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DEPARTMENT OF STATE  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
Washington, D.C. 20523

CAPITAL ASSISTANCE PAPER

Proposal and Recommendations  
For the Review of the  
Development Loan Committee

PARAGUAY - MALARIA ERADICATION

AID-DLC/P-540

UNCLASSIFIED

DEPARTMENT OF STATE  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
Washington, D.C. 20523

UNCLASSIFIED

AID-DLC/P-540  
April 19, 1967

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Paraguay - Malaria Eradication

Attached for your review are the recommendations for authorization of a loan in an amount not to exceed \$1,900,000 to the Republic of Paraguay ("Borrower") to assist in financing the United States dollar and local currency costs of equipment, material, and services necessary for the conduct of a program for the eradication of malaria from Paraguay ("Project").

If any member of the DLC has a basic policy issue arising out of this proposal, it is requested that you communicate this to us as early as possible but in no event later than close of business on Thursday, April 27, 1967. In the absence of any indication that there is a fundamental policy problem, we propose to proceed with the authorization of this loan promptly after April 27, 1967.

Rachel C. Rogers  
Assistant Secretary  
Development Loan Committee

Attachments:

Summary and Recommendations  
Project Analysis  
ANNEXES I-IV

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April 19, 1967

PARAGUAY -- MALARIA ERADICATION

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April 19, 1967

PARAGUAY - MALARIA ERADICATION

SUMMARY AND RECOMMENDATIONS

1. **BORROWER:** The Government of Paraguay. The execution of the project will be the responsibility of the Ministry of Health, through its Servicio Nacional de Erradicacion del Paludismo (SENEPA), which will further be the recipient of AID and PAHO technical assistance.
2. **AMOUNT OF LOAN:** Not to exceed \$1,900,000, all or substantially all for local currency expenses, to be disbursed during the first five years of the eight year project.
3. **LOAN TERMS:** Repayment over a 40-year term from date of first disbursement of loan funds, with a 10-year grace period on amortization of principal. Interest will accrue at the rate of one percent annually during the grace period and at two and one-half percent annually thereafter on the balance outstanding.

4. **COST OF PROJECT:**

	<u>Total</u>	<u>First 5 Years</u>
GOP	\$3,690,000	\$2,040,000
AID Loan	<u>1,900,000</u>	<u>1,900,000</u>
Local Cost Total	5,590,000	3,940,000
PAHO/UNICEF	1,360,000	1,280,000
AID Grant (TA)	<u>200,000</u>	<u>200,000</u>
Dollar Cost Total	1,560,000	1,480,000
GRAND TOTAL	7,150,000	5,420,000

5. **PURPOSE:** To eradicate malaria from Paraguay, thereby improving the health level of the populace and increasing the productivity of areas now subject to the risk of malaria, which include some of the more productive and potentially productive agricultural regions in Paraguay.

6. **BACKGROUND:** Until 1955, the Ministry of Health was engaged in a limited malaria control program. With the desire to solve an important health problem and comply with WHO's (1953) and PAHO's (1954) resolutions recommending a world-wide approach to eradicate malaria, Paraguay created the National Malaria Eradication Service (SENEPA) on September 12, 1957, and embarked on a malaria eradication spray program with PAHO's technical assistance plus financial assistance from UNICEF and predecessor agencies of AID.

For lack of funds and administrative deficiencies, the spray program was interrupted in March 1961. SENEPA continued in existence, but limited its activities to counteracting local outbreaks of malaria and to the preparation of necessary preliminary studies for resumption of the nationwide eradication campaign. In December 1964, at the insistence of PAHO and UNICEF, SENEPA was reorganized; PAHO, UNICEF and the USPHS Intensive Review team have approved this reorganization. The performance of its limited function was, on the whole, both competently handled and useful as a preparation for the planned new campaign.

7. **PROJECT DESCRIPTION:** The purpose of this project is to assist the GOP in their proposed national Malaria Eradication Program, which will be coordinated with the bordering countries of Argentina, Bolivia and Brazil. This program is planned to eradicate malaria from Paraguay over a period of eight years, after which the responsibility for maintaining the country malaria-free would be transferred to the general public health department of the Ministry.

More than two-thirds of the known malaria cases in Paraguay are presently appearing in the Departments of Caaguazu and Alto Parana, where the GOP is placing great emphasis on opening up new agricultural lands, as part of the national land reform and agricultural productivity program, and is constructing the Acaray hydroelectric complex. Therefore it is imperative that the Malaria Eradication Program be placed in operation so as to prevent the disease, which has reached epidemic proportions in the last year, from further retarding the economic and social progress of the country.

8. **ALTERNATE SOURCES OF FINANCING:** As all or substantially all of this loan is for local cost financing, this project is not suitable for the Export-Import Bank. The IDB (letter of December 14, 1966) and IBRD (letter of December 5, 1966) have also indicated they are not interested in financing this project.

9. VIEWS OF COUNTRY TEAM: The Country Team gives this project a high priority on both social and economic grounds, and recommends authorization of this loan.
10. STATUTORY CRITERIA: All Statutory Criteria have been or will be met.
11. ISSUES:
  - a. Joint Fund/Co-Administrator: As discussed below, the project committee feels that this project will be most effectively administered if it is funded out of a joint AID/GOP fund held in the Central Bank of Paraguay and if one of the USPHS/PASA technicians serves as co-administrator of SENEPA for the term of the loan; he would also be co-administrator of the joint fund. This type of organizational relationship is not usually recommended for use under loans because such a method does not have the degree of institution building effects normally desired. However, the primary objective of this program is not so much one of institution building as the eradication of a specific disease in the shortest time possible. Therefore, the project committee recommends said organizational framework in order to assure rapid and effective implementation and successful completion of the project. The indirect, longer term institution building effect of the program is discussed in Section I, E, 10.
  - b. Grant Funding of USPHS/PASA Technicians: It is the opinion of the project committee that the results of such grant funding are so greatly superior in terms of increased job effectiveness as to overcome the general policy reasons advanced in favor of loan funding technicians: although the disparate salaries of the AID technicians vis-a-vis their local counterparts and the necessary overseer functions of the North Americans are acceptable to the locals when the cost is paid out of U.S. funds, when this becomes a charge against the future resources of their own poor country, their resentment could become sufficiently great to serve as a major hindrance to the formation of the necessarily close working relationship that should exist for maximum project effectiveness.
  - c. GOP Counterpart Fund Availability: An earmarked one and one-half percent tax, collected by the Social Security Institute (IPS), will assure an adequate GOP contribution to the first five years of the eradication program, but will

-iv-

leave a \$370,000 shortfall for the last three years. If, as seems quite possible, expansion of the IPS system causes revenues from the one and one-half percent tax to rise faster than the cost of the malaria eradication program, some or all of the shortfall may be met with such revenues; however, a condition/covenant will be inserted that any shortfall shall be met out of general GOP funds.

GOP Debt Payment Arrearages:

d. It is recommended that a clause containing substantially the following language be inserted in the Loan Authorization and Loan Agreement to minimize the likelihood of this problem arising: "Prior to the execution of the Loan Agreement, all payments on all of the Borrower's debts to AID or its predecessor agencies shall be current.

e. GOP Global Self-Help: This Issue is dealt with in TOAID A-431.

12. RECOMMENDATIONS: Authorization of a loan to the Government of Paraguay for an amount not to exceed \$1,900,000, subject to the following terms and conditions:

a. Interest and Repayment Terms. The Borrower shall repay the loan to AID in United States Dollars within forty (40) years from the date of first disbursement under the loan, including a grace period not to exceed ten (10) years. The Borrower shall pay to AID in United States Dollars on the disbursed balance of the loan interest of one (1) percent per annum during the grace period and two and one-half (2½) percent thereafter.

b. Other Terms and Conditions.

(1) Borrower shall covenant to give full cooperation to the USPHS/PASA personnel assigned to the project.

(2) Prior to the execution of the Loan Agreement, the Borrower shall furnish AID, in form and substance satisfactory to AID, a schedule of the expected amounts of its contributions to the project to be derived from the one and one-half percent IPS tax during the estimated eight year program, 1967-1974. The Borrower shall accompany that schedule with (a) evidence satisfactory to AID that arrangements have been made for

automatic retention of said one and one-half percent IPS tax revenues by the Central Bank of Paraguay, acting as trustee for SENEPA, or such other means of assuring fund availability as AID may agree to in writing; (b) evidence that its budgeted 1967 contribution to the project is current; and (c) evidence that any shortfall in the project will be met out of the Borrower's general funds.

(3) Borrower shall covenant that all clothing provided by SENEPA to working personnel as part of this program shall bear Alliance for Progress markings satisfactory to AID.

(4) Prior to the execution of the Loan Agreement, the Borrower shall furnish AID in form and substance satisfactory to AID evidence that the contributions to the Project scheduled for UNICEF and PAHO will be available on a timely basis and that UNICEF and PAHO have agreed to give full cooperation to the USPHS/PASA personnel assigned to the project.

(5) The Borrower shall covenant faithfully to carry out its Plan of Operation and to obtain the approval of AID, PHS, UNICEF and PAHO before modifying the Plan.

(6) Prior to the execution of the Loan Agreement, the Borrower shall covenant to provide the resources in addition to the AID loan (including any increases required over the presently scheduled commitment resulting from increased costs) necessary to achieve the eradication of malaria within its territory and to use its best efforts to prevent the reappearance of malaria in that territory; in furtherance of that undertaking the Borrower shall consult periodically with representatives of AID, or such persons as AID may nominate, during at least three years after the last disbursement.

(7) The Borrower shall covenant that it will maintain, for the full eight years of the project or other such period as AID and the Borrower agree, the Servicio Nacional de Erradicacion del Paludismo (SENEPA) as a separate administrative and technical entity reporting directly to the Minister within its Ministry of Health and Social Welfare, for the purpose of implementing this project.

(8) Equipment, materials and services (except marine insurance) financed under the loan shall have their origin in and be procured from the United States or Paraguay. Marine

insurance financed under the loan shall be placed in the United States with a company authorized to do marine insurance business

(9) United States Dollars utilized under the loan to finance local currency costs shall be made available to the Borrower or its designee through SIC procedures and shall be used only for procurement in the United States.

(10) Borrower shall covenant to promulgate administrative regulations satisfactory to AID for SENEPA and to cooperate in the formation of a Malaria Advisory Council and a Personnel Committee satisfactory to AID.

(11) Borrower shall covenant to coordinate its Program with those of its neighboring countries in the manner recommended by the USPHS/PASA advisors.

(12) Prior to the execution of the Loan Agreement all payments on all of the Borrower's debts to AID or its predecessor agencies shall be current.

(13) Prior to the execution of the Loan Agreement, the Borrower shall have agreed with A.I.D. on the establishment of the SENEPA joint fund account and the scope and nature of the U.S. Co-Administrator's duties.

(14) The loan shall be subject to such other terms and conditions as A.I.D. may deem desirable.

PROJECT COMMITTEE:

Loan Officer	:	PNWenger, US AID/Paraguay
Malaria Advisors	:	RFontaine/IMacKensie/JThomsen
Counsel	:	NBerman

DRAFTING OFFICERS : PNWenger/RFontaine

SECTION I - DETAILED DESCRIPTION OF PROJECT

A. Borrower

1. Name and Description. The Borrower will be the Government of Paraguay, with responsibility for the execution of the project placed in the Ministry of Health and Social Welfare. Operations under the project will be carried out by the Servicio Nacional de Erradicacion del Paludismo (SENEPA), a semi-autonomous agency under the Ministry. SENEPA is headed by a Paraguayan Director who, advised and monitored by the various committees set forth hereinafter, will be responsible for implementation of the basic policy decisions reached by the Minister on the advise of the Malaria Advisory Council. Responsible to the Director will be one Paraguayan and one U.S. Co-Administrator who will be in charge of the detailed administration of the project. All project funds will be channeled through a joint fund account in the Central Bank of Paraguay from which drawings can only be made through documentation signed by both Co-Administrators.

2. Organization and Experience of Administering Agency. SENEPA has been in existence since 1957 and although in its earlier days it had some major administrative deficiencies these were substantially corrected in the 1964 reorganization, which was approved by PAHO and UNICEF and is now also approved by the project committee. Additionally, the presence of the U.S. Co-Administrator will amply fortify SENEPA against such administrative contingencies as may arise.

3. Previous U.S. and Other Assistance to Borrower. A.I.D. and its predecessor agencies, as well as Ex-Im Bank, have carried out both grant and loan programs in Paraguay for over 25 years; for more than five years IBRD/IDA, IDB and other non-U.S. Government units have also had comparable programs. Paraguay is considered well suited for external concessional development financing both because of the high degree of need and because the economic, financial, social, and political stability of the country make it probable that substantial beneficial effects will accrue from such financing.

B. Background of Project

1. 1951 - 1956. Prior to 1951 there was little factual information about malaria in Paraguay. In that year a Malaria

Control Service was organized under an agreement concluded between the GOP, PAHO and UNICEF. The following year epidemiologic investigations were started but there was no entomologist available and only hematologic and splenometric studies were possible. These were incomplete owing to inadequate staff resources and were accordingly not representative of the country as a whole. Concurrently with these studies and in order to gain experience in the techniques, spray operations using DDT were carried out from September 1951 to July 1953 as a pilot scheme in the Department of San Pedro. Thereafter, in 1954, preparations were made to spray with DDT the homes of a population of 162,000 in the Department of Cordillera. After two cycles of spraying this operation was discontinued in 1956.

2. 1956 - 1961. Based on the experience gained, a malaria eradication program was prepared in May 1956. This received the approval of PAHO and UNICEF and what had been solely a malaria control program since 1951, now became the Paraguayan Malaria Eradication Program, to be launched in 1957, in conformity with the continental policy of malaria eradication in the Americas. In January 1957, the preparatory phase was begun, and by July 1957, a census of 86 percent of the houses in the areas to be sprayed had been taken. The Paraguayan Government passed enabling Law 458 in September 1957, creating SENEPA as a Department of the Ministry of Public Health and Social Welfare with its own staff and a separate working account. In October 1958, spraying of the area of Paraguay, then considered to be malarious, was started as a combined operation of the GOP, PAHO/WHO and UNICEF. The U.S. Government, through ICA, supported the program under an agreement signed in January 1958.

This malaria eradication program was based on the spraying of all houses in the malarious districts, which were believed at that time to constitute only about 10 to 12 percent of the area of the country, with a residual insecticide. The attack was directed at the vector mosquito A. darlingi, which was believed to invade eastern Paraguay annually during the wet season by extension from Brazil of breeding grounds along the Paraguay and Parana Rivers. Dieldrin 50% was the insecticide of choice to be applied annually. However, there had been little epidemiologic investigation to support these presumptions, an insufficient survey of the types of structures to be sprayed, an incomplete census of houses and a considerable underestimate of the extent of the morbidity from malaria throughout Paraguay.

After three years of attack with dieldrin it was obvious that although there had been a significant reduction in the incidence of malaria, transmission had not been interrupted. A review undertaken in October 1960, showed that the whole of Paraguay, outside Asuncion, was malarious and that the vector A. darlingi was indigenous to every Department. This review included a study of house spraying techniques and of the substitution of other insecticides for dieldrin. As a result of this review, in March 1961, an agreement was reached between the GOP, PAHO/WHO, UNICEF, and ICA to suspend the eradication program until such time as SENEPA had been able to define more precisely the malarious areas, to study the behavior and density of the vectors and to develop a revised plan of campaign in which DDT would be the residual insecticide. This revision also indicated a considerable increase in the cost of the program, as eradication would have to be a country-wide activity and the measures would have to be meticulously and comprehensively applied. The structure of SENEPA was retained and it was charged with responsibilities for the control of outbreaks of epidemic malaria, for comprehensive epidemiological and entomological studies, for the development of an organization capable of achieving eradication, and for the surveillance of malaria in the general population.

3. 1961--1966. During this time various essential activities were developed: The SENEPA administration has been restructured and strengthened; the country program has been organized on the basis of 3 zones with 21 sectors; a census has been taken of 80 percent of all houses in the areas outside of Asuncion. In addition, some 2,600 information posts have been established, largely staffed by unpaid voluntary collaborators, who make home and community calls to search for and treat cases of malaria. In this process over 450,000 blood smears have been taken and examined at the central laboratory and over 1-1/2 million tablets of chloroquine distributed. An entomological study has also been maintained, largely by volunteers, with over 200,000 specimens of anophelines collected and sent to Asuncion for identification and classification. Much information has been gained on the intra-domiciliary density of vector mosquitoes, their feeding and resting habits and some information gained on extra-domiciliary feeding habits.

The results of all these studies have been incorporated in a three volume plan of operations covering an eight year National Malaria Eradication Program.

4. Financial Support from National and International Agencies.  
 Past anti-malaria efforts in Paraguay were the product of multi-agency funding in which the U.S. Government, the Pan American Health Organization and UNICEF participated. During the period 1958-1965 the contribution of the interested parties was as follows:

Government of Paraguay	\$ 1,938,000	67%
*Government of the U.S. (ICA)	275,000	9%
*UNICEF	318,000	11%
PAHO	<u>353,000</u>	<u>13%</u>
	\$ 2,884,000	100%

\* The U.S. and UNICEF terminated assistance in 1961.

For comparison, it should be noted that malaria programs in the Central American countries (prior to AID's recent series of loans to said countries) have been financed as follows:

Country	Government Share	UNICEF/PAHO Share	A.I.D. Share	Program Costs in Total Dollars
Costa Rica	72%	28%	-	\$ 3,248,903
El Salvador	62%	33%	5%	7,224,031
Nicaragua	41%	28%	31%	6,040,000
Guatemala	39%	33%	28%	10,108,354
Honduras	31%	26%	43%	5,021,500

#### C. Country Team Comments

It is the opinion of the Country Team that this project is important to the economic, political and social well-being of Paraguay and should be given high priority. The sustained opening up of the high endemicity interior of Eastern Paraguay to colonization, farming and timber exploitation; the consequent relief of population pressures in the heavily settled areas around Asuncion and expansion of the Paraguayan economy through increased agricultural production will all benefit from this project. The benefits of this eradication program in a social sense, through improved health and living conditions, will likewise be substantial. The Program will also enhance and protect the U.S. investment in malaria eradication in contiguous areas.

#### D. Alternate Sources of Financing

Since this project is one of local cost financing only, the Export-Import Bank is not interested in financing it. The two most likely international agencies for providing assistance for malaria eradication, PAHO and UNICEF, are already scheduled for continuing financial and technical support. Both the Inter-American Development Bank (letter of December 14, 1966) and the International Bank for Reconstruction and Development (letter of December 5, 1966) have indicated an unwillingness to finance this project.

#### E. Technical Analysis

1. Introduction. Although anti-malaria programs have been operative in Latin America for over sixty years, the overall endemicity of the disease was not significantly reduced except in areas such as the Panama Canal Zone where intensive anti-mosquito measures could be taken. Such measures were limited primarily to larviciding and water control, which served as a direct attack upon the breeding habitat of the mosquito population. The impossibility of financing campaigns of this kind throughout the entire continent limited its applicability.

The advent of the residual insecticides like DDT and dieldrin have permitted the application of a new principle, based upon the elimination of the parasite reservoir in humans and not upon the control of the mosquito in its outdoor breeding locations. The strategy is to spray all houses in malarious areas with DDT or dieldrin for the purpose of preventing the vector mosquitoes from transmitting the parasites from infected to noninfected people. The residual insecticide is not intended to eradicate the total population of mosquitoes, but to maintain it for four years below the level necessary for the continued transmission of malaria, thus allowing time for the virtual disappearance of the malaria "parasite reservoir" from the human community. This method is to be supported by case finding which seeks to locate and treat all malaria cases. In the absence of parasites, the abundance of mosquito vectors thereafter is no longer significant; however, it is essential to understand that the potential for an outbreak always exists if an undetected case of malaria is introduced in an area where the breeding of a vector mosquito is plentiful.

It is a worldwide phenomenon both that anopheline mosquitoes are developing resistance to DDT and other residual sprays and, equally alarming, that drug resistant strains of parasite are appearing in many areas. Although neither mosquito nor parasite resistance has yet been observed in Paraguay, the threat does exist there as elsewhere. This consideration lends urgency to the need to eradicate malaria now, while the epidemiological situation is sufficiently favorable. If the program is postponed to the future due to a scarcity of present financial resources the required effort will probably be much greater, and may even be technically ineffective. The urgency of the problem is also related to the need for Paraguay's participation in the concerted Latin American program to eradicate malaria. This regional program must succeed as a whole or not at all; it simply cannot afford to have one or more countries lag behind as sources of reinfection for their "clean" neighbors.

## 2. The Epidemiologic Situation

a. The Distribution of Malaria. The estimated population of Paraguay is approximately 2 million, of whom 80 percent live in areas affected by malaria. Transmission is believed to take place in all areas outside Asuncion but there is an intensity of transmission in 5 Departments of the Eastern Zone which accounts for roughly 85 percent of the cases. These Departments constitute 20 percent of the total area of Paraguay and contain one-sixth of the total population. The predominantly identified plasmodium is P.vivax which accounts for 92 percent of the positive blood smears sent in from information posts; the remaining 8 percent are identified as P.falciparum. Of the P.falciparum infections, 98 percent occur in the Departments of Alto Parana, Caaguzu, San Pedro and Caazapa. Transmission of malaria is believed to occur all the year round but there are seasonal variations in incidence. The main peak coincides with the on-set of the autumn wet season and with the maximum intra-domiciliary densities of A.darlingi. The second lesser peak in the spring months has been attributed largely to relapses of P.vivax infections added to the increased vector density caused by the spring rains.

b. The Vectors and their Habits. Thirty-one species of anophelines have been identified in Paraguay. Four of these species, A.darlingi, A.albitarsis, A.nordestensis and A.strodei are known to be possible vectors, but only A.darlingi has a proven capacity as a vector in South America. The assumptions,

which have considerable justifications, are that A.darlingi is the principal vector, that transmission of malaria is predominantly intra-domiciliary and that A.strodei may have some subsidiary role in transmission in certain specific situations of high mosquito density and the absence of domestic animals on which A. strodei may feed. Otherwise A.darlingi is the predominant vector.

Investigations into the habits of A.darlingi carried out over the past 5 years have indicated that throughout the main transmission season of January to June, 43.9 percent of mosquitoes caught throughout the whole of Paraguay were taken intra-domiciliary; of the five most common anophelines captured indoors, 64 percent were A.darlingi, which was captured in every locality and region throughout Paraguay. The lack of trained entomology staff has not permitted an assessment of sporozoite rates but figures from adjoining areas of Brazil have recorded a 1.8 percent rate for A.darlingi and a 0.1 percent rate for A.albitarsis. The peak feeding activity of A.darlingi occurs early in the evening and just before dawn. Extra-domiciliary feeding does occur and the question regarding its place in effective transmission has yet to be defined. A.darlingi is a relatively short lived mosquito with a longevity of about one month. Tube insecticide susceptibility tests have indicated that the anophelines in Paraguay which are known to be vectors of malaria are all fully susceptible to DDT. This favorable state of affairs is believed to be due to the fact that the insecticide spraying and crop dusting in agricultural areas has not yet been extensively practiced in Paraguay.

c. Morbidity Caused by Malaria in Paraguay. The situation, as assessed by SENEPA from the records of blood smears examined during the years 1962 to 1966, indicates overall malaria attack rates ranging from 2.3 per 1,000 in 1963 to 11.2 per 1,000 in 1966. Presumptive totals of malaria incidence based on these attack rates are shown in Table I.

Table 1Estimated Malaria Morbidity -- Paraguay 1962-1966

	<u>*1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>**1966</u>
Estimated population	1,816,000	1,851,000	1,900,000	1,949,000	1,999,000
***Attack rate per 1,000	3.0	2.3	5.3	4.1	11.2
Presumptive total of cases	5,448	3,257	10,070	7,990	22,383

\* 1962 Census

\*\* January-August 1966 inclusive

\*\*\* The attack rate has been calculated from the percentage of total population from which blood slides are taken and the percentage of positive blood slides among the total examined.

Origin: SENEPA, Paraguay

When these totals of incidence are compared to the totals of actual cases identified by blood smears, there is not a wide divergence. However, it is maintained by field workers that for every one case of malaria diagnosed by blood smear an additional five cases are unidentified and that the presumptive totals for the whole country should be multiplied by six to gain a more realistic measure of morbidity. The main supporting argument for this attitude is that there is a general awareness of the benefits of chloroquine as a suppressant and the tablets are used widely for self-medication for "fever". Consequently, only a highly selected segment of the population is seen by voluntary collaborators and even then many of the blood slides examined from this segment may be negative as a result of undisclosed self-medication. Further, as blood smears are taken only from 5 to 6 percent of the total population of 1.7 million in the malarious areas, many of these being taken during relapses, there are strong grounds to presume a much higher level of malaria morbidity than is indicated by the total of positive blood smears.

Whatever the fallacies of this analysis, there is no doubt that there has been a steady increase in malaria morbidity since spraying was stopped in 1961 and that epidemic conditions have prevailed in certain Departments during 1966. Moreover, now that the parasite reservoir has been re-established in the Paraguayan people, no great diminution in malaria morbidity can be hoped for absent an eradication campaign.

There was a total of 59,642 blood slides examined in 1966 from the 16 Departments of Paraguay and all but one Department yielded positive blood smears. The positive slides constituted 27.5 percent of the total examined and the range of positivity in the various Departments was from 0.3 percent to 47 percent. The high incidence areas with presumptive attack rates of up to 43.6 per 1,000 are predominantly in Eastern Paraguay along the new highway to Brazil, on either side of which are numerous colonies of agricultural and lumber workers and their families. These settlers are a tremendous economic asset, but as a susceptible population introduced into an endemic malaria zone are being gravely handicapped by a burden of malaria infection which will well determine whether or not these new settlements can become not only successful, but permanent.

The maximum incidence of malaria diagnosed by blood smears occurs between the ages of 7 years and 30 years and is higher in males than in females. Mortality from malaria has not been assessed and the overall case fatality rate is not known. In one small and limited study of deaths from malaria 40 percent of those who died were children under 14 years of age. The relapse rate and the influence of reinfections on the total of cases diagnosed by blood smears cannot be generally defined. However, a recent field study of a total of 105 cases, in an area of high transmission, by the Director of SENEPA, revealed a conclusive history of one or more prior attacks of malaria in 46 instances.

3. Plan of Operations. A plan of operations covering administrative, financial, technical and operational details of the program was completed by SENEPA in 1964. Subsequently, revisions were made to the plan which reflected the more detailed information on the malaria problem gathered by field staff and voluntary collaborators. The plan essentially follows the line of strategy and methodology for malaria eradication programs recommended by WHO and PAHO. It provides for a time-limited, three-phased program spanning a period of eight years from its inception. The first stage, the preparatory phase of one year, permits organizational development and recruitment of personnel additional to the present SENEPA staff of 180 employees, rising to a planned complement of about 700 headquarters and field workers. The proposed distribution of staff by headquarters and field is shown in the accompanying table.

Distribution of Personnel

Year	1967	1968	1969	1970	1971	1972	1973	1974
<u>Headquarters</u>								
<u>Technical</u>	32	32	32	32	32	32	28	28
Administration	53	55	55	55	52	44	44	41
Sub-total	85	87	87	87	84	76	72	69
<u>Operation Field</u>								
Administration	12	15	15	15	15	12	12	12
Technical	585	602	602	612	400	283	248	195
Sub-total	597	617	617	617	415	295	260	207
GRAND TOTAL	682	704	704	714	499	371	332	276

Major activities during this development period will consist of training new recruits, establishing zone and sector facilities and marshalling and distribution of supplies and equipment throughout the malarious area.

The second phase, the attack phase, is directed toward the interruption of malaria transmission throughout the malarious areas of the country. In light of the data collected by SENEPA during the past 5 years, strategy is based on the assumptions that the only epidemiologically significant vector is A.darlingi, that malaria transmission occurs preponderantly indoors at night, that after feeding A.darlingi will rest on a sprayed indoor surface and, being sensitive to DDT, will die. Accordingly, the primary mode of attack will be to spray all houses in the malarious areas twice each year with DDT in a dose of 2 gms. per square meter. This attack phase will last for 3 to 4 years throughout Paraguay, the 4-year phase being designed to give flexibility to the plan, particularly in respect to the areas of high transmission. Arrangements will also be made for supplementary spraying of new houses or additions to houses erected between spray cycles.

In places where the above method is not fully effective in stopping transmission, supplementary measures of vector mosquito destruction at the source through larvaciding of breeding places, drainage or other means will be accomplished. Also, in such areas intensive treatment of the population with anti-malarial drugs is contemplated in the plan if conditions warrant.

Past experience in Paraguay and elsewhere has underlined the absolute necessity to have the maximum of flexibility in plans for the application and dosage of DDT. Such tests as have been possible indicate that there are unlikely to be sorption problems connected with house surfaces to be sprayed. However, it is essential during the attack phase for continued monitoring of the duration of action of DDT and the possibility of emergence of mosquito resistance to it so that dosage levels can be amended as conditions require, without delay.

Likewise, experience elsewhere has shown that the habits of vectors may be modified as a result of house spraying. Feeding habits may change and extra-domiciliary transmissions could then become a factor which might prejudice the whole program. A well equipped and adequately trained entomology force is essential during the attack phase if the spraying and transmission problems that may arise are to be defined as soon as they become evident. A consultant entomologist will be required for this who has had experience in other malaria eradication programs where such problems have arisen. Otherwise, the situation could again result where it is obvious only after the attack phase has been in process for the full duration planned that transmission has not been interrupted.

In addition to the problem of extra-domiciliary transmission possibly becoming a factor, there is the problem of transmission among nomadic groups using temporary or unidentified shelters that have not been or cannot be sprayed effectively. Here the use of mass drug treatment, which is curative, may have to be used as a supplementary measure. This problem of the elimination of the malaria parasite from the nomadic groups will be dealt with during the attack phase as and when circumstances dictate.

The phase of consolidation is initiated when evidence of the interruption transmission is obtained in the attack phase. At this time, spray operation and other attack phase measures are withdrawn and the program is converted to surveillance activities lasting for a three-year period. The surveillance concentrates on seeking out and treating with anti-malaria drugs any relapsing or imported cases; it further provides the means to combat incipient malaria outbreaks before a potentially serious extension of transmission occurs. A network of active and passive case detection maintained by SENEPA workers and voluntary collaborators will carry out the surveillance until an absolute minimum of further cases is detected.

As prosperity increases as a result of malaria eradication, so it becomes imperative to protect growing centers of population against re-invasion by malaria. One effective way is to reduce sources of breeding by larva control measures related to impounded water management practices, such as at the Acaray hydroelectric project lake, and to the siting, construction, layout and drainage of new townships and other settlements. A great deal can be done in this direction, even in small communities, by timely assistance and advice from the relevant malaria authority.

Finally, there remains the problem of the integration of SENEPA permanent personnel into the structure of the general health service when the stage of maintenance is reached. Assuming that the program moves according to schedule, planning should start now in conjunction with those who have the responsibility of medical and paramedical education and of the development of the general health service in the rural areas. In this connection, the development within the Ministry of Health of an Endemic Disease Control Division, charged with the responsibility for diseases of community importance, such as leprosy, Chaga's disease and leishmaniasis, might well be considered for future programming.

4. Comment on Plan of Operations. The Pan American Health Organization has approved the Government of Paraguay plan of operations and UNICEF has indicated its intention to furnish the necessary commodities upon approval of the AID loan. The U.S. Public Health Service consultants who conducted an intensive review of the program in October 1966, consider the plan and the financing basically sound.

5. Inter-Country Coordination. Through the aegis of PAHO, which functions as the coordinator of the malaria eradication programs in the Americas, provision is made for the coordination of malaria eradication programs of the countries bordering on Paraguay. It is planned to hold meetings with the Directors of malaria campaigns in Argentina, Bolivia and Brazil for the purposes of exchanging information on the progress being made and to make appropriate adjustments when indicated for the improvement of technical procedures and malaria surveillance along the borders of these countries. Moreover, annual meetings of the Directors of malaria eradication programs in South America are being held as a forum for the interchange of information and for program coordination among the countries involved.

6. Adequacy of Local Staff. The chiefs of the major sections of the SENEPA headquarters and zone establishments in the field are largely professional personnel such as physicians, engineers, and administrators. Some of the professional staff members have been trained abroad and there is no doubt of their dedication to the objectives of the program. They have a practical knowledge of conditions in the field and an appreciation of the administrative and technical problems which caused suspension of operations in 1961. Given adequate operational executive autonomy and responsibility, with policy directives from the Ministry framed on the advice of an Advisory Council, it is reasonable to expect that the effectiveness of the administration and execution will be fully satisfactory. As the number of personnel is increased to meet the requirements of the new program, an intensive training activity will be carried out to develop the necessary operational competence in the field. Of course, technical assistance, as discussed below, will be needed.

7. Technical Assistance. Since 1957, the Pan American Health Organization has provided technical assistance to the program by assignment of advisory teams. (From 1958 to 1961, when the program was partially grant funded by the Agency for International Development, consultation and program review services were furnished on an informal basis by the AID/W Latin America Regional Malaria Advisor. However, no U.S. technicians were ever permanently assigned to the program). If the loan is approved, PAHO has indicated it will assign five consultants -- a malariologist, an engineer and three inspectors -- for the proposed eight year life of the program. Under an AID/PASA arrangement with the U.S. Public Health Service, provision should be made for assignment of two grant funded malaria technicians -- a malaria advisor (entomologist) and a malaria specialist (administrator): The malaria advisor (entomologist) will assist the Director and national staff on general technical and operational activities, in the preparation of annual work plans and in making assessments of progress. Under the PASA arrangement between the USPHS and AID, the senior technician's duties will include periodic reporting on program developments and problems to the USPHS as well as to the Mission. The technician will provide monitoring of project performance in order to ascertain the degree of conformance with approved work plans and loan covenants, and will seek ways and means to improve operational effectiveness through modifications or alterations in methods and procedures when such is indicated. The malaria specialist (administrator) will function as co-administrator sharing responsibility for administration with the SENEPA administrator. See section 8, a, below.

The PHS/CDC Malaria Eradication Branch will maintain routine contact with the advisors for appraisal of program progress and problems, will furnish special consultative services and will conduct periodic program assessments in collaboration with participating international agencies. In all planning, evaluation and operational activities the PHS advisors will work closely with the international advisors to assure adequate coordination and complementation of assistance.

8. Project Implementation. The stringent operational requirements for a successful malaria eradication program demand a high degree of efficiency in the administration and management thereof. The urgent need to meet work schedules in the field without undue delay requires a well coordinated logistics effort at all levels of the organization. The marshalling of men, materials and equipment in the proper amounts, at the right place and on time is essential if the program is to succeed. Many countries engaged in eradication have learned through experience that the regular ministerial and governmental administrative procedures are ill-suited to implementation of an eradication effort and have adopted special provisions which permit the Director to exercise the required degree of flexibility and authority in the management of finance, personnel and supplies.

As previously noted, eradication operations were suspended by SENEPA in 1961 in order to reorganize administrative and field operations. This was done in response to recommendations of AID/W and PAHO, which were delineated in a joint report submitted to the Ministry of Health in July 1961. From that time to the present, SENEPA has acted on the recommendations to the following extent:

- i. A legal basis for the organization has been established.
- ii. The Government of Paraguay has decisively committed itself to support the program.
- iii. SENEPA has been reorganized to provide decentralization in the field programs.
- iv. The administration has been streamlined by removal of superfluous echelons.
- v. Geographical reconnaissance is nearing completion.
- vi. An acceptable plan of operation for an eight year program has been completed.

area but spraying has been maintained along the border with Mato Grosso and with Paraguay as additional protection.

10. Institutional Development. Since malaria eradication is a time limited, categorical program dedicated to the elimination of a single disease, it may not fit the usual terms of reference which define institutional development. However, it is well recognized that malaria eradication programs have made substantial contributions to advancement of public health institutions in the developing countries.

The impact on institutional development has come about in several ways. The eradication service is usually the first direct contact that rural people in developing countries have with public health. The nature of the activity -- house spraying and drug treatment of suspected malaria cases -- brings health measures to the majority of people in the remotest areas and to a considerable extent requires their participation and cooperation in the activity. In establishing the field program, the eradication service sets up a network of operating bases and malaria notification posts manned by voluntary collaborators. When the program is phased out upon achievement of eradication, these facilities and the personnel staffing them are convertible for use in new health programs.

Experience in India and other developing countries has shown that the malaria eradication program establishes a pattern of an efficient service around which other health services can be built and extended. The regular functional components of malaria eradication such as administration, research and evaluation, field operations, training and health education, fit the pattern of organization of most health activities and the personnel who gain skill and experience in these activities represent a readily transferable asset.

F. Economic Analysis

1. General Situation. Paraguay is a virtually landlocked country in central South America with an area of 157,000 square miles or 407,000 square kilometers (roughly the size of the State of California) and a population of about 2,000,000. It is one of the least developed countries of Latin America with a per capita product of approximately \$250, roughly comparable to that of Honduras or Nicaragua. The known natural resources of the country are grazing and agricultural lands and forest products. These natural resources are substantially under-utilized at present and could support a much higher standard of living if they were properly developed.

In general, the development of the country prior to 1958, was confined to a relatively small area in the south central portion of Eastern Paraguay containing less than 10 percent of the country's area. The choice of this area for development was based on its ease of access and ease of development rather than its soil quality or natural resources, and until recently, development outside this area was very slow due to the lack of a transportation system. This forced the bulk of the rural population to farm on a subsistence basis, with the attendant evils of backwardness and lack of opportunity; however, it also kept the population density low in the highly endemic malarious areas and thus kept the malaria problem within bounds.

Then, in 1955, opening up of this agriculturally rich but malarious area began with the extension of the so-called "Brazil Road" from Coronel Oviedo on the western edge of Caaguazu to the Parana River on the eastern edge of Alto Parana. The Brazil Road has been constantly improved from that time on, to and including AID Loan 526-L-015, signed January 6, 1967. Meanwhile, in 1962, under joint AID-GOP financing, construction began on a farm-to-market road system (including certain penetration roads) branching north from the Brazil Road. This road system is serving to stimulate the agricultural production and harvesting of timber products of the area and is thus substantially increasing the national wealth of the country. Likewise, it has brought about substantial progress in breaking down the barriers of rural isolation, leading to a better understanding between citizens of the country and opening the way to the introduction of better educational, health and other

facilities. However, a multifold increase in malaria has been the price of this progress.

## 2. Economic Background Evaluation.

a. Recent Performance. During 1964 and 1965 Paraguay made considerable economic progress, as measured by increases in the real gross domestic product, which rose by 3.3 percent in the former year and 6 percent in the latter. The expansion stemmed primarily from a notable improvement in export receipts, which rose by \$6 million in 1964 and by another \$15 million (to \$60 million) in 1965. Public investment increased moderately in both years, and private investment outlays also rose. Consumption, both government and private, also rose, especially in 1965. Imports increased in both years but the balance of payments deficit on goods and services account was reduced in 1965. Prices, as measured by the cost-of-living index, rose by less than 4 percent in each of the two years.

In 1966, the economy grew but slightly, as a moderate domestic expansion was largely offset by a sharp fall in exports. Several factors contributed to this fall in export earnings: Lower meat production, triggered by and combined with a drop in world prices, appears to have been the most important cause, but some crops were also damaged by rain and floods and in some cases demand declined.

b. Basic Development Policy. Development planning in Paraguay is still in its early stages. The Technical Planning Secretariat was not organized until 1962, and its plan for 1965-1966 was never put into operation; the plan for 1967-1968 was recently released. Notwithstanding the prior absence of a formal plan, there are certain fairly well defined development policies of a number of years' standing. Until recently, the Government's main effort was directed to the extension of the infrastructure, with special emphasis on transportation projects intended to offset the disadvantages of Paraguay's landlocked position and to end its relative isolation. These infrastructure projects, especially the road works, are continuing and others are being initiated. Since about 1963, however, increasing attention has been paid to stimulating investment in the private sector, principally through the agency of the National Development Bank.

Public investment in Paraguay is heavily dependent on the availability of foreign credits, which since 1962 or 1963 have been forthcoming on a more ample scale than in earlier years. The utilization of these credits, however, has proceeded relatively slowly, although in 1966 the rate of utilization appeared to

accelerate. In part, the relatively slow start which was made with some of these loans was due to purely technical considerations, including the time needed to initiate new works. In other cases, however, the utilization of available loans has been retarded by the lack of funds to provide the local currency contribution to the various projects; this, along with certain debt servicing arrearages, has also been a limiting factor in the negotiation of additional foreign credits.

c. Existing Tax Structure. The Paraguayan revenue system is highly dependent on taxes on foreign trade, which currently account for over 40 percent of total receipts, as against approximately 30 percent from domestic indirect taxes and only 15 percent from direct taxes. Moreover, the sales tax, which in 1965 yielded 3.1 percent of total revenues, is levied almost exclusively on imported goods. Of the other indirect taxes on domestic transactions, the most important are stamp taxes, yielding 8.5 percent of total revenues in 1965, a tax on the transfer and industrialization of cattle (4.7 percent), alcohol (2.5 percent), and tobacco (3.2 percent). In recent years there has been a tendency to reduce export taxes, or to replace them with other taxes, and they now provide only about 6 percent of total receipts. Petroleum products provide a relatively small proportion of total receipts (3 percent). The income tax is the principal direct tax, yielding roughly 10 percent of total receipts, while the real estate tax provides some 5 percent. The only other direct taxes of significance are on legacies and donations and on contracts. The overall tax system is seriously deficient in that it provides insufficient revenue to meet development needs, creates economic disincentives and encourages contraband.

d. Future Fiscal Policies. The GOP recognizes the need for an improvement in overall fiscal performance as a condition for continuing monetary stability combined with the attainment of an accelerated rate of development. This clearly requires continuing economy in administrative expenditures; however, outlays in some areas of activity, such as agricultural extension, are already too low to provide efficient services, and it is also necessary to keep pace with the requirements of an increasing population and to provide for improvements in fields such as education.

In view of the persistent upward trend of expenditures, it is realized that a major effort has to be made to improve revenues. A number of steps toward tax reform were undertaken

in 1964, when the stamp and inheritance tax laws were revised and rates increased, but a new income tax law, which was an important feature of the program, was withdrawn after it encountered heavy opposition. Other steps were taken, however, to raise revenues in 1965, including the application of additional import surcharges and an increase in the cattle transfer tax, which is levied in lieu of the income tax. Although no major tax measures were introduced in 1966, another installment of tax reform is under legislative consideration for 1967. This will necessarily involve efforts to increase the yield of the domestic taxes, since there is no longer any scope for additional taxes on imports, especially in view of the problem of contraband.

In the meantime, the authorities have concentrated their attention on improving collections under the existing taxes. This has included some modifications in the existing laws in order to prevent evasion, including adoption of some of the measures proposed by the US/IRS/PASA tax advisors. Increased efforts are also being made to improve real estate tax assessments and to reduce tax arrears, as also proposed by the U.S. advisors. Other policies involve improving the training of the collection staff and devoting as much manpower as possible to the collection of the higher yielding taxes.

Government Transactions in Relation  
to Gross Domestic Product

Year	Cash Revenues	Cash Expenditures	<sup>1/</sup> Deficit	Cash Revenues	Cash Expenditures
Year	(Millions of Guaranies)			(As percent of GDP)	
1961	3,480	3,636	-156	8.8	9.2
1962	4,161	4,285	-124	9.2	9.4
1963	4,220	4,422	-202	8.7	9.1
1964	4,375	4,758	-383	8.5	9.3
1965	5,710	5,747	- 37	10.2	10.3

<sup>1/</sup> Excludes amortization of bonds and expenditures financed from foreign loans and grants

3. Relation of Project to U.S. Assistance Strategy. The Malaria Eradication project conforms with the priority goal of the U.S. Assistance Strategy to increase agricultural, livestock and forestry production in Paraguay. By permitting the opening of new, fertile areas to colonization and development, malaria eradication will permit the GOP to implement more effectively ongoing programs of land reform, supervised credit, and development of cooperatives. These programs serve to promote political and economic stability in the country, to reduce social pressures in the overpopulated area near the capital city, Asuncion, and to give impetus to the forces of progress in every sphere of Paraguayan life. Because the country is poor and underdeveloped, every increment of progress stands out, both in its impact on the nation as an entity and in the immediate and substantial benefits accruing to the people. Paraguay has a stable government and a stable currency, so the gains made will not be lost through unrest or eroded by inflation; thus they need not run faster merely to stand still, but can count on actual progress in the economic as well as social living standards of the people as the product of this program.

Moreover, Paraguay does not suffer from the bitterly divisive social turmoil that plagues many of the other less-developed Latin nations: There is no racial conflict between "Creoles" and "Indians"; Paraguayans are proud of their common bonds of racial amalgamation and national unity. The contrast between dire poverty and ostentatious, entrenched wealth is far less than in other Latin lands; thus neither the need for nor the seeds of violent upheaval are present. Similarly, there is relatively little latifundia and the low population density per hectare of arable land makes minifundia purely a problem of insufficient capital and transport availability; tenant farming and grasping landlords are conspicuously absent from the Paraguayan scene. And the institutional weaknesses that have held back Paraguay's development are the result merely of lack of knowledge and sophistication rather than any manifestation of a deep and intractable social problem.

#### 4. Relation of Project to Economic Development

a. National Considerations. The following programs are directly related to malaria eradication:

1. The hydroelectric plant at Acaray in the Department of Alto Parana will bring about the improvement of electrical services in Asuncion and the electrification of cities in the interior of Paraguay. It is also

associated with the program of regional integration arising from studies made by the Economic Planning Council (COPEM) of Misiones, Argentina, and the Study Center for the Socio-Economic Development of Itapua (CEPRI), Paraguay. To that end, both Misiones and Itapua are to consume electric current generated by the plant. However, the Acaray project will create a huge lake which will serve as a potential breeding place for the vector mosquitoes.

ii. Colonization and urbanization of Puerto Presidente Stroessner, on the eastern edge of Alto Parana. The purpose of this undertaking is to promote economic growth in a zone rich in resources; the administration of the project is entrusted to a special commission whose intention is to industrialize the agricultural production of 125,000 acres. The commission already has obtained a loan from IDB for a total of US\$910,000, part of which has been earmarked for the purchase of machinery and equipment.

iii. The Institute of Rural Welfare (IBR) is both implementing and expanding an extensive colonization program in the rich agricultural lands of Caaguazu and Alto Parana. In Paraguay, it is essential to increase the agricultural area under cultivation in order to sustain output growth, since, at present, agricultural production is concentrated in the Asuncion area, where overpopulation, excessive fragmentation of holdings, soil exhaustion, and multi-crop exploitation do not permit commercial production to take place.

The transformation and improvement of land use in areas to be particularly benefitted by malaria eradication will be further aided by social reform and self-help measures: The land redistribution law empowers the government to expropriate (and to indemnify the owners) areas in excess of 10,000 hectares owned by one person in the eastern part of the country (and any excess over 20,000 hectares in the Chaco) provided such lands are not farmed in a "rational" manner. At the same time that IBR has settled tens of thousands of colonists in new, rich areas, these colonists have also received some financial assistance both from IBR and from the National

Development Bank administering funds from an IDB/SPTF loan, though much remains to be done in this area. Even in absolute terms, this colonization program rivals any other in Latin America; relative to the small size and limited resources of Paraguay, it is immense.

b. Agricultural Considerations. An indication of the increasing importance of the Caaguazu-Alto Parana portion of Paraguay as an agricultural area is shown in the following production statistics for major crops in the Departments of Caaguazu and Alto Parana for the years 1958 and 1964, in metric tons:

<u>Crop</u>	<u>CAAGUAZU</u>			<u>ALTO PARANA</u>		
	<u>1958</u>	<u>1964</u>	<u>%-Increase</u>	<u>1958</u>	<u>1964</u>	<u>%-Increase</u>
Manioc	12,700	104,550	723.2	11,247	27,980	148.8
Sugar cane	23,790	62,400	162.3	968	1,900	96.2
Corn	12,700	14,520	14.3	1,700	3,750	120.6
Sweet potatoes	3,768	10,300	173.3	598	700	17.0
Cotton	1,436	3,020	110.3	-	80	-
Alfalfa	760	1,760	131.6	68	80	17.6
Tobacco	735	1,500	104.0	12	-	316.7
Wheat (1959)	1,020	570	-44.1	-	-	-
Onions	178	1,280	360.4	9	80	788.9
Peanuts	310	720	132.3	41	60	46.3
Cowpeas	1,010	3,020	199.0	123	330	168.3

As seen from the foregoing table, major increases have occurred not only in crops for domestic consumption (manioc, cowpeas, corn, onions, cotton), but also in those destined primarily for export (sugar cane, tobacco, peanuts). However, the 85,000 square kilometer area that will be most directly affected by the proposed malaria eradication program is still for the most part undeveloped; roughly 60 percent of it is heavily timbered with high quality hardwood forest, slightly rolling in terrain, with little present agriculture but excellent soil and climatic conditions. On the basis of 50 hectare farms, the area would provide for 170,000 farm units which in turn could support an ultimate farm population of over a million.

c. Industrial Possibilities. As shown in the table below, going eastward from the Central Department the level of industrialization in the malarious areas drops sharply. However, since these

data are from the 1963 economic census, and hence refer to the situation prior to the paving of the Brazil Road, it is to be expected that this event will help generate substantial new manufacturing activity, such as sawmills and food processing plants, along its route and in areas connected by feeder roads. This industrialization will be accelerated by the construction of the Acaray hydroelectric power project. Since these industries will largely be engaged in processing agricultural and forestry raw materials from a bulky original condition to more compact processed entities, the economics of transportation cost will generally make it advisable to do the processing out near the source of supply -- provided the malaria problem is overcome.

Industrial Statistics, Census of 1963

	<u>Number of</u> <u>Establishments</u>	<u>Persons</u> <u>Employed</u>	<u>Value of</u> <u>Product</u>	<u>Value</u> <u>Added</u>
			(Millions of Guaranies)	
<u>Paraguay</u>	<u>5,845</u>	<u>35,652</u>	<u>15,461</u>	<u>5,683</u>
Department				
Central	2,374	19,375	11,071	3,920
Cordillera	992	3,750	246	119
Caaguazu	249	833	121	58
Alto Parana	22	177	31	13

Thus, the expected impetus which the Brazil Road and Acaray Hydroelectric project, combined with malaria eradication, will give to the country's industrial development efforts, will enable Paraguay to benefit more broadly from its participation in the Latin American Free Trade Association by increasing its exports of processed and semi-processed agricultural products to other member countries.

d. Forestry Products. The possibility of producing wood pulp and paper in the highly malarious Alto Parana zone has been studied more than once. Notwithstanding the generally satisfactory technical conclusions, no cellulose or paper manufacturing plant has yet been installed. More recently, however, the Administrative Commission of Colonia Puerto Presidente Stroessner has initiated a nursery to produce half a million pine trees. Also, the USAID now has both a Forestry export and a Private

Enterprise advisor on board to expedite existing and potential projects in this area.

Moreover, the future for a lumber industry in Paraguay is definitely encouraging if the industry can be freed from the overhanging threat of malaria. Between 1960 and 1970 the increased demand for lumber in Latin America is calculated at 226 million square feet. With regard to other markets, the FAO estimates that the demand for lumber and paper in North America, Europe, Australia, and Japan will have increased from 3,767 to 6,458 million square feet and 60 to 150 million tons, respectively, between 1960 and 1975. A few years ago Europe was still a foremost exporter of forest products; it is now importing lumber to a value of \$600 million a year. Furthermore, no increase in its production is possible as its forests are already being fully exploited.

e. Tourism and Business Travelers. Paraguay has a substantial tourist potential in its resources for hunting and fishing, which are accessible a moderate distance from Asuncion. Also, the people are pleasant and the climate is sub-tropical. The Yguazu Falls, just across the border in Brazil, some 250 miles from Asuncion, are world renowned for their beauty and size; there is regularly scheduled air service from Asuncion to Yguazu, as well as highway travel on the paved Brazil Road, and a modern hotel has recently been opened at Puerto Presidente Stroessner on the Parana River, near the Brazilian border.

The arrival of tourists in Paraguay, calculated over periods of five years, is as follows:

<u>Years</u>	<u>Number of Tourists</u>
1950-1955	3,291
1956-1960	21,875
1961-1965	54,747

During the year 1965 the number of tourists arriving in Paraguay was 13,336, which is the largest number recorded during the period 1950-1965.

When the number of business visitors are added to those of tourists, the flow of travelers to Asuncion alone is over 50 percent greater than the number of tourists nationwide. According to Asuncion hotel listings, they had 10,751 visitors

in 1960; 11,931 in 1961; 13,060 in 1962; 15,925 in 1963; 21,934 in 1964; and 25,281 in 1965, for a six year total of 98,882. The accelerated rate of growth in the last two years attests to the growing importance of and interest in Paraguay. In order to cash in on this trend, construction of a new air conditioned hotel has just begun at Ita Enramada on the Paraguay River near Asuncion, which lies across the river from Clorinda, Argentina, and is an important connecting point between the two countries.

All of this, however, would be endangered by a "health scare" such as would take place were the incidence of malaria to continue increasing at an epidemic rate. Since both the major business potentials and tourist attractions of Paraguay lie in its rural areas, malaria would strike at the heart of the country's economic future.

5. Overall Significance of Malaria Eradication. Since 1942, the U.S. Government has been assisting other countries in their anti-malaria programs. During 1956 and 1957, such support reached a \$11.5 million annual level in Latin America. Under Section 420 of the Mutual Assistance Act, 1957-1960, the U.S. Congress recognized that malaria "constitutes a major deterrent to the efforts of many people to develop their economic resources" and stated the U.S. policy of assistance to efforts to eradicate malaria. U.S. contributions to UNICEF, WHO and PAHO assist these international agencies in malaria eradication in most of the 84 countries where anti-malaria activities are underway.

A statistical survey by WHO in mid-1963 estimated that 154 1/2 million persons on the American continents live in what once were malaria infested areas. This figure includes about 45 million in the United States where malaria has been eradicated. The economic and social consequence in the way of increased agricultural and industrial production and reduced mortality rates is substantial; however, as in the case of other public health activities, the direct economic benefits from malaria control and eradication are difficult to quantify.

Comparisons of agricultural production in West Pakistan between protected and unprotected malaria districts suggest that increased agricultural yields are directly correlated with anti-malarial activities. WHO experiments in East Pakistan and

other worldwide data suggest that agricultural yields may increase from 15-40 percent due to eradication of malaria. Such details suggest the importance to Paraguay's heavily agricultural economy of the anti-malaria program.

In assessing the economics of malaria eradication, the time limiting feature of the program must be considered and weighed against the expense of maintaining a mere control program which would require recurring expenditures for an indefinite period in the future. In Paraguay, the annual cost of maintaining malaria control at a level below the threshold of crucial public health importance is estimated at \$400,000. On the other hand, the eradication program, as planned, would terminate the disease and the expense of eradication in an eight year period at a cost of \$7 million. In the same period, the control program at \$400,000 per annum would have totalled \$3,200,000 or almost one-half the cost of eradication. However, the annual expenditure of control would recur so that once the savings realized in the first eight years were dissipated, control would thereafter represent an annual loss of \$400,000 over an indefinite period.

## 6. Ability to Repay

a. Balance of Payments. Paraguay's balance of payments historically has varied greatly with (a) fluctuations in the domestic economy; (b) the depth of the water in the Paraguay River, on which most of the country's trade moves; (c) fluctuations in the Argentine market for certain of Paraguay's leading exports (e.g., lumber and yerba mate); and (d) fluctuations in U.S. and European markets for Paraguay's other major exports (e.g., beef, cotton and tobacco). However, the effects of the Alliance for Progress in focusing both external and internal attention upon the requisites of more orderly growth through the rationalization of economic processes have given rise to a degree of cautious optimism for a more stable future. The Paraguayan economy has been growing at a rate averaging over five percent per year in real terms over the past six years. While reduced export production cut this figure to around four percent in 1966, there are various indications that growth in 1967 will recover to the earlier rates. With respect to the foreign sector, Paraguay's gross international monetary reserves have been built up to around \$12 million, or two and one-half months' imports. In 1966, export prices and volume declined so that even with a strong inflow on capital account, the net result was a slight loss, nearly \$1 million, in reserves.

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Exports and imports for the years 1954-1963, based on the Central Bank's balance of payments data, are set forth in Table 1:

Table 1

Year	Exports (FOB)	Imports (FOB)	Balance
	(in millions of dollars)		
1954	34.8	34.4	0.4
1955	38.2	30.9	7.3
1956	36.3	30.6	5.7
1957	36.1	37.9	-1.8
1958	33.6	42.3	-8.7
1959	35.4	36.5	-1.1
1960	36.5	43.9	-7.4
1961	43.1	47.8	-4.7
1962	39.6	40.3	-0.7
1963	38.7	40.6	-1.9

More detailed information concerning 1964-1967 is contained in Table 2:

Table 2

Balance of Payments

	1964	1965	Prelim. 1966	Est. 1967
	(In thousands of dollars)			
<u>Current Account</u>	<u>-11.5</u>	<u>-7.1</u>	<u>-22.4</u>	<u>-33.0</u>
Exports (FOB)	(45.4)	(60.7)	(53.1)	(55.0)
Imports (FOB)	(-45.5)	(-52.2)	(-56.9)	(-65.0)
Trade Balance	-0.1	8.5	-3.8	-10.0
Travel (net)	(-1.2)	(-1.3)	(-1.4)	(-2.0)
Services Inc. Transport and Insurance	(-8.9)	(-12.1)	(-14.9)	(-18.0)
Transfers	(-0.7)	(-0.3)	(-0.2)	-1.0
Interest	(-1.8)	(-1.9)	(-2.1)	(-2.0)
Other Services				
Total Invisibles	-11.6	-15.6	-18.6	-23.0

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Table 2 (Continued)

	1964	1965	Prelim. 1966	Est. 1967
	(in thousands of dollars)			
<u>Capital Account</u>	<u>17.0</u>	<u>13.8</u>	<u>21.4</u>	<u>37.0</u>
Private long-term (net)	5.2	3.5	3.5	4.0
Private short-term (net)	5.5	2.1	1.1	-
Public				
Disbursements on govern- ment loans	5.1	9.0	18.6	25.0
Amortization	-2.7	-2.9	-4.1	-5.0
Public Transfer	3.9	2.1	2.3	-
<u>Balance of Payments</u>	<u>5.5</u>	<u>6.7</u>	<u>-1.0</u>	<u>4.0</u>
Monetary Movements				
Changes in Net Reserves (- = increase)	-3.3	-4.4	1.0	-4.0
Errors and Omissions	-2.2	-2.3	-	-

These projections are premised upon the continuation of monetary stability and the development of institutions for preparing adequate feasibility studies and for implementing sound development projects and programs: The IMF has indicated its confidence in monetary stability by granting a \$7.5 million Stand-by; the IDB has authorized a \$700,000 feasibility study loan and an IDB Financial Agency/National Development Fund proposal for development projects financing and implementation is under study.

b. Public External Debt. The external public debt of Paraguay outstanding on December 31, 1965, was equivalent to \$96.3 million. Of this total, \$64.1 million (67 percent) was payable in foreign exchange. Of the external public debt payable in foreign exchange, repayments of principal and interest were expected to be as follows:

Table 3

<u>Year</u>	<u>US\$1,000</u>
1966	5,841
1967	4,831
1968	4,035
1969	3,810
1970	2,687

If programmed new borrowing were to take place, foreign exchange debt service payments in 1967 and 1968 would amount to about \$6.1 million and \$7.7 million respectively. The ratio of debt service to the value of exports was expected to hold around 11 percent or a little more.

Table 4

Year	Exports (In millions of dollars)	External Public Debt Service <sup>1/</sup>	Ratio of Debt Service to Exports (Percent)
1966	53.1	5.8	10.9
1967	55.0	6.1	11.1

<sup>1/</sup> Interest and principal.

An additional 33 percent of Paraguay's public external debt was repayable in local currency at the end of 1965. This debt amounted to \$32.2 million. Thus, combined external debt service payments due in foreign exchange and guaranies were to absorb about 50 percent of gross public savings in 1966, and even with the projected rise in public sector savings, will still absorb some 45 percent of these savings in 1967. This high ratio derives from Paraguay's heavy dependence on external resources for financing its economic development; its domestic savings still are much too small to do the job alone.

Table 5

Year	Public Savings (\$ million/\$ million)	Public External Debt Service <sup>1/</sup> (\$ million)	Percentage of Public Savings
1966	2,049	16.3	49.7
1967	2,386	18.9	45.0

<sup>1/</sup> Dollars and Guaranies expressed in dollars.

Despite a short run excess of suppliers' credits, Paraguay basically has a reasonably favorable external debt structure; the average length of maturities on the outstanding debt to AID and the international lending agencies is between 15 and 20 years, and grace periods average about five years. Moreover, about one-third of this external debt is repayable in local currency. Were this favorable debt structure to change materially for the worse, the debt service burden could easily become unmanageable and adversely

affect the country's credit position. Conversely, the current trend toward softer loans by AID, combined with the continuation of the concessionary terms of the other agencies, will be of great value in protecting the country's ability to repay. Paraguay, therefore, needs to obtain credits on a very long-term basis, and such loans need to provide substantial financing for local needs requirements as well. Under such terms, Paraguay will continue to be able to service its external debt burden.

Table 6

Currently Scheduled Debt Service  
Payments

Year	Total	Guaranteed	Foreign Exchange	Suppliers' Credits	Long-Term Debt
(In millions of dollars)					
1966	4.07	3.23	3.55	2.74	3.11
1967	4.22	3.43	4.04	1.94	2.90
1968	4.69	3.75	4.04	1.21	2.83
1969	5.97	4.77	3.00	1.01	2.79
1970	5.98	3.30	2.68	0.47	2.21

Table 7

External Public Debt Outstanding  
as of December 31, 1968

	Disbursed	Total
(In thousands of dollars)		
<u>Repayable in Foreign Exchange</u>	<u>31,950</u>	<u>64,103</u>
IBRD loans	-	2,200
IDA	2,585	9,600
IDB	3,317	13,957
Purchase of British-owned railroad	490	490
<u>Privately Placed Debt</u>	<u>6,933</u>	<u>8,610</u>
Suppliers' credits	6,483	8,160
Other	450	450
<u>Government loans</u>		
United States	14,240	17,422
Export-Import Bank	7,194	7,194
AID/DF	7,045	10,228

Table 7 (Continued)

	<u>Disbursed</u>	<u>Total</u>
<u>Other Governments</u>		
Brazil	430	430
Japan	2,075	2,075
Spain	802	6,291
Federal Republic of Germany	1,078	2,998
<u>Repayable in Local Currency</u>	<u>17,307</u>	<u>32,210</u>
AID/DLF/PL 480	10,999	13,938
EDB	6,308	18,272
Total External Debt	<u>49,257</u>	<u>96,313</u>

Source: International Monetary Fund, Staff Report,  
August 15, 1966

### G. Financial Analysis

1. Introductory. AID has been asked to lend the GOP 34 percent of the estimated local costs of this project (48 percent of the local costs for the first five years). This loan of \$1,900,000 will be used for personal services, \$1.4 million; operating costs, \$350,000; and for locally purchased supplies, \$150,000. These cost estimates are derived from detailed project analyses. The personal services costs are in line with wage scales now current in Paraguay, and the operating and supplies costs are based on previous experience and are reasonable. The GOP will fund the remaining \$3,690,000 in local costs for the full eight-year program (\$2,040,000 during the first five years).

In addition to the GOP/AID local cost contributions to the project, the USPHS will provide two grant-funded technicians costing a total of \$40,000 annually over the five years of AID's participation in the project; PAHO will continue to provide technical assistance -- to which a cash value has not been assigned -- plus incidental commodities valued at \$22,000 over the eight years of the project; and UNICEF will provide the vehicles, spray pumps and insecticides required with supporting equipment valued at \$1,344,000 over eight years.

2. Estimated Cost of Program. The estimates of annual costs of the loan assisted program are shown in the accompanying table.

Table 1.

Estimated Annual Costs in \$1,000

	1967	1968	1969	Calendar Years		1972	1973	1974	Total
				1970	1971				
Local Costs	555	862	885	927	705	584	555	509	5,582
Imported Commodities	348	277	267	273	116	36	27	19	1,363
Total	903	1,139	1,152	1,200	821	620	582	528	6,945

The estimate of contributions to be made by the participating agencies for each year of the eight-year program is shown in table 2 below.

Table 2

Estimated Contributions of Participating Agencies  
\$1,000

	1967	1968	1969	1970	1971	1972	1973	1974	Total
GOP	320	427	427	427	427	584	555	509	3,676
AID	235	435	458	500	278	-	-	-	1,906
UNICEF	346	274	264	270	113	33	24	17	1,341
PAHO	2	3	3	3	3	3	3	2	22
Total	903	1,140	1,152	1,200	821	620	582	528	6,945

3. Borrower Ability to Meet Section 611. With respect to Section 611 requirements, the Borrower has completed, with assistance of PAHO/WHO, a plan of operations for an eight-year malaria eradication program which contains a detailed cost breakdown acceptable to PAHO/WHO and USPHS. (See project description). Necessary administrative personnel changes were made by SMNEPA in December 1964 in accordance with PAHO/WHO, UNICEF and USAID recommendations. It appears, therefore, that the cost estimate is sufficiently firm to fulfill the requirements of Section 611.

4. Proposed Terms. Terms recommended for this loan are:

Amortization - 40 years

Grace Period - 10 years

Interest - 1 percent during grace period  
2½ percent during payoff period

5. Reasonableness of Proposed Terms and Financial Plan. The financial plan which contemplates AID financing of 34 percent of the local currency cost of the project (48 percent of the local currency cost for the five years of the program in which AID will participate), and the terms, which are the most concessional offered by AID, are deemed reasonable under the circumstances. As shown in the Economic Analysis (Section I, F), Paraguay's urgent need is for developmental financing with the minimum possible requirement for GOP local cost contribution and on the most concessional terms available; current and projected GOP revenue budget deficits remain substantial and the chances of near-term amelioration of this situation are dim; projected annual debt service requirements may reach 12 percent of projected export exchange earnings and 45 percent of gross public savings; the need for development capital is both long term and immediate; the project is one of public health rather than income producing; per capita annual income in Paraguay is estimated in the neighborhood of \$250; the GOP will, over the next eight years, increase budget allocations by over \$140,000 per year, which is equivalent to an average annual contribution more than 50 percent above the recent SENEPA budget level; Paraguay's foreign exchange earnings, which are dependent on several agricultural commodities, have left the GOP with reserves sufficient to cover only about two months' payments for imports of goods and services. Therefore, harder terms and a larger local cost contribution would only serve to weaken the country's ability to carry out the necessary overall program of economic development.

SECTION II - IMPACT ON U.S. ECONOMYA. Competition with U.S. Enterprise

No competition with U.S. enterprise will arise from this project; on the contrary, U.S. firms will have their markets expanded thereby, since the growth of Paraguay's economy brought about through removal of the malaria threat from her most fertile area will enable Paraguay to buy more U.S. products.

B. Source/Origin Procurement of Goods and Services. The loan provisions will limit loan-financed external procurement to the United States; however, substantially all of the loan is expected to be used for costs of personal services and local commodities procured in Paraguay.

SECTION III - COVENANTS AND CONDITIONS

In addition to the usual covenants and conditions, the Loan Authorization and Agreement will require, in substance, that:

- A. Borrower shall covenant to give full cooperation to the USPHS/PASA personnel assigned to the Project.
- B. Prior to the execution of the Loan Agreement, the Borrower shall furnish AID, in form and substance satisfactory to AID, a schedule of the expected amounts of its contributions to the project to be derived from the  $1\frac{1}{2}$  percent IPS tax during the estimated eight year program, 1967-1974. The Borrower shall accompany that schedule with (1) evidence satisfactory to AID that arrangements have been made for automatic retention of said  $1\frac{1}{2}$  percent IPS tax revenues by the Central Bank of Paraguay, acting as trustee for SENEPA, or such other means of assuring fund availability as AID may agree to in writing; (2) evidence that its budgeted 1967 contribution to the project is current; and (3) evidence that any shortfall in the project will be met out of the Borrower's general funds.
- C. Borrower shall covenant that all clothing provided by SENEPA to working personnel as part of this program shall bear Alliance for Progress markings satisfactory to AID.
- D. Prior to the execution of the Loan Agreement, the Borrower shall furnish AID, in form and substance satisfactory to AID, evidence that the contribution to the Project scheduled for UNICEF and PAHO will be available on a timely basis and that UNICEF and PAHO have agreed to give full cooperation to the USPHS/PASA personnel assigned to the project.
- E. The Borrower shall covenant faithfully to carry out its Plan of Operation and to obtain the approval of AID, PHS, PAHO and UNICEF before modifying the Plan.
- F. Prior to the execution of the Loan Agreement, the Borrower shall covenant to provide the resources in addition to the AID loan (including any increases required over the presently scheduled commitment resulting from increased costs) necessary to achieve the eradication of malaria within its territory and to use its best efforts to prevent the reappearance of malaria in that territory; in furtherance of that undertaking the Borrower shall consult periodically with representatives of AID, or such persons as AID may nominate, during at least three years after the last disbursement.

- G. The Borrower shall covenant that it will maintain, for the full eight years of the project or other such period as AID and the Borrower agree, the Servicio Nacional de Eradicacion del Paludismo (SENEPA) as a separate administrative and technical entity reporting directly to the Minister within its Ministry of Health and Social Welfare, for the purpose of implementing this project.
- H. Equipment, materials and services (except marine insurance) financed under the loan shall have their origin in and be procured from the United States or Paraguay. Marine insurance financed under the loan shall be placed in the United States with a company authorized to do marine insurance business in any state of the United States.
- I. United States dollars utilized under the loan to finance local currency costs shall be made available to the Borrower or its designee through SIC procedures and shall be used only for procurement in the United States.
- J. Borrower shall covenant to promulgate administrative regulations satisfactory to AID for SENEPA and to cooperate in the formation of a Malaria Advisory Council and a Personnel Committee satisfactory to AID.
- K. Borrower shall covenant to coordinate its program with those of its neighboring countries in the manner recommended by the USPHS/PASA advisors.
- L. Prior to the execution of the Loan Agreement, all payments on all of the Borrower's debts to AID or its predecessor agencies shall be current.
- M. Prior to the execution of the Loan Agreement, the Borrower shall have agreed with A.I.D. on the establishment of the SENEPA joint fund account and the scope and nature of the U.S. Co-Administrator's duties.
- N. The loan shall be subject to such other terms and conditions as A.I.D. may deem desirable.

SECTION IV - ISSUESA. Joint Fund/Co-Administrator

As discussed above, the project committee feels that this project will be most effectively administered if it is funded out of a joint AID/GOP fund held in the Central Bank of Paraguay and if one of the USPHS/PASA technicians serves as co-administrator of SENEPA for the term of the loan; he would also be co-administrator of the joint fund. This type of organizational relationship is not usually recommended for use under loans because such a method does not have the degree of institution building effects normally desired. However, the primary objective of this program is not so much one of institution building as the eradication of a specific disease in the shortest time possible. Therefore, the project committee recommends said organizational framework in order to assure rapid and effective implementation and successful completion of the project. The indirect, longer term institution building effect of the program is discussed in Section I, E, 10.

B. Grant Funding of USPHS/PASA Technicians

It is the opinion of the project committee that the results of such grant funding are so greatly superior in terms of increased job effectiveness as to overcome the general policy reasons advanced in favor of loan funding technicians: although the disparate salaries of the AID technicians vis-a-vis their local counterparts and the necessary overseer functions of the North Americans are acceptable to the locals when the cost is paid out of U.S. funds, when this becomes a charge against the future resources of their own poor country, their resentment could become sufficiently great to serve as a major hindrance to the formation of the necessarily close working relationship that should exist for maximum project effectiveness.

C. GOP Counterpart Fund Availability

An earmarked  $1\frac{1}{2}$  percent tax, collected by the Social Security Institute (IPS), will assure an adequate GOP contribution to the first five years of the eradication program, but will leave a \$370,000 shortfall for the last three years. If, as seems quite possible, expansion of the IPS system causes revenues from the  $1\frac{1}{2}$  percent tax to rise faster than the costs of the malaria eradication program, some or all of the shortfall may be met with such revenues; however, a condition/covenant will be inserted that any shortfall shall be met out of general GOP funds.

D. GOP Debt Payment Arrangements

It is recommended that a clause containing substantially the following language be inserted in the Loan Authorization and Loan Agreement to minimize the likelihood of this problem arising: "Prior to the execution of the Loan Agreement all payments on all of the Borrower's debts to AID or its predecessor agencies shall be current."

E. GOP Global Self-Help

This Issue is dealt with in TOAID A-431.

SECTION V - IMPLEMENTATION PLAN

In view of the presence of the USPHS Malaria Advisor as a Co-Administrator of SENEPA, in addition to the fact that US AID/Paraguay has a permanent Capital Development Officer, it is recommended that the Mission Director be granted implementation authority on this loan, in conjunction with the Malaria Advisor and the General Counsel, as necessary.

It is expected that this loan will be authorized before the end of April, 1967, and that the Loan Agreement will be signed within a 120-day period thereafter. The loan project committee estimates that approximately one month will be required after signing of the Loan Agreement to satisfy the conditions precedent. GOP concurrence in principle to the terms of the PASA to be executed between the US AID/Paraguay and U.S. Public Health Service will be obtained immediately after the execution of the Loan Agreement. Arrangements for providing the two U.S. Public Health Service Advisors will be concluded immediately following execution of the Loan Agreement, with the Advisors expected to be in the field about two or three months later.

The A.I.D. loan, being purely for local costs, will be disbursed by the US AID/Paraguay through an initial advance of approximately \$200,000 which will be replenished quarterly upon submission of required documentation, except that prior to disbursement of the last \$50,000, Borrower shall have submitted required documentation for all previous disbursements. Unless otherwise agreed to in writing by US AID/Paraguay, the initial advance will be replenished only if the scheduled disbursement of funds to SENEPA by the Central Bank has been made in the previous quarter. The quarterly reimbursements to the revolving fund will be made throughout the five years of A.I.D. participation in the program, with the final disbursement occurring by late CY1972 in accordance with the schedule. The building up of a lasting institution to deal exclusively with malaria eradication is not envisaged as part of the plan. A capable institution to carry out the program already exists in SENEPA, which will then be phased out and the follow-up operations will be carried out by the GOP Ministry of Public Health, once all malarious areas are put into the maintenance phase. The work will proceed in accordance with the detailed schedule of the Plan of Operations.

Reporting, Monitoring

Fiscal control of the loan funds will be the responsibility of the USAID/Paraguay Office of the Controller, which will supplement review of documents with occasional spot checks of the Ministry of Health and Social Welfare, and SENEPA procedures as called for. Certification of commodity procurement and personal service vouchers will be provided by the U.S. Public Health Service PASA technician. Periodic progress reports will be submitted to USAID/Paraguay by SENEPA and will be forwarded to AID/W by the USPHS monitor of the loan. The monitor will have the responsibility of evaluating the Borrower's reports and compilation of internal AID Status Reports and other supplementary information.

PARAGUAY--MALARIA ERADICATION  
CHECK LIST OF STATUTORY CRITERIA

(Alliance for Progress)

In the right-hand margin, summarize for each item the information or conclusion requested. As necessary, reference the section(s) of the Capital Assistance Paper, or other clearly identified and available document, in which the matter is further discussed. This form may be made a part of the Capital Assistance Paper.

The following abbreviations are used:

FAA - Foreign Assistance Act of 1961, as amended by the Foreign Assistance Act of 1966.

App - Foreign Assistance and Related Agencies Appropriations Act, 1967.

1. FAA §.102. Precautions that have been or are being taken to assure that loan proceeds are not diverted to short-term emergency purposes (such as budgetary, balance of payments, or military purposes) or any other purpose not essential to the country's long-range economic development.  
The proceeds of this loan will be used exclusively on the project and all-disbursements will be made pursuant to AID regulations. PASA technician will serve as Co-Administrator and shall approve all requests for disbursements and make certifications as to timely and full contributions of the GOP.
2. FAA §.102. Information on measures taken to utilize United States Government excess personal property in lieu of the procurement of new items.  
All procurement will be handled by and with funds of UNICEF and PAHO.
3. FAA §.102. Information whether the country permits, or fails to take adequate measures to prevent, the damage or destruction by mob action of United States property.  
Both the people and the Government are favorable to the U.S. and hostile mob action could not occur.
4. FAA §.201(d). Information and conclusion on legality (under laws of country and U. S.) and reasonableness of lending and relending terms of the loan.  
Loan terms are consistent with U.S. and Paraguay laws.
5. FAA §.251(a). Manner in which loan will promote country's economic development and contribute to the welfare of its people.  
The eradication of malaria will be of great economic and social benefit to Paraguay.
6. FAA §.251(b)(1). Extent to which country is adhering to the principles of the Act of Bogota and Charter of Punta del Este and is showing a responsiveness to the vital economic, political, and social concerns of its people, and extent to which country has demonstrated a clear determination to take effective self-help measures.  
Starting from an extremely modest economic base, Paraguay has made substantial progress since the inception of the Alliance and has supported the economic and social goals thereof. Possessed of a turbulent and undemocratic history, the country has nevertheless taken significant steps toward tranquility, stability and personal and political freedom. Although hindered by inadequacy of its resources, Paraguay is seeking, with fair success, to attain an increasing level of self-help.

7. FAA §.251(b)(2). Information and conclusion on activity's economic and technical soundness. This activity has been found economically and technically sound. See Sections I, E and I, F.
8. FAA §.251(b)(3). Information and conclusion on activity's relationship to and consistency with other development activities, and its contribution to realizable long-range objectives. This activity has a basic significance for all Borrower's development activities, and will play an essential part in the realization of long-range objectives. See Sections I, A and I, E.
9. FAA §.251(b)(4). Information and conclusion on possible effects on U. S. economy, with special reference to areas of substantial labor surplus. There will be no adverse effect on the U.S. economy as a result of this project; in fact, it will benefit the U.S. economy through increased purchases of U.S. products by a more prosperous and healthy Paraguay.
10. FAA §.251(b)(5). Information and conclusion on the degree to which the country is making progress toward respect for the rule of law, freedom of expression and of the press, and recognition of the importance of individual freedom, initiative, and private enterprise. Paraguay is making substantial progress: all of country's major political parties are recognized, the press is free to criticize the government and personal and business initiative are encouraged.
11. FAA §.251(b)(6). Information and conclusion on the degree to which the country is taking steps to improve its climate for private investment. Paraguay encourages private investment with tax concessions, permission to remit profits and investment guaranties, plus an atmosphere of official welcome.
12. FAA §.251(b)(7). Information and conclusion on whether or not the activity to be financed will contribute to the achievement of self-sustaining growth. Freeing the country's best agricultural areas from malaria will help greatly in achieving economic development.
15. FAA §.251(b)(8). Information and conclusion on the extent to which the activity will contribute to the economic and political integration of Latin America. Malaria eradication is of regional importance and will help develop a greater degree of integration.
14. FAA §.251(b). Information and conclusion on availability of financing from other free-world sources, including private sources within the United States. Other Free World financial sources are not interested in financing this project. See Section I, D.
15. FAA §.251(b). Information and conclusion on capacity of the country to repay the loan. For the reasons set forth in Section I, F it is believed that Paraguay has the capacity to repay this loan.

1. FAA §.251(b). Information and conclusion on country's efforts to repatriate capital invested in other countries by its own citizens. Capital flight is considered not to be a major problem in Paraguay at this time.
17. FAA §.251(b). Information and conclusion on reasonable prospects of repayment. For the reasons set forth in Section I, F it is believed that there are reasonable prospects of repayment of this loan.
18. FAA §.251(e). Information and conclusion on availability of an application together with sufficient information and assurances to indicate reasonably that funds will be used in an economically and technically sound manner. Borrower has made a formal application for loan funded assistance. There is sufficient information to indicate that the funds under this loan will be used in an economically and technically sound manner.
19. FAA §.251(g). Information and conclusion on use of loan to assist in promoting the cooperative movement in Latin America. Not applicable.
20. FAA §.251(h). Information and conclusion on whether the activity is consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress in its review of national development activities. Malaria eradication is an approved activity.
21. FAA §.252(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources. All funds under this loan will be used to pay local costs of the project.
22. FAA §.281. Extent to which the loan will contribute to the objective of assuring maximum participation in the task of economic development on the part of the people of the developing countries, through the encouragement of democratic private and local governmental institutions. The decentralized organization and training and use of local personnel of this program plus the creation of public health consciousness in remote areas will encourage such institutions.
23. FAA §.601(a). Information and conclusions whether loan will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture, and commerce; and (f) strengthen free labor unions. The benefits of this project will encourage efforts of Borrower through increased agricultural production, to increase flow of international trade, foster private initiative and competition and improve the technical efficiency of agriculture.

24. FAA §.601(b). Information and conclusion on how the loan will encourage U. S. private trade and investment abroad and how it will encourage private U. S. participation in foreign assistance programs (including use of private trade channels and the services of U. S. private enterprise). The loan will encourage private trade and participation through its improvement of the health and economic well being of the people of Paraguay, who will then be both willing and able to acquire more U.S. goods and services.
25. FAA §.601(d). Conclusion and supporting information on compliance with the Congressional policy that engineering and professional services of U. S. firms and their affiliates are to be used in connection with capital projects to the maximum extent consistent with the national interest. No procurement of engineering or professional services of private firms is contemplated under this loan financed activity.
26. FAA §.602. Information and conclusions whether loan will permit American small business to participate equitably in the furnishing of goods and services financed by it. All funds under this loan will be used to pay local costs of the project.
27. FAA §.604(a); App. §.1v8. Compliance with restriction of commodity procurement to U. S. except as otherwise determined by the President and subject to statutory reporting requirements. All funds under this loan will be used to pay local costs of the project. U.S. dollars utilized under the loan to finance local currency costs shall be made available to Borrower or its designee through SLC procedures, and shall be used for procurement in U.S.
28. FAA §.604(b). Compliance with bulk commodity procurement restriction to prices no higher than the market price prevailing in the U. S. at time of purchase. All funds under this loan will be used to pay local costs of the project.
29. FAA §.604(d). Compliance with requirement that marine insurance be purchased on commodities if the host country discriminates, and that such insurance be placed in the U. S. All funds under this loan will be used to pay local costs of the project.
30. FAA §.604(e). Compliance with requirement that funds not be used for procurement of any agricultural commodity or product thereof outside the United States when the domestic price of such commodity is less than parity. Not applicable
31. FAA §.611(a)(1). Information and conclusion on availability of engineering, financial, and other plans necessary to carry out the assistance and of a reasonably firm estimate of the cost of the assistance to the United States. Necessary substantive technical and financial planning for the project has been completed and a reasonably firm estimate of costs for the project has been obtained.
32. FAA §.611(a)(2). Necessary legislative action required within recipient country and basis for reasonable anticipation such action will be completed in time to permit orderly accomplishment of purposes of loan. The only legislative action required is a decree approving the loan agreement which is expected on a timely basis because of GOP interest in the project.

33. FAA §.611(b); App. §.101. If water or water-related land resource construction project or program, information and conclusion on benefit-cost computation. **Not applicable.**
34. FAA §.611(c). Compliance with requirement that contracts for construction be let on competitive basis to maximum extent practicable. **Not applicable.**
35. FAA §.612(l) and 636(h). Appropriate steps that have been taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services and foreign currencies owned by the U. S. are utilized to meet the cost of contractual and other services. **Borrower is contributing over 65% of the local cost financing of this project. See Section I, G.**
36. FAA §.619. Compliance with requirement that assistance to newly independent countries be furnished through multilateral organizations or plans to maximum extent appropriate. **Not applicable.**
37. FAA §.620(a); App. §.107(a) and (b). Compliance with prohibitions against assistance to Cuba and any country (a) which furnishes assistance to Cuba or failed to take appropriate steps by February 14, 1964, to prevent ships or aircraft under its registry from carrying equipment, materials, or supplies from or to Cuba; or (b) which sells, furnishes, or permits any ships under its registry from carrying items of primary strategic significance, or items of economic assistance to Cuba. **Paraguay provides no assistance to Cuba.**
38. FAA §.620(b). If assistance to the government of a country, existence of determination it is not controlled by the international Communist movement. **Paraguay is not controlled by the international communist movement.**
39. FAA §.620(c). If assistance to the government of a country, existence of indebtedness to a U. S. citizen for goods or services furnished or ordered where such citizen has exhausted available legal remedies or where the debt is not denied or contested by such government or the indebtedness arises under an unconditional guaranty given by such government. **Not applicable.**
40. FAA §.620(d). If assistance for any productive enterprise which will compete in the U. S. with U. S. enterprise, existence of agreement by the recipient country to prevent export to the U. S. of more than 20% of the enterprise's annual production during the life of the loan. **Not applicable.**

41. FAA §.620(e)(1). If assistance to the government of a country, extent to which it (including government agencies or subdivisions) has, after January 1, 1962, taken steps to repudiate or nullify contracts or taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U. S. citizens or entities beneficially owned by them without taking appropriate steps to discharge its obligations. **Paraguay has taken no such action.**
42. FAA §.620(f); App. §.109. Compliance with prohibitions against assistance to any Communist country. **Paraguay is not a communist country.**
43. FAA §.620(j). Compliance with prohibition against use of assistance to compensate owners for expropriated or nationalized property. **Will be complied with.**
44. FAA §.620(h). Compliance with regulations and procedures adopted to insure against use of assistance in a manner which, contrary to the best interests of the U. S., promotes or assists the foreign aid projects or activities of the Communist-bloc countries. **The project will not promote or assist the foreign assistance aid projects or activities of the communist bloc countries.**
45. FAA §.620(i). Existence of determination that the country is engaging in or preparing for aggressive military efforts. **Paraguay is not engaging in such activity.**
46. FAA §.620(i). Information on representation of the country at any international conference when that representation includes the planning of activities involving insurrection or subversion against the U. S. or countries receiving U. S. assistance. **Paraguay is strongly pro U.S. and anti communist.**
47. FAA §.620(k). If construction of productive enterprise where aggregate value of assistance to be furnished by U. S. will exceed \$100 million, identification of statutory authority. **Not applicable.**
48. FAA §.620(l). Consideration which has been given to denying assistance to the government of a country which after December 31, 1966, has failed to institute the investment guaranty program for the specific risks of inconvertibility and expropriation or confiscation. **Paraguay has an investment guaranty program.**
49. FAA §.620(n); App. 107(b) and 116. Compliance with prohibition against assistance to countries which traffic or permit trafficking with North Viet-Nam. **Paraguay neither traffics nor permits trafficking with North Vietnam.**

50. FAA §.620(o). If country has seized, or imposed any penalty or sanction against, any U. S. fishing vessel on account of its fishing activities in international waters, information on the consideration which has been given to excluding the country from assistance. Not applicable.
51. FAA §.620(q). Existence of default under any Foreign Assistance Act loan to the country. No such default exists.
52. FAA §.621. Information and conclusion on how the loan in providing technical assistance will operate to the fullest extent practicable goods and professional and other services from private enterprise on a contract basis. If the facilities of other Federal agencies will be utilized, information and conclusion on whether they are particularly suitable, are not competitive with private enterprise, and can be made available without undue interference with domestic programs. All technical assistance furnished by the U.S. will be provided by the USFMS under terms of its PASA with AID.
53. App. §.102. Compliance with requirement that payments in excess of \$25,000 for architectural and engineering services on any one project be reported to Congress. Not applicable.
54. App. §.104. Compliance with bar against funds to pay pensions, etc., for military personnel. Will be complied with.
55. App. §.106. If country attempts to create distinctions because of their race or religion among Americans in granting personal or commercial access or other rights otherwise available to U. S. citizens generally, application which will be made in negotiations of contrary principles as expressed by Congress. Paraguay does not make any such distinctions.
56. App. §.111. Compliance with existing requirements for security clearance of personnel. Security clearance of U.S. funded personnel will be obtained.
57. App. §.112. Compliance with requirement for approval of contractors and contract terms for capital projects. Not applicable.
58. App. §.114. Compliance with bar against use of funds to pay assessments, etc., of U. S. member. No funds under this loan will be used to pay assessments, etc. of UN.
59. App. §.115. Compliance with regulations on employment of U. S. and local personnel for funds obligated after April 30, 1964 (Regulation 7). This requirement will be complied with.
60. App. §.401. Compliance with bar against use of funds for publicity or propaganda purposes within U. S. not heretofore authorized by Congress. This requirement will be complied with.

### Analysis of Plan of Operations

The Pan American Health Organization has approved the Government of Paraguay Malaria Eradication Plan and UNICEF has indicated its intention to furnish the necessary commodities if the AID loan is approved. The U.S. Public Health Service consultants who conducted an intensive review of the program in October 1966 consider the plan of operations and the financing essentially sound.

In studying the efficacy of the present plan the consultants noted factors that led to the suspension of the original eradication program in 1961 and the withdrawal of external assistance by the USOM/P and the UNICEF. These factors were delineated in reports by the ICA Regional Malaria Advisor who reviewed the program in March and July 1961 at the request of USOM/P. Evidence of deficiencies in program administration, organization, financing and operations were documented in the advisor's reports as well as inadequacies in technical areas of the malaria program.

Among the deficiencies noted, outstanding were the diversion of some malaria project funds to other Ministry of Health projects. Another was the lax enforcement of internal regulations governing personnel, supply, transport and purchasing. For example, organization vehicles were diverted for unofficial use without reimbursement to SEMEPA, unassigned personnel were payrolled, supplies were incompletely inventoried and disciplinary measures for neglect of duty and unsatisfactory performance was not exercised to the extent required for efficient operations.

In the organization of the program all activities were centralized in Asuncion and recruitment of personnel was limited to sources of labor from the city. There was no provision for local hire of field staff workers from rural agricultural areas where the malaria problem is mainly centered. As a result, travel expenses and man days lost in deploying personnel long distances into the field to and from Asuncion were excessive and needless.

In the conduct of anti-malaria operations schedules of work were not maintained, the application of residual spraying to

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to houses was incomplete and only partial spray coverage of the malarious areas was accomplished. The inadequate coverage reflected the incompleteness of geographic reconnaissance of the malaria territory and uncertain delimitation of the malarious areas of the country. The latter was the result of erroneous and unverified information about the habits and distribution of the mosquito vectors of malaria, the investigation of which was only superficially treated in the beginning stages of the program. Lacking qualified entomologist on the staff and also on the staff of assigned international advisors, SENEPA was unable to plan and direct satisfactory entomological studies and assessments.

Finally, program resources, internal and external, were insufficient to mount the program to a level of effort necessary to accomplish eradication in Paraguay.

In consideration of the administrative, technical and operational deficiencies neither ICA nor UNICEF could justify further external assistance to the program until the GOP could reorganize and refinance the program to include restaffing of the headquarter's technical and administrative sections.

The conditions precedent for reconsideration of the question of external assistance to the program by ICA and UNICEF were set forth by the ICA regional malaria advisor and the PAHO advisor in a joint report to the Government of Paraguay, Ministry of Health, in July 1961. The report called for:

1. Accurate delimitation of the malarious areas of the country.
2. Accurate and complete geographical reconnaissance of the areas to be covered by operations.
3. Development of a network of malaria notification posts manned by voluntary collaborators strategically located throughout the malarious areas of the country.
4. Preparation of a plan of operations detailing the activities to be carried out each year to the completion of eradication, a budget presentation for each year and a precise delineation of the requirements for external assistance.
5. Creation of a revolving fund to which contributions of the Government and participating agencies would be deposited in a special SENEPA account.

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6. Formation of a Malaria Council to review periodically the needs of the program and to assess its progress with membership comprised of one member from each agency cooperating in the program.

7. Establishment of internal regulations governing administration of the program.

The IRT (Intensive Review Team) in assessing the response of SENEPA to the recommendations of the 1961 report considers that satisfactory compliance has been demonstrated on all of the conditions noted below:

1. The plan of operations is complete and provides adequate estimates of the requirements for achieving eradication.
2. The financial plan provides adequate projections of funding for the program over its estimated eight-year life.
3. The headquarters had been restaffed and reconstituted along lines recommended by international malaria advisors (WHO and PAHO).
4. The organization had been decentralized on the basis of 3 zones and 21 sectors.
5. Some 2,600 malaria notification posts have been established largely staffed by voluntary collaborators.

Other conditions noted below are progressing satisfactorily but remain to be completed:

1. Information has been improved on the distribution of the vector mosquitoes, their habits and behavior to the degree that is possible within limitations of the present SENEPA entomological service.
2. Geographical reconnaissance is proceeding satisfactorily but remains to be completed.
3. A revolving fund will be established when financing for eradication is assured.
4. A malaria council will be formed as recommended when the eradication program is initiated.

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Based on the results of the review made of the plan of operations, the staffing, the administration and the technical accomplishments during the period 1961-1966, the IRT considers that the SEMEPA is prepared to initiate a malaria eradication program.

#### Adequacy of Staff and Technical Assistance

Although there are no serious reservations about the reliability of the plan of operations, it should be emphasized that its successful implementation will depend mainly on the abilities, the competence, the dedication and resourcefulness of the headquarters and field supervisory staff.

The chiefs of the major sections of the SEMEPA headquarters and zone establishments in the field are largely professional personnel such as physicians, engineers and administrators. Some of the professional staff members have been trained abroad and there is no doubt of their dedication to the objectives of the program. They have a practical knowledge of conditions in the field and an appreciation of the administrative and technical problems which caused suspension of operations in 1961.

Given adequate operational executive autonomy and responsibility, with policy directives from the Ministry framed on the advice of an Advisory Council, it is reasonable to expect that the effectiveness of the administration and execution will be significantly improved. As the number of personnel is increased to meet the requirements of the new program, an intensive training activity will be carried out to develop the necessary operational competence in the field.

However, when the adequacy of the present staff is weighed against the magnitude and complexity of the malaria problem and the 700 to 800 personnel to be employed, the depth of resources of key personnel possessing the necessary management and technical skills and experience needs to be increased. The shortage will present a problem during the crucial first 3 to 4 years of the program at a time when the level of operation efforts must be maintained at a peak level. The problem can be alleviated by provision of technical assistance from the PASB which plans to assign five consultants: a malariologist, a malaria engineer and three malaria inspectors, and by the U.S. Public Health Service which plans to assign two PASA advisors: a senior malaria advisor with entomological specialty and an administrator. The PHS malaria advisor will serve two principal functions: first, he will monitor project performance to ascertain the degree of conformance with operational plans and loan covenants and will assist

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the Director of SENEPA and his staff in the preparation of annual work plans and budgets. Periodic reports detailing the progress of the program, the problems encountered and suggestions for remedial actions when indicated will be rendered to the USAID/P and the PHS. Also, liaison will be maintained between the USAID/P, the PHS and the national program on all matters of mutual concern. In the operations of the program, the advisor will seek ways and means of improving efficiency and effectiveness through demonstration, training and investigation and by consultation with the PHS/CDC Malaria Eradication Branch.

The assignment of the PHS malaria advisor will assure that the U.S. loan assistance is effectively utilized as planned and that prompt remedial action is taken when and if the need should arise.

In addition to providing general advisory services the advisor will assist the national staff to plan and direct an entomological service in SENEPA which can ensure proper entomological surveillance, assessment and investigation in all operating areas during the attack phase of the program. Inadequacy of such assessment of the 1958-1961 period led to gross misdirection of field operations which found spraying underway in areas of non-malaria transmission and the omission of spraying from areas of transmission.

A properly planned and directed entomological activity will serve to detect early in the attack phase the relative effectiveness of the residual insecticides against the prevalent malaria vectors, significant changes in the behavior and habits of the vectors induced by widespread spray operations, the duration of effectiveness of the insecticides, and the optimum dosage and cycles of insecticide to be employed in the various malarious areas. The product of such data and information properly documented and analyzed will provide the basis for a more effective operation responsive to timely modification of plans and methods should such be considered desirable during the normal course of the program.

The malaria specialist (administrator) will function as co-administrator sharing responsibility for administration with the SENEPA administrator. His duties will encompass fiscal certifications and monitoring services as required by the loan

agreement covenants and conditions and will include direct assistance to SENEPA in planning, developing and implementing an adequate administrative service in the management of transport, supply, finances and personnel.

The PHS/CDC, Malaria Eradication Branch, will maintain routine contact with the PHS advisors for appraisal of program progress and problems. The Branch will furnish special consultative services and will conduct periodic program assessments in collaboration with participating international agencies.

In all planning, evaluation and operational activities the PHS advisors will work closely with international advisors to assure adequate coordination and complementation of assistance.

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AGREEMENT OF THE II PARAGUAYAN-BRAZIL  
BORDER MEETING ON MALARIA ERADICATION  
May 11-12, 1966 - PUERTO PRESIDENTE  
STROESSNER, PARAGUAY

The representatives of the Servicio Nacional de Erradicacion del Paludismo (SENEPA) and Campana de Erradicacion de Malaria del Brasil (CEM), participants of the II Paraguayan-Brazilian border meeting on malaria eradication, meeting this time in Puerto Presidente Stroessner, Alto Parana, Republic of Paraguay, on May 11-12, 1966, after analysing carefully their epidemical activites and other aspects of malaria eradication in the border area of both countries, resolve the following:

1. Both CEM and SENEPA will take steps before the corresponding authorities to obtain authorization for the traffic of vehicles and personnel of the Service in the neighboring territory, presenting only the CEM or SENEPA Identity Card.

2. There are Paraguayan and Brazilian localities located one in front of the other forming a unique population center, generally divided by only an imaginary line that determines the border, and considering that the locality is an indivisible unit for the purpose of malaria eradication and considering that SENEPA has not yet begun its attack program, it is agreed that CEM spray the house of those Paraguayan localities whose list and sketch will be sent by the respective zones of SENEPA to the CEM corresponding sector.

3. SENEPA agrees that CEM chooses from this list the localities that it thinks convenient and includes others that are not in the list and whose spraying is considered necessary.

4. SENEPA agrees to send one person to go along with the spray men of CEM during the spraying operations.

5. As soon as SENEPA starts its attack phase, it was agreed that intradomiciliary spraying of the border areas will have to be carried out simultaneously at the same time on both sides of the border. As CEM has its attack program in progress, SENEPA will have to adjust its itinerary schedule to the itinerary schedule of CEM of this area.

6. It is agreed that the evaluators of CEM of the Mato Grosso sector will resupply the Paraguayan PPNN (Notification Posts)

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situated in bordering localities whose list will be agreed upon in the field by the representatives of SENEPA and CEM. SENEPA will provide CEM with the forms used by the Paraguayan Notification Posts for the blood sample taking.

7. CEM will examine said samples and will send the results in the forms provided by SENEPA (EP-1) to Zone III with headquarters in Concepcion, through the headquarters of CEM in Ponta Pora.

8. Personnel of CEM will visit Paraguayan bordering localities to continue with cases and for radical treatment of sick people, as well, for epidemical investigations.

9. Personnel of SENEPA and CEM will visit together the bordering localities to be introduced to the official authorities, collaborators of Notification Posts and leaders, asking for support of said persons in order to do a better job in case the personnel wants to cross the border to spray houses, resupply of Notification Posts, epidemical investigations, continuation of cases, radical curing, etc.

10. Exchange of information about the epidemical situation of the country and the present situation of the activities of the eradication campaign will be carried out between the Direcciones Generales of SENEPA and CEM.

11. More frequent exchange of information will be carried out between the Mato Grosso and Parana Sectors and Zones II and III of SENEPA, which will be carried using the fastest and most direct means (public transportation, etc.). The Chiefs of Zones and Sectors will agree in the field the best ways to carry out these recommendations. In case of emergency, telegraph will be used.

12. It was agreed that the Chiefs of Sectors of CEM of Mato Grosso and Parana keep in continuous contact with their Paraguayan colleagues of Zones II and III of SENEPA.

13. It was agreed that the kind of meeting that took place in Puerto Presidente Stroessner be carried out periodically every year, alternating the corresponding headquarters in bordering localities of both countries (Paraguay-Brazil). The headquarters of the next meeting will be the City of Guaira (Parana). The meeting will take place around June 1967.

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14. It was agreed to give priority to the study of the behavior of *P.falciparum* before chloroquine in view of the discovery of several cases with apparent abnormal reaction to that drug in the bordering area.

15. The delay to start the attack phase of the program of Paraguay was a reason for uneasiness before the serious problem of malaria in the bordering area that affects the progress of the malaria eradication campaign of Brazil, as well as the program of colonization and development of that area in Paraguay.

16. It was agreed by unanimity to give a vote of gratitude of the Minister of Public Health and Social Welfare, Dionisio Golzales Torres for his participation in this technical meeting.

Signed: DR. ALCIDES ALMADA LOPEZ  
SENEPA - Paraguay

Signed: DR. DJALMA ALMEIDA  
CEM - Brazil

PARTICIPANTS:

SENEPA - Paraguay and CEM - Brazil (see annex list).

Puerto Presidente Stroessner  
May 12, 1966

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Paraguayan Delegation

Prof. Dr. Dionisio Gonzales Torres, Minister of Public Health  
and Social Welfare

Dr. Alcides Almada Lopez, Director of SENEPA

Dr. Bruno Gustavo Rumich R., Chief of Zone II (Caaguazú)

Dr. Pedro P. Martinez, Chief of Zone III (Concepcion)

Dr. Ruben M. Caceres, Director of II Sanit. Region (Villarrica)

Eng. Carlos R. Mariotti, Chief of Sparing Operation Division, SENEPA

Dr. Bernardo Troche, Chief of Sanitary Education Division, SENEPA

Dr. Carlos Gonzales, Administrative Director, SENEPA

Lic. Ladislao R. Gonzales, Chief of Public Relations Division,  
Ministry of Health

Sr. Carlos Saguer, observer

Sr. Francisco Ramon Brizuela, secretary

Brazilian Delegation

Dr. Djalma Almeida, malariologist, Assesor Tecnico do Superintendente

Dr. Jose Aluisio B. da Fonseca, doctor, Chefe Divisao Tecnica

Dr. Joaquim Cavalcante, doctor, Chefe do Sector Parana

Dr. Perce Infante Matschbach, malariologist, Assistente do Sector Para

Dr. Goldardo Tomich, Chefe do Sector Mato Grosso

Dr. Edyr Pedroso Daubian, malariologist, Assistente do Sector Mato Grosso

OSP/OMS

Sr. Francisco Gannan Corcho, OSP/OMS consultant, SENEPA

Dr. Rafael Miranda Franco, OSP/OMS consultant, CEM

Dr. Allan Perez Santos, OPS/OMS consultant, CEM

USAID

Dr. Jacob H. Landes, USAID Advisor - CEM

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ACUERDO DE TRABAJO DE LA PRIMERA REUNION  
PARAGUAYO-ARGENTINA SOBRE ERRADICACION  
DEL PALUDISMO EN AREAS DE FRONTERAS.

Los representantes del Servicio Nacional de Erradicación del Paludismo, SENEPA, Paraguay y de la Dirección de Lucha contra el Paludismo y Fiebre Amarilla de Argentina, DIPALFA, en cumplimiento del Acuerdo Sanitario Panamericano entre Uruguay, Argentina, Brasil y Paraguay, auspiciado por la OSP (13-Marzo-1948) en Disposiciones Generales a) II y III convienen realizar actividades epidemiológicas y los otros aspectos de la Erradicación del Paludismo en el área fronteriza de ambos países.

1. Los Servicios de Erradicación del Paludismo gestionarán ante las autoridades correspondientes la autorización para el tráfico en servicio de vehículos y personal en los territorios vecinos con la sola presentación de un carnet de identidad otorgado por SENEPA o DIPALFA.
2. Los servicios considerarán a la frontera como una misma área operativa y confeccionarán un Plan de Trabajo y su calendario respectivo de común acuerdo. En las áreas fronterizas, los rocios deberán realizarse simultáneamente, en la misma época y a ambos lados de la frontera. Esta coordinación quedará a cargo de los Delegados Zonales (DIPALFA) y Jefes de Zonas (SENEPA), respectivamente.
3. Si uno de los programas no puede realizar su fase de ataque puede acordarse que otro servicio rocíe las casas pero previamente se enviarán lista y croquis a las Zonas que realizarán éstos. Producido este caso el Servicio no actuante se compromete a enviar un funcionario para que acompañe al Servicio que realice la operación.
4. DIPALFA y SENEPA acuerdan facultar a los Delegados Zonales y Jefes de Zonas respectivos para que coordinen todo lo relativo al funcionamiento de los Puestos de Notificación existentes en las fronteras.
5. Las informaciones se harán de acuerdo a los formularios oficiales de los Servicios que contemplan los requisitos de la OSP.
6. Los Directores de los Servicios harán intercambio de información, semanal, o mensualmente, de acuerdo a lo que convengan.

7. Los responsables de los Servicios, convendrán el sistema a aplicar en seguimiento de casos y tratamiento radical de enfermos, así como investigaciones epidemiológicas en las zonas consideradas fronteras.
8. Los Directores conjuntamente realizarán visitas periódicas de inspección en la zona de trabajo.
9. La información requerida a ambos servicios para el éxito de las tareas deberá ser utilizando los medios más rápidos y directos y los Jefes de Zonas respectivos convendrán en el terreno los mecanismos más prácticos para llevar a efecto esta recomendación.
10. DIPALFA y SENEPA acuerdan facultar a sus Delegados Zonales y Jefes de Zonas para que cuando las circunstancias lo exijan intercambien localmente y por la vía más rápida información sobre la aparición de brotes de paludismo en la frontera u otros factores epidemiológicos.
11. Por unanimidad se acordó votos de reconocimientos a S. E. el Sr. Ministro de Salud Pública y Bienestar Social del Paraguay, Prof. Dr. Dionisio González Torres, a S. E. el Sr. Secretario de Estado de Salud Pública de la Argentina, Dr. Ezequiel Dago Holmberg, y al Representante de la OSP/OMS, Dr. Norman Kliwadenko por su participación en la presente reunión.
12. El presente acuerdo se firma en la ciudad de Asunción, Capital de la República del Paraguay, en el local del Ministerio de Salud Pública y Bienestar Social, a los diez y siete días del mes de diciembre del año mil novecientos sesenta y seis, en dos ejemplares de un mismo tenor y a un sólo efecto.

Fdo.: DR. JOSE MARIA GALIANO  
SENEPA-PARAGUAY

Fdo.: DR. JULIO HORACIO OUSSET  
DIPALFA-ARGENTINA

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PARTICIPANTES (ver lista anexa).

ANEXO UNICO

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PARTICIPANTES DE LA PRIMERA REUNION PARAGUAYO-ARGENTINA  
SOBRE ERRADICACION DE PALUDISMO EN AREAS FRONTERIZAS.  
16 al 17 de diciembre de 1966, Asunción, Paraguay.

PARAGUAY

Prof. Dr. Dionisio González Torres,	Ministro de Salud Pública y Bienestar Social
Dr. Juan Javaloyes y González,	Coordinador General de Regiones Sanitarias
Dr. José María Galiano	Jefe Dpto. de Epidemiología y Evaluación SENEPA
Dr. Carlos González	Administrador del SENEPA
Dr. Bernardo Troche	Director Educación Sanitaria
Dr. Javier Palacios M.	Jefe Zona I
Dr. Bruno G. Rumich	Jefe Zona II
Ing. Vicente Pistilli	Ingeniero de Campo
Dra. Marina Agüero	Jefe de Entomología

ARGENTINA

Dr. Ezequiel Dago Holmberg,	Secretario de Estado de Salud Pública
Dr. Manuel P. Gómez Carrillo	Enviado Extraordinario y Ministro Plenipotenciario (Encargado de Negocios, a.i.)
Dr. Julio Blaksley	Director General de Medicina Sanitaria
Dr. Julio Horacio Ousset	Director de Paludismo y Fiebre Amarilla
Dr. Ernesto Escudero	Director de Aviación Sanitaria
Ing. Juan Carlos Neumann	Jefe División de Ingeniería Sanitaria de Paludismo
Dr. Juan José Flores	Delegado Zonal en el Litoral
Ing. Samuel Kaliman	Ingeniero Sanitario Delegación Zonal Litoral
Dr. Jorge Linares	Jefe Base Operativa Formosa

OSP/OMS

Dr. Norman Kliwadenko	Representante Paraguay
Sr. Francisco Gañan Corcho	Inspector Sanitario Paraguay

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PARAGRAPH BUDGET (LOCAL COSTS)

I T E M S	1 <sup>st</sup> year	2 <sup>nd</sup> yr	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	T O T A L
Personal Services .....	401.507	641.366	669.802	710.161	537.956	448.989	428.234	400.951	4,259,272
Travel .....	13.541	28.547	25.547	29.785	21.452	13.015	12.817	12.658	150,156
Transport & Storage .....	4.761	4.761	4.761	3,968	3,174	2,174	2,380	2,350	29,365
Rent .....	12,380	14,285	14,285	14,285	12,698	12,602	12,698	12,698	106,031
Commercial Services .....	3,754	6,208	6,224	6,063	5,206	4,575	4,103	2,980	39,119
Utilities .....	571	634	634	634	634	634	634	634	5,015
Office Equipment Repair .....	793	793	793	793	793	793	555	555	5,873
Insurance .....	6,724	6,724	6,724	6,724	6,724	5,655	5,655	5,655	50,587
Vehicle Spare Parts & Repair .....	7,142	7,936	7,936	7,936	9,523	9,523	7,936	7,936	65,873
Fuels & Lubricants .....	40,543	95,885	95,885	95,886	65,350	54,183	51,518	38,416	537,670
Office Supplies .....	7,936	9,533	8,730	8,730	7,936	6,349	6,349	6,349	61,904
Office Equipment .....	11,613	---	504	793	---	---	---	---	12,911
Chemical Products .....	2,479	2,692	2,574	2,730	1,395	1,371	2,371	2,360	21,384
Personal Equipment .....	21,445	29,358	29,358	29,353	18,352	12,712	11,250	8,718	161,609
Other Supplies & Equipment .....	12,009	12,001	7,082	8,408	10,516	8,094	7,723	6,460	79,717
Contingency .....	357	723	793	793	793	793	634	634	5,595
T o t a l .....	554,422	862,075	834,050	827,530	714,615	504,667	555,345	509,393	5,582,099

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ANNEX II, Page 14 of 16  
Exhibit 4, Page 1 of 1

DECRETO-LEY No 444

POR EL QUE SE ESTABLECE UN APORTE PATRONAL ADICIONAL DE MEDIO POR CIENTO (0.50%) AL INSTITUTO DE PREVISION SOCIAL, DESTINADO A SUFRAGAR GASTOS DE CAMPAÑA DE MEDICINA PREVENTIVA.

Asunción, 2 de enero de 1967

CONSIDERANDO:

Que una de las campañas sanitarias preventivas más importantes que se ha encarado en los últimos tiempos es la lucha antipalúdica, considerada por los Organismos Técnicos del Gobierno Nacional como proyecto de primera prioridad en el Plan de Desarrollo Económico y Social;

Que existe un Plan de Erradicación del Paludismo en el Paraguay aprobado técnicamente por el Gobierno Nacional y por Organismos Internacionales como la Oficina Sanitaria Panamericana; el Unicef y otros, que han comprometido su asistencia técnica y financiera al Paraguay en su lucha por erradicar el paludismo;

Que la participación técnica y financiera de esos Organismos Internacionales está condicionada a la disposición adecuada de fondos nacionales para sufragar gastos locales;

Que los recursos actualmente disponibles, provenientes del 1% de los aportes patronales al Instituto de Previsión Social son insuficientes para cubrir la cuota que el Gobierno Nacional se ha comprometido a aportar;

Que las proporciones que va adquiriendo el paludismo en el Paraguay como factor retardatorio en el proceso de desarrollo económico y social con las graves implicaciones en todos los órdenes de la vida nacional y especialmente en la producción, consumo, educación, salud, vivienda y seguridad hacen impostergable una inmediata acción coordinada y total para erradicar de una vez por todas este flagelo de nuestra población, que azoña con más intensidad en zonas donde mayor esfuerzo e ingentes inversiones públicas y privadas se realizan pero que al mismo tiempo son las áreas con factores epidemiológicos más propicios para la transmisión del paludismo;

Que los estudios realizados sobre el problema del paludismo permiten asegurar que si la campaña de erradicación se inicia sin más dilaciones las condiciones favorables para tal erradicación son óptimas, condiciones cuya prevalencia no podrá asegurarse si la iniciación de la campaña es postergada;

DECRETO-LEY Nº 444

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ANNEX II, Page 16 of 16  
Exhibit 5, Page 2 ' 2

POR EL QUE SE ESTABLECE UN APORTE PATRONAL ADICIONAL DE MEDIO POR CIENTO (0.50%) AL INSTITUTO DE PREVISION SOCIAL, DESTINADO A SUFRAGAR GASTOS DE CAMPAÑA DE MEDICINA PREVENTIVA.

Hoja Nº 2.

Que el costo de la campaña, evaluando sus resultados con términos de productividad, es una operación cuyos efectos favorables compensarán ampliamente los gastos de la inversión;

Que el Ministerio de Salud Pública y Bienestar Social, a través del Servicio Nacional de Erradicación del Paludismo (SENEPA), organismo técnico con suficiente experiencia y capacidad, se halla en condiciones de ejecutar exitosamente el Plan de Erradicación del Paludismo en el lapso previsto de ocho años;

Por tanto, y oído el parecer favorable del Excmo. Consejo de Estado,

EL PRESIDENTE DE LA REPUBLICA DEL PARAGUAY

DECRETA CON FUERZA DE LEY:

- ARTICULO 1º.- Establécese un aporte adicional de medio por ciento (0.50%) a calcularse sobre la cuota patronal aportada al Instituto de Previsión Social, a partir del 1º de abril de 1967.
- ARTICULO 2º.- El aporte adicional a que hace referencia el artículo anterior será percibido por el Instituto de Previsión Social que actuará como agente recaudador y transferido mensualmente al Ministerio de Salud Pública y Bienestar Social para sufragar los gastos que demandan la campaña de erradicación del paludismo.
- ARTICULO 3º.- El aporte adicional del medio por ciento (0.50%) establecido en el Artículo 1º tendrá una vigencia de (7) siete años contados desde la fecha de su aplicación.
- ARTICULO 4º.- Dése cuenta oportunamente a la Honorable Cámara de Representantes.
- ARTICULO 5º.- Comuníquese, publíquese y dése al Registro Oficial.

Fdo.

Fdo.: GRAL. DE EJ. ALFREDO STROESSNER  
" PROF. DR. DIONISIO GONZALEZ TORRES  
" GRAL. D. I. M. CESAR BARRIENTOS  
" DR. SABINO A. MONTANARO.

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ANNEX III, Page 1 of 12

Exhibit 1, Page 1 of 7

April 19, 1967

PARAGUAY  
Basic Data

Population and area:

Population (1964)	1.9 million
Area	406,906 sq. kilometers; 157,052 sq. miles

Gross domestic product (1965) G 51 billion

Origin	
Agriculture	21%
Livestock	12%
Forestry	4%
Manufacturing	16%
Construction	3%
Commerce and finance	23%
Transport and utilities	4%
Other services	17%

Per capita GDP US\$207

<u>Annual changes in selected economic data:</u>	Average		
	<u>1962-63</u>	<u>1964</u>	<u>1965</u>
	(In per cent)		
Real GDP	4.2	3.3	6.0
Real per capita GDP	1.4	-0.4	3.2
Domestic expenditure (at current prices)	9.6	6.9	7.2
Investment	(4.2)	(19.2)	(-6.1)
Consumption	(10.6)	(4.7)	(9.9)
Cost of living (annual averages)	1.7	1.9	4.6
	<u>1963</u>	<u>1964</u>	<u>1965</u>
	(In per cent)		
Government revenues (cash)	1.4	3.7	30.5
Government expenditures (cash)	3.9	6.6	21.0
Money and quasi-money	19.8	25.5	16.1
Bank credit (net)	22.7	20.4	14.3
Credit to public sector (net)	12.3	24.9	3.7
Credit to private sector	12.3	16.9	22.1

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<u>Balance of payments elements:</u>	<u>Average</u> <u>1962-63</u>	<u>1964</u>	<u>1965</u>
	<u>(In millions of US\$)</u>		
Exports	39.1	45.4	60.0
Imports	41.9	45.5	52.2
Investment income payments	-2.0	-2.5	-3.0
Current account balance	-6.3	-7.9	-4.9
Capital	7.9	13.5	13.9
Central Bank net international reserve position (increase -) <sup>1/</sup>	-0.1	2.5	7.7
International reserves (end of 1965)			
Net position <sup>1/</sup>			
Gross holdings of gold and convertible exchange <sup>2/</sup>			

<sup>1/</sup> Includes import arrears.

<sup>2/</sup> Includes gold tranche position.

Gross Domestic Product

	1962	1963	1964	1965
(Billions of guaraníes at 1962 market prices)				
Agriculture	9.81	10.46	10.35	10.74
Livestock	5.37	5.23	5.53	5.84
Forestry	1.66	1.61	1.66	1.82
Other primary products	<u>0.09</u>	<u>0.11</u>	<u>0.13</u>	<u>0.14</u>
Subtotal--primary production	16.93	17.41	17.67	18.54
Manufacturing	7.15	7.31	7.61	8.02
Construction	1.01	1.06	1.15	1.25
Electricity and water	0.31	0.32	0.34	0.34
Transport and communications	1.69	1.79	1.89	1.93
Commerce and finance	10.43	10.33	10.54	11.54
Government	1.82	1.88	2.03	2.23
Other services	4.44	4.70	5.07	5.27
Housing	<u>1.59</u>	<u>1.64</u>	<u>1.69</u>	<u>1.74</u>
Total	45.38	46.45	47.98	50.85
(Per cent of GDP)				
Agriculture	21.6	22.5	21.6	21.1
Livestock	11.8	11.3	11.5	11.5
Forestry	3.7	3.5	3.5	3.6
Other primary products	<u>0.2</u>	<u>0.2</u>	<u>0.3</u>	<u>0.3</u>
Subtotal--primary production	37.3	37.5	36.9	36.5
Manufacturing	15.8	15.7	15.9	15.8
Construction	2.2	2.3	2.4	2.5
Electricity and water	0.7	0.7	0.7	0.7
Transport and communications	3.7	3.9	3.9	3.8
Commerce and finance	23.0	22.2	22.0	22.7
Government	4.0	4.1	4.2	4.4
Other services	9.8	10.1	10.6	10.4
Housing	<u>3.5</u>	<u>3.5</u>	<u>3.5</u>	<u>3.4</u>
Total	100.0	100.0	100.0	100.0

Source: Central Bank of Paraguay.

Treasury Cash Accounts and Financing

(In millions of guaraníes)

	1963	1964	1965	Jan.-May	
				1965	1966
<u>Revenues</u>	<u>4,220</u>	<u>4,375</u>	<u>5,710</u>	<u>2,419</u>	<u>2,567</u>
Ordinary budget	3,497	3,658	4,786	1,933	2,035
Special laws <sup>1/</sup>	723	717	924	451	474
<u>Expenditures</u>	<u>4,422</u>	<u>4,755</u>	<u>5,747</u>	<u>2,195</u>	<u>2,457</u>
Ordinary budget (adjusted)	3,775	4,090	4,944	1,620	2,019
Ordinary budget	(3,844)	(4,140)	(4,986)	(1,839)	(2,031)
Amortization of bonds	(-24)	(-60)	(-41)	(-16)	(-15)
Other adjustments (net)	(-45)	(-10)	(-1)	(-3)	(-3)
Special laws <sup>1/</sup>	647	688	803	375	438
<u>Surplus or deficit (-)</u>	<u>-202</u>	<u>303</u>	<u>-37</u>	<u>224</u>	<u>110</u>
Ordinary budget	-278	-432	-153	148	74
Special laws	76	49	121	76	36
<u>Central Bank financing</u>					
Bonds (net)	-24	642 <sup>2/</sup>	353	-16	-15
Short-term credits	303	-206	-195	-126	-46
Change in Treasury deposits (increase -) <sup>3/</sup>	-76	-59	-120	-116	-46
Other credits	--	--	--	--	100 <sup>4/</sup>
Net credit to Treasury	203	377	38	-258	-7
Change in other deposits (increase -) <sup>5/</sup>	164	5	57	-29	-95
Net credit to Government	-367	382	95	-287	-103

Sources: Ministry of Finance; Central Bank of Paraguay.

1/ For January-May 1965 and 1966 includes special law transactions on account of other government departments and agencies.

2/ Includes \$ 300 million of bonds issued to finance 1965 deficit.

3/ Includes special law deposits.

4/ Special credit to Treasury in anticipation of payment for radio station; not yet disbursed.

5/ Deposits of other government departments; includes counterpart of certain U.S. grant funds credited to Paraguayan Government account but not included as revenues.

Balance of Payments

(In millions of U.S. dollars)

	1961	1962	1963	1964	1965
<u>A. Goods, services and transfer payments</u>	<u>-1.5</u>	<u>-10.4</u>	<u>-2.2</u>	<u>-7.9</u>	<u>-4.0</u>
Merchandise, f.o.b.	-0.9	-6.1	0.6	-0.1	7.3
Exports	( 43.1)	( 39.6)	( 38.7)	( 45.4)	( 40.0)
Imports	(-44.0)	(-45.7)	(-38.1)	(-45.5)	(-52.3)
Service payments	-8.5	-8.5	-9.1	-20.3	-17.2
Freight and merchandise insurance (net)	( -6.5)	( -5.8)	( -5.4)	( -6.4)	( -7.0)
Investment income payments	( -1.9)	( -1.9)	( -2.0)	( -2.5)	( -3.0)
Travel (net)	( -0.3)	( -0.7)	( -1.0)	( -1.2)	( -1.2)
Other (net)	( 0.2)	( -0.1)	( -0.7)	( -2.7)	( -4.6)
Transfer payments (net)	4.9	4.2	6.3	5.0	3.5
Private	( 2.5)	( 1.6)	( 2.8)	( 1.0)	( 0.3)
Central Government	( 2.4)	( 2.6)	( 3.5)	( 4.0)	( 3.2)
<u>B. Nonmonetary sector capital</u>	<u>9.5</u>	<u>8.1</u>	<u>7.7</u>	<u>12.5</u>	<u>12.9</u>
Direct investment	2.6	2.7	5.5	4.6	7.7
Private sector loans	-0.1	-0.1	2.4	0.8	-0.1
Loans received	( 0.1)	( 0.1)	( 2.4)	( 1.4)	( 1.2)
Amortizations	( -0.2)	( -0.2)	( --)	( -0.6)	( -1.3)
Government sector loans	2.7	2.5	2.8	3.6	6.4
Loans received	( 5.3)	( 4.3)	( 4.8)	( 5.2)	( 8.4)
Amortizations	( -2.6)	( -1.8)	( -2.0)	( -1.6)	( -2.0)
Short-term credit (net)	2.3	0.6	-1.3	3.0	0.7
Holdings of guarantees	1.8	4.1	1.9	1.7	1.4
U.S. Government	( 1.2)	( 3.8)	( 1.7)	( 1.2)	( 0.0)
International agencies	( 0.6)	( 0.3)	( 0.2)	( 0.5)	( 0.9)
Subscriptions to international agencies	-1.1	-0.9	-0.1	-0.3	-0.9
Commercial banks' foreign exchange position (net)	1.3	-0.8	-1.0	0.1	1.7
<u>C. Net errors and omissions</u>	<u>-2.0</u>	<u>1.0</u>	<u>-4.5</u>	<u>-3.1</u>	<u>-1.3</u>
<u>D. Surplus or deficit (-)(A through C)</u>	<u>3.0</u>	<u>-1.3</u>	<u>1.0</u>	<u>2.5</u>	<u>7.7</u>
<u>E. Commercial arrears</u>	<u>....</u>	<u>1.3</u>	<u>0.4</u>	<u>0.6</u>	<u>-1.6</u>
<u>F. Net Central Bank reserves (increase -)</u>	<u>-3.0</u>	<u>--</u>	<u>-1.4</u>	<u>-3.3</u>	<u>-6.1</u>
Gold and convertible exchange (net)	-2.0	2.4	0.1	-2.0	-0.9
Net IMF position	-1.0	-1.3	-0.9	-0.6	-1.1
Payments agreement balances (net)	0.0	-0.6	-1.0	-0.6	-0.7

Source: Central Bank of Paraguay.

Central Bank--International Reserve Position

(In millions of U.S. dollars)

End of Period	Gold and Convertible Exchange		Net Bilateral Balances	Net Holdings	Gold Tranche Position with Fund	Total Net Reserves	Payments Arrears	Net Reserve Position	
	Assets	Liabilities							
1961	2.44	--	2.44	-1.35	1.09	-0.44	0.65	0.65	
1962	0.78	-0.76	0.02	-0.70	-0.68	1.31	0.63	0.63	
1963	1.40	-1.50	-0.10	0.29	0.19	1.81	2.01	0.32	
1964	3.15	-0.60	2.55	0.45	3.00	2.31	5.31	2.80	
<u>1965</u>									
Mar.	3.71	-0.45	3.26	1.03	4.29	2.44	6.73	4.68	
Jun.	6.20	--	6.20	1.02	7.22	2.56	9.78	9.60	
Sept.	7.80	--	7.80	1.19	8.99	2.69	10.68	10.05	
Dec.	7.46	--	7.46	1.16	8.62	2.81	11.43	10.50	
<u>1966</u>									
Mar.	5.23	--	5.23	1.15	6.38	3.75	10.13	8.38	
Jun. 2/	6.33	--	6.33	0.96	7.29	3.75	11.04	8.57	

Source: Central Bank of Paraguay.

1/ From September 1965 includes \$250,000 of IBRD bonds, and from April 1966 includes also \$250,000 of IBRD bonds.

2/ July 1.

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Economic I, Page 6 of 7

Exports by Value <sup>1/</sup>

(In millions of U.S. dollars)

	1963	1964	1965	Jan.-May 1965	Jan.-May <sup>1/</sup> 1966
<u>Agricultural products</u>	<u>16.5</u>	<u>17.7</u>	<u>18.7</u>	<u>5.2</u>	<u>6.1</u>
Cotton fiber	3.2	4.2	4.7	1.5	1.3
Coffee	3.3	3.2	3.6	0.6	1.3
Tobacco	3.2	3.7	4.3	0.8	1.3
Fruits	0.3	0.4	0.6	0.2	0.3
Sugar	0.7	0.4	0.1	0.1	--
Corn	0.1	0.3	0.3	0.1	--
Oilseeds	0.8	1.0	1.2	0.5	0.3
Tung oil	2.7	2.7	1.8	0.6	0.8
Coconut oil	1.7	1.2	1.4	0.5	0.6
Expellers	0.5	0.6	0.7	0.2	0.1
<u>Livestock products</u>	<u>12.2</u>	<u>16.3</u>	<u>20.4</u>	<u>6.2</u>	<u>4.2</u>
Meat	10.5	14.7	16.7	5.7	3.6
Canned	(8.6)	(9.6)	(11.4)	(....)	(....)
Frozen	(--)	(0.8)	(3.0)	(....)	(....)
Extract	(1.2)	(3.5)	(3.4)	(....)	(....)
Other	(0.7)	(0.8)	(1.0)	(....)	(....)
Animal by-products	0.2	0.3	0.3	0.1	0.1
Hides	1.5	1.3	1.4	0.4	0.5
<u>Forestry products</u>	<u>9.7</u>	<u>13.9</u>	<u>16.0</u>	<u>6.9</u>	<u>6.1</u>
Sawn lumber	1.0	1.7	2.4	1.2	0.8
Logs	3.7	5.4	7.4	3.1	3.0
Yerba mate	0.9	1.3	1.6	0.7	0.6
Essential oils	1.3	1.5	1.1	0.5	0.6
Quebracho extract	2.8	4.0	3.5	1.4	1.1
<u>Other exports</u>	<u>1.8</u>	<u>1.9</u>	<u>2.3</u>	<u>0.9</u>	<u>0.9</u>
<b>Total</b>	<b>40.2</b>	<b>49.8</b>	<b>57.3</b>	<b>19.2</b>	<b>17.3</b>

Source: Central Bank of Paraguay.

<sup>1/</sup> Based on customs data f.o.b. values.

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EXHIBIT 2, Page 1 of 1

P O P U L A T I O N

Total and by selected Departments

	1950 Census	1962 Census	Intercensal Variation per cent
PARAGUAY	1,328.452	1,816.890	37
<u>Departments</u>			
Caaguazú	71.699	123.590	72
Alto Paraná	9.531	26.680	180

Source: Dirección Geeneral de Estadística y Censos

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ANNEX III, Page 9 of 12  
Exhibit 3, Page 1 of 2AGRICULTURAL PRODUCTION - (In Tons)SAN PEDRO

<u>Crop</u>	<u>1958</u>	<u>1964</u>	<u>% Increase</u>	<u>1965</u>
Manioc	68,654	76,500	11,4	63,600
Sugar Cane	17,825	25,200	41,3	25,400
Corn	7,437	10,440	40,3	16,030
Sweetpotatoes	2,512	1,900	-24,4	1,710
Cotton	146	840	475,3	1,140
Alfalfa	900	860	- 4,4	480
Tobacco	186	690	270,9	1,710
Wheat	-	15	-	450
Onions	185	45	-75,6	510
Peanuts	412	1,150	179,1	1,050
Cowpeas	967	1,040	7,5	1,110

CORDILLERA

<u>Crop</u>	<u>1958</u>	<u>1964</u>	<u>% Increase</u>	<u>1965</u>
Manioc	162,807	191,800	17,8	216,000
Sugar Cane	62,331	60,200	- 3,4	63,300
Corn	16,780	23,380	39,3	21,270
Sweetpotatoes	17,157	18,300	6,8	16,830
Cotton	4,980	7,760	35,7	7,800
Alfalfa	2,380	1,070	- 21,4	1,320
Tobacco	1,069	1,700	37,1	1,560
Wheat	-	330	-	380
Onions	950	1,550	63,1	1,220
Peanuts	1,243	3,250	161,5	2,820
Cowpeas	3,646	5,650	54,9	4,840

CAAGUAZU

<u>Crop</u>	<u>1958</u>	<u>1964</u>	<u>% Increase</u>	<u>1965</u>
Manioc	50,597	104,550	106,6	129,000
Sugar Cane	23,790	62,400	162,3	65,300
Corn	12,700	14,520	14,3	19,650
Sweetpotatoes	3,768	10,300	173,3	18,530
Cotton	1,436	3,020	110,3	3,240
Alfalfa	760	1,760	131,6	1,740
Tobacco	735	1,500	104,0	2,800
Wheat	1,020	570	- 44,1	170
Onions	278	1,280	360,4	1,360
Peanuts	310	720	132,3	820
Cowpeas	1,016	3,020	199,0	2,780

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PARAGUARI

<u>Crop</u>	<u>1958</u>	<u>1964</u>	<u>% Increase</u>	<u>1965</u>
Manioc	172,723	260,700	50.9	254,800
Sugar Cane	86,826	180,000	107.3	183,100
Corn	17,330	41,200	137.7	34,620
Sweetpotatoes	11,000	12,300	11.8	14,260
Cotton	8,176	7,350	- 10.1	8,540
Alfalfa	4,450	4,640	4.2	5,920
Tobacco	1,095	1,620	47.9	3,670
Wheat	-	190	-	130
Onions	1,255	1,960	56.1	1,710
Peanuts	3,529	5,280	49.6	4,930
Cowpeas	3,241	4,030	27.4	3,800

ALTO PARANA

<u>Crop</u>	<u>1958</u>	<u>1964</u>	<u>% Increase</u>	<u>1965</u>
Manioc	11,247	27,980	148.8	25,950
Sugar Cane	968	1,900	96.2	2,150
Corn	1,700	3,750	120.6	3,380
Sweetpotatoes	598	700	17.0	900
Cotton	-	80	-	170
Alfalfa	68	80	17.6	150
Tobacco	12	50	316.7	660
Wheat	-	-	-	-
Onions	9	80	788.9	200
Peanuts	41	60	46.3	150
Cowpeas	123	330	168.3	310

FIELD REPