

c. Mali -- Proposal and Recommendations on Veterinary Laboratory

d. CAP -- Liberia -- Improvements of Roberts International Airport, Phase II (Construction)

e. CAP -- Swaziland -- Agricultural Development Loan

f. CAP -- Ethiopia -- Malaria Eradication -- Phase I

g. CAP -- Somalia -- Mogadiscio Water Supply

h. CAP -- Tanzania -- Agricultural Projects Support

i. CAP -- TANZAM Highway Phase III

j. CAP -- Uganda -- Livestock Development

The above listed documents have been reviewed by appropriate staff personnel assigned to Africa Bureau to determine if these documents should be declassified. Based on this review, no justifications have been identified for the continued classification of these documents. Therefore, this memorandum hereby authorizes the declassification of all documents listed.

analysis to see what changes may be necessary in the strategy to meet our concern for the post-Phase II period.

I. Strategy:

A. I. D.'s objectives have been and are to "contribute" to the eradication of smallpox and the control of measles in Central and West Africa. According to the best available technical information and the dramatic success of the project in the field, the goal of eradication of smallpox appears attainable within the five-year period, barring unforeseen social or political upheavals. The issue for measles, however, is not so clear. Although it had been hoped that the project would bring the 19 countries to the point where they could control measles after the five-year period, this was not a basic assumption in the original plan.

Our basic objective for both diseases continues to be a "contribution" to the eradication of smallpox and to the control of measles within the five year period.

Since the latest information, based on assessment of a representative sampling of countries, indicates that the effectiveness of our "contribution" to smallpox eradication and measles control varies widely between the two diseases, we should consider the two separately.

A. Smallpox

As of March 19, 1969, WHO reports that 5344 cases of smallpox occurred in the 19-country area in 1968 compared to 10,813 in 1967, a decrease of 50.6 percent. Furthermore, the figures for the first period of 1969 show an 88 percent decrease compared with the same period in 1968. In 1968 monthly smallpox reports were consistently below the monthly average for the 1960-1967 period. The trend continues into 1969 with only 482 cases reported through October 1969.

In its assessment of the program to date, WHO concludes that:

(1) The Phase I mass vaccination operation "was adequately designed and executed to provide a high level of immunity in the present population."

(2) "In general an acceptably high level of coverage has been attained in all age and population groups" and this "in conjunction with outbreak containment activities has been adequate in most areas to interrupt smallpox transmission."

(3) "The steady entrance of susceptible persons into the population by birth is gradually reducing the proportion of immune persons in the population." This "dilution effect" is especially "present in the under-one

age group as a result of new births" but "the immigration of people from other and unvaccinated areas has contributed to the dilution effect."

On the basis of these findings, NCDC experimented with and adopted new tactics for the campaign designated as "Eradication Escalation" (SEP Report, Vol. III, No. 2, April 1969). According to that report, "tactical priority" in smallpox mass vaccination was originally "given to the areas of highest smallpox incidence" and once a regular schedule was begun "it was not to be interrupted for epidemic control work in areas not yet reached by the mass campaign."

This tactic was challenged as the programs in several countries "gained experience in dealing with smallpox outbreaks in unvaccinated areas" and this "experience demonstrated that outbreak control activities in unvaccinated areas often contributed to the sharp decline of smallpox incidence without detracting from the over-all effectiveness of mass campaign activities."

"Eradication Escalation", comprising the following elements, was effectively applied thereafter:

(1) The detection of smallpox outbreaks by all possible means - reports from health centers, mobile teams, herdmen, teachers, persons, alert citizens, etc.

(2) Diligent investigation of all reported smallpox cases, determination of the full extent of the outbreak, designation of the target area for epidemic control measures, search for information on the events leading to the outbreak, and collection of laboratory specimens to verify smallpox. (An Outbreak is defined as one or more cases of smallpox occurring in an area previously free of smallpox).

(3) Outbreak Control by vaccination of a geographic or functional area around the case or cases as outlined in the Outbreak Investigation. (The SEP report points out that "This approach, therefore, is intermediate between the selective vaccination of contacts as practiced to contain imported smallpox in non-endemic countries and the indiscriminate mass campaigns required in the absence of outbreak investigation.")

(4) Communications. Weekly telegraphic reports to the Regional Office in Lagos, NCDC Headquarters in Atlanta and neighboring countries on the number of cases, geographic location and status of control activities.

B. Measles

The measles vaccinations are given to children of six months to four years old who are simultaneously vaccinated against smallpox.

NCDC reports that for the year 1968, a total of 169,060 cases of measles was reported in the 19-country area compared to 236,631 for 1967. Since reporting activities presumably are being strengthened by this project as time goes on, we can surmise that a higher percentage of cases was reported in 1968 than in 1967 and that, therefore, there has been a considerable reduction in the incidence of measles.

On the basis of the original 1966 estimate of a population of 110 million for the area, it was expected that 18 million children would be vaccinated against measles. Through November 1969, 16.4 million children have been reached. Based on 1969 population estimates there is a total of 119 million persons. It is now estimated that during the five-year period of the program approximately 24,824,590 children will have reached the age of six months. Based on the assumption that the A. I. D. five-year program would prevent a minimum of 41 percent of the cases and deaths, a minimum of 10,178,081 children will have been spared from measles by the present program, including 1,017,808 children who would have died.

While total control of measles was never intended and will not be achieved on the basis of the present rate and cycling of vaccinations, the program has resulted in savings of lives of a great many children, children, the prevention of considerable morbidity and sequelae such as blindness, deafness and brain damage. This may be the principal benefit that can be expected of the project as it is presently constituted.

If the current plan for Phase II measles vaccinations, with present A. I. D. assistance is not able to bring the disease under control, the chances of doing so will be far less when A. I. D. resources are withdrawn and the 19 countries may be forced to finance the purchase of vaccine and the cost of operations themselves.

There is much evidence to indicate that the Africans are far more interested in the measles than the smallpox vaccinations and that some countries accepted the latter in order to get the former. Unfortunately, the cost of measles vaccine appears to be prohibitive for most if not all of these countries to continue without outside help.

C. Phase II. NCDC Plan of Operations for Smallpox and Measles

Upon completion of the initial mass vaccination, the plan of operations for the smallpox and measles vaccination program will be limited to the following two activities:

(1) Surveillance, which is defined as assistance in the development and strengthening of reporting systems and methods to identify occurrence of disease and provide necessary vaccinations of people in the area surrounding the occurrence of disease to isolate the immediate area of outbreak and thus break the chain of infection.

Surveillance activities will be carried on for both smallpox and measles, with vaccination for either disease as required by the outbreak. Unless the immediate epidemic situation requires, measles will not be given with smallpox, nor smallpox with measles. Depending upon the state of country surveillance structure, efforts to seek out smallpox cases may be more aggressive than those for measles for the period immediately following completion of the mass vaccination.

(2) Maintenance, which is defined as providing vaccination for the following categories of susceptibles:

a. All newborns from six to eighteen months of age.

b. Migrants who may have entered the area since the last vaccination.

Maintenance vaccinations will be provided for both smallpox and measles simultaneously as part of their regular national health service schedule for covering the respective countries over a two to three-year period. All countries, however, will have certain densely populated areas which will receive annual cycling. All maintenance vaccination activities will be regularly assessed to assure maximum coverage.

II. Funding Level:

It is now estimated that the total cost for the five-year program, including Phase II, will run between $31.1 and $32 million as compared to the estimate of about $48 million contained in the original Technical Assistance Paper.

Of the revised total of $31.1 million, it is estimated that Phase I will cost $24.1 million (compared to the original estimate of $29 million); and Phase II $7 million (compared to the original estimate of $19 million).

The $31.1 million estimate for both Phases covers $20.5 million for vaccine, equipment and other commodities, $10.1 million for HQDO services, $131,000 for participant training and $380,000 for SAS costs.

The substantial reduction in total estimated costs of the five-year program is due to the following principal factors:

A. Refinement, on the basis of actual experience, of the original illustrative budget.

B. Elimination of the second mass vaccination against smallpox and institution of surveillance and maintenance activities with consequent savings in commodity costs in Phase II.

C. Reduction in the cost of the measles vaccine.

D. Reduction in the age limit of children receiving the measles vaccinations from six to four years in most places.

E. Elimination of a considerable number of in-depth country assessments as a result of experience and knowledge derived from the first several in-depth assessments made.

Initially, it was calculated that Phase I would be completed within two to three years in all countries (except for the Gambia which because of its small size required only one year). Except for Mauritania and Nigeria, because of factors completely beyond the control of either A. I. D. or WHO, there have been no significant delays in completing Phase I in spite of difficulties in negotiating Project Agreements and initiating procurement on such a massive scale. It is considered remarkable that despite problems in logistics and political disturbances such a complex program has been maintained largely on schedule.

While there is general agreement on the technical accomplishments, there have been operational deficiencies in the management of the project as noted by IGA and by the Auditor General in their reviews. These deficiencies are being examined. Some changes have already been instituted and others are under study.

III. National Capabilities to Carry on the Program

Mobile endemic disease teams were a part of the health structure of most, if not all, French-speaking countries before this program began. There were no mobile units in the English-speaking countries, but, as a result of this program, these countries have initiated mobile team usage.

The smallpox/measles program is the first nationwide national mobile preventive medical effort in the Gambia, Nigeria, Ghana, Liberia and Sierra Leone. In addition, it is the first coordinated nationwide effort against these diseases in French-speaking Senegal, Cameroon, Gabon, Niger, C. A. R., Guinea, Togo and Mauritania. By tradition the national endemic disease services have been weighted toward curative rather than preventive medicine. With the advent of this program, a major shift is evolving toward emphasis on the preventive aspects incorporating both mobile and static services. Some training is being provided at all levels - from the policy planning level in the Ministries of Health through programming down to the operational level. The general upgrading of reporting and diagnostic procedures is strengthening the capacities of these services.

The full degree to which the national health services of the countries have been expanded as a result of this program is not known but it is certain that expansion has been considerable though varying from

country to country. We are working with NCDC to review the health structures in order to gauge more accurately those which, without major assistance, can continue to function following Phase II, and those which must be strengthened in order to provide a national capability to carry on after the termination of the present program in FY 1971.

An example of the magnitude of the cost of an adequate health structure to maintain smallpox/measles control is given in the NCDC assessment of the program in Northern Nigeria where about 280 Nigerians were employed from the senior health superintendent down to members of the vaccinating teams, with a country expenditure of over $250,000 during FY 1968 and FY 1969 and U. S. assistance of $1,674,000 making a total cost of over $1,925,000. Correspondingly, in Western Nigeria there were approximately 97 Nigerians employed with country expenditure of $158,736; U. S. assistance of $983,212, making a total cost of $1,142,000. These contributions by the Nigerian states, though far below the levels needed to finance the program without outside help, nonetheless are considered remarkable in view of the war expenses and the tax riots in the Western State.

The reports submitted by fifteen of the countries (including Nigeria) at the jointly sponsored WHO/A. I. D. meeting in Lagos in May indicated a total of 1966 African employees involved in the program in these countries. The reports showed varying smallpox/measles structures in each country. When an analysis of each country program is made, an estimate of the cost to each country maintaining these structures during the remainder of the program and perhaps permanently thereafter can be made.

Assuming that the degree of support in Northern and Western Nigeria represents the limit of local contributions in these states and of the other countries for the future, apparently the program in all countries must be drastically curtailed if the costs of the continuation of the program is to be financed entirely by African funds after FY 1971.

An analysis is being made as to whether measles/smallpox should continue to get special treatment through specialized teams or whether a beginning should be made to integrate activities against these two diseases into the functions of general health teams.

IV. Capabilities of the Regional Organizations:

The two involved are the OCCGE in West Africa and OCEAC in Central Africa. OCCGE includes nine French-speaking countries, although for the purposes of this program, four English-speaking countries are also cooperating with it.

Funds for the commodities of four English-speaking countries in West Africa - Gambia, Ghana, Sierra Leone and Liberia - were programmed

through the OCCGE grant agreement with the concurrence of all parties. (Funds for Nigeria, which represents about half the total program, were provided directly through a Project Agreement). The English-speaking countries do not have a regional health organization. It is our hope that the OCCGE eventually will be expanded to bring these countries into membership.

OCEAC includes five French-speaking countries and steps are being taken to bring Equatorial Guinea (Spanish-speaking) into membership. OCEAC, from the inception of the program, has also taken on the responsibility of administering A. I. D. - financed commodities and providing technical assistance to Congo (B) since the U. S. does not maintain diplomatic representation in that country. (The pattern of the A. I. D. - OCEAC-Congo relationship was later used in the A. I. D. - OCCGE-Mauritania agreement after that country broke diplomatic relations with the U. S.)

OCCGE (initially a French institution) and OCEAC (with expatriate staff) are now in varying stages of Africanization. They are primarily coordinators and disseminators of information, but also carry out some research, training, and intermediate commodities. They are financed by assessments from member countries. OCCGE receives additional financial assistance from France. OCCGE and OCEAC are not sources of financing or of technical assistance to any appreciable degree. Therefore, as presently constituted they would not be able to fill the gap between resources and needs in the member countries in continuing activities against measles and smallpox.

Participants from 16 African countries in a seminar on smallpox eradication, organized jointly by WHO and A. I. D. and held in Lagos in May, recommended that their governments, under WHO, set up an Inter-State Coordination Committee on Communicable Diseases. This could help bridge the English-French and OCCGE-OCEAC gaps in the general functions of policy coordination and data gathering, analysis and distribution, but not the gap between needs and resources, except to influence outside donors to come in with some of the help needed.

V. Training:

Over 2450 health workers (vaccinators, clerks, and drivers) have been trained in Africa in the techniques of mass vaccination. Nine medical and non-medical Ministry of Health officials have received special training in Atlanta in epidemiology, bio-statistics, management of mass immunization programs, as well as the principles of smallpox eradication and measles control. Thirteen senior Ministry of Health officials have received training in Atlanta. In addition, counterparts from the Ministries of Health participated with WHO staff in a recent WHO inter-regional smallpox seminar held in West Africa. The operations of this West African program, almost entirely conducted

by nationals, is regarded by WHO as a model upon which other smallpox activities throughout the world are being patterned.

While the initial emphasis in training in Africa has been on the techniques of mass vaccination, efforts are now being directed to surveillance, diagnostic, and reporting procedures, and to the development of the infrastructure necessary for carrying out such activities.

VI. The Question of Combining Health Activities with Population Programs

The savings in lives from the measles and smallpox program will materially affect the population dynamics of the area.

We have been concerned by this problem and believe that some attempt should be made to link health programs with those aimed at population control. This will be analyzed in the overall review of our strategy indicated in this memorandum.

VII. Summary of Conclusions:

A. From the numerical point of view, we are within striking distance of our Phase I objectives of vaccinating all the people in the area against smallpox and children in the target ages against measles.

B. From the point of view of our strategy of "contributing" (and we interpret that to mean a substantial contribution) to the eradication of smallpox and the control of measles, the situation stands as follows:

(1) Smallpox: The mass vaccination effort of Phase I plus the surveillance and maintenance program proposed for Phase II augmented by actions in the next two years to improve the technical capabilities of the national health services after Phase II should result in virtual eradication of the disease by 1971 or within a few years thereafter.

(2) Measles: Briefly stated, the technical approach to measles control in Phase II includes vaccination of all newborns over six months of age. It is calculated that 4.9 million infants will annually enter this age group.

These infants will be reached during the maintenance programs of the countries. The maintenance programs will provide vaccinations for both smallpox and measles simultaneously as part of their regular national health service schedules to cover their countries over a two to three-year period. All countries, however, will have certain densely populated areas which will receive annual cycling. Therefore, some children will have contracted measles before being reached in the vaccination program as a result of the long

vaccination cycle. Even with this regime, the occurrence will be reduced by /1 percent.

Within the practical limitations of the countries to perform, the achievement of this reduction in incidence is considered to be a most significant degree of control. The degree to which such a percentage of immunes will interrupt epidemic transmission can be determined only on the basis of future experience as there is no existing data from which conclusions can be derived. This project is writing history in this respect.

Neither the national health services nor the regional organizations will be able to provide, after FY 1971, more than a fraction of the funds needed for measles control although they probably will be able to support a sufficient degree of smallpox maintenance. Therefore, unless plans are made within the next two years either for a gradual diminution of the measles program to the level the countries can support, or for continued external aid, there is likely to be a precipitate and distressing drop in such operations when this A. I. D. program terminates in FY 1971.

C. The strategy and plan of operations proposed by NCDC for Phase II appears adequate to the present situation and has already been put into effect at least in some countries, as a logical, money-saving development in the later stages of Phase I. No second mass vaccination of the entire population against smallpox is necessary and is no longer presented as alternative strategy for Phase II.

D. Since this program and population problems are directly interrelated, the effect of the one on the other and the consequences is being studied.

E. Considerable emphasis has been put on training Africans and strengthening health structures. This will be continued with especial attention to the development of health structures within the abilities of the African nations to maintain.

VIII. Proposed Course of Action by AID/NCDC

During Phase II operations between now and the end of the project on June 30, 1971, A. I. D. and NCDC intend to cooperate further with the countries, OCCGE, OCCAO and WHO in the development of a list of options from which the countries will make a judgment as to what action is possible for each to control measles and maintain smallpox eradication after June 30, 1971, with or without external assistance. See TAB B for examples of options which may be submitted by the countries together with information which will be required from each.

A letter will be sent from Dr. A. C. Curtis, AFR/ID/PH, early in 1970 to the individual Ministries of Health, OCCGE, OCCAO and WHO, in which he will reiterate the statement made at the WHO/NCDC sponsored

meeting in Lagos in May 1969 that A. I. D. assistance is scheduled to end on June 30, 1971. He will request all to cooperate in working towards the development of a country-by-country list of options to be completed by May 1, 1970.

Analysis of the options and the material used as a basis for their selection should clearly demonstrate the benefits which have been derived from A. I. D.'s effort and contributions to this program.

After the analyses and options have been reviewed by A. I. D. and NCDC, an A. I. D. sponsored, and perhaps financed, meeting will be held June 15, 1970 to discuss the options.

Since title to the material provided by A. I. D. resides in OCCGE, OCEAC and the Government of Nigeria, an effort will first be made to persuade the countries and organizations to develop a mechanism through which any future communicable disease control program could be carried on in the same 20-country regional context. Failing this, details must be worked out for the final disposition of the material remaining in the countries as of June 30, 1971.

The sequence and approximate timetable for the above is:

A. Letter to the Ministries of Health, OCCGE, OCEAC and WHO be sent early 1970.

B. Completion and receipt of individual country analyses - May 1, 1970.

C. A. I. D. sponsored, and perhaps financed, meeting of country representatives, OCCGE, OCEAC and WHO to discuss options, to determine those most feasible for each country, and to determine apportionment of remaining material in accordance with requirements - June 15, 1970.

During the last year of A. I. D. operations, July 1, 1970 through June 30, 1971, activities will be adjusted within each country (or regionally) insofar as possible to the option (s) selected for implementation after termination of the project.

RECOMMENDATIONS:

That you approve the strategy, plan of action and estimated funding level of $7. million for Phase II as described in this memorandum with the understanding that such funds as are required in FY 1970 will be based on specific operational needs and described in program documents at a later date.

That you approve the proposed course of action by AID/NCDC in the development of a list of options from which the countries may make a judgment as to what action each country may be able to undertake after June 30, 1971.

Upon your approval, the scope of work of the definitive FY 1970 PASA AFR(HA) 18-66 between A. I. D. and DHEW for the measles/smallpox program will incorporate the courses of action outlined above.

Approved: /s/ Samuel C. Williams, Jr.

Disapproved: _____

Date: JAN 5 1970

Enclosures:
1. TAB A
2. TAB B

Clearances:
AFR/CMA/RA:WSpencer (draft)
AFR/ID:RLRupard (draft)

AFR/ID/PH:ACCurtis:lmct;VBurati,AFR/CMA

BACKGROUND

This program, eventually including 19 Central and West African countries (the 20th, Equatorial Guinea was added in late FY 1969) began in January 1967. (Cameroon, C. A. R., Chad, Congo (B), Dahomey, Gabon, Gambia, Ghana, Guinea, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Sierra Leone, Senegal, Togo, Upper Volta). A. I. D. objectives were to make a contribution over a five-year period towards the eradication of smallpox and the control of measles in Central and West Africa. The smallpox aspect of the program represented the U. S. role in the worldwide campaign of WHO to eradicate smallpox. The U. S. interest in smallpox was responsive to a U. S. domestic interest in contrast to measles control originally initiated in response to U. S. foreign policy directive in French-speaking Central and West Africa.

The U. S. program was approved in principle by the A. I. D. Administrator and announced by the President on November 23, 1965. At that time, A. I. D. was already involved in a measles vaccination program in a number of French-speaking countries. In taking on the smallpox program, A. I. D. decided to combine action against the two diseases and therefore to extend its measles vaccination program to all the 19 countries covered by the smallpox campaign. Not all 19 countries placed equal importance on smallpox as on measles, but accepted the former in order to get the latter.

Main elements of the program approval were:

1. A general commitment by A. I. D. to support the program for five years through FY 1971, subject to annual appropriations, in two phases as follows:

Phase I: One mass vaccination of the total population of the 19 countries (about 110 million) against smallpox and of children (about 18 million) against measles. The funding level was approved specifically only for Phase I, requiring two to three years to complete in most countries.

Phase II: The work plan and funding level for Phase II, (the remainder of the five-year commitment, generally one to two years, depending on the country) was to be decided on the basis of an evaluation of Phase I operations when those were about 60 percent completed in each country to determine the type of activity to follow mass vaccination.

2. The participating countries were to be responsible for providing or arranging finances for the local costs such as National Health Service personnel, some vehicles, and the operation and maintenance of all vehicles both country and U. S. supplied. (WHO has provided some support costs for 11 of the 19 countries.) (Chad, Dahomey, Guinea, Liberia, Mali, Mauritania, Niger, Nigeria, Sierra Leone, Togo and Upper Volta).

3. WHO was to be responsible for smallpox eradication in the rest of Africa and especially to coordinate its operations in Congo (K) and Sudan

with the A. I. D. program in order to protect the flanks of the latter. (The WHO program is underway in those two countries and most of East Africa).

As shown on the attached schedule, Phase I for the most part will be completed this calendar year and some FY 1970 financing will be required for Phase II. Completion of Phase I will be delayed in the Eastern area of Nigeria because of the Nigerian civil war. It should be noted, however, that as of June 15, 1.8 million citizens in the Biafra area have been vaccinated against smallpox and approximately 727,000 against measles through a program supported by A. I. D., NCDC, UNICEF and the ICRC. The program in Mauritania was delayed because of the lapse in operations which followed the break in diplomatic relations with the U. S. but is now continuing under the auspices of the regional organization (OCCGE), of which Mauritania is a member, with WHO providing the technical assistance.

A number of Phase I assessments of key countries (Gambia, Northern Nigeria, Western Nigeria, Dahomey/Togo) have already been made or are in various stages of completion. The special information derived from them, as well as the experience gained from the regular operations, provide the basis for the conclusions and recommendations set forth in this paper.

The estimated cost of the five-year program used in the original Technical Assistance Paper and in the Congressional Presentation for the past several years was put at about $/8 million. This was on the original E-1's prepared by NCDC which envisaged two mass vaccinations against smallpox during the five-year period. Mr. Hutchinson, then Assistant Administrator for Africa, made a decision that although A. I. D. would support a five-year program, in principle, specific financing would be approved only for operations based on one mass vaccination against smallpox and concurrent measles vaccination of children between 1 and 6 years old until experience indicated what should constitute the entirety of the program.

ESTIMATED COMPLETION DATES PHASE I - MEASLES/SMALLPOX

1.	Cameroon	June 1969
2.	Central African Republic	January 1970
3.	Chad	December 1969
4.	Congo (B)	January 1970
5.	Dahomey	March 1969
6.	Equatorial Guinea	January 1971
7.	Gabon	June 1969
8.	Gambia	April 1968
9.	Ghana	March 1971
10.	Guinea	June 1969
11.	Ivory Coast	December 1969
12.	Liberia	August 1970
13.	Mali	May 1970
14.	Mauritania	June 1971
15.	Niger	June 1969
16.	Nigeria	
	Western	June 1969
	Mid-West and Northern	January 1970
	Eastern	?
17.	Senegal	March 1970
18.	Sierra Leone	June 1969
19.	Togo	June 1969
20.	Upper Volta	June 1970

Based on NCDC Info
December 11, 1969

AFR/ID/PH

OPTIONS AND BACKGROUND MATERIAL

Examples of options open to the countries might be as follows on measles/ smallpox:

1. To continue the present plan of vaccinating susceptibles who are reached in the regular circuits of the endemic disease teams.

2. To intensify vaccinations by shortening the cycles in the cities and continue the present cycles in the rural areas.

3. To shorten the cycles in both the urban and rural areas.

4. To bolster the surveillance systems to assure adequate disease detection and vaccination around outbreaks.

Material to be submitted with each option would include:

1. A plan of operations setting forth the objectives and duration of the program in each country.

2. Administrative and supervisory organizations required to implement.

3. The specific immunizations to be given, for example - number of antigens to be used and schedule of innoculations for each.

4. The numbers of each injection.

5. Quantity of vaccines and cost.

6. Personnel requirements (teams).

7. Material (including vehicles, jet guns, etc. and cost).

8. Maintenance costs.

To facilitate a selection of an option, an analysis will be made by the countries, OCCGE, OCCAC and WHO, with the assistance of NCDC, as to what has been accomplished during the five-year period of A. I. D. assistance. The analysis would include for example:

1. The number of deaths prevented.

2. The days of illness or incapabilities avoided.

3. An attempt to estimate the economic importance to each country.

4. The educational effect in convincing the population to avail themselves of modern preventive medicine resources.

5. The value to the government in preventing social unrest.

6. What has been the organizational and administrative development, for example - concrete illustrations of any shifts in public health planning and budgeting by the country toward preventative rather than curative medical services.

7. An inventory of administrative capability, trained personnel and materiel which will remain in the country from the A. I. D. assistance project which would be available for implementing the selected option.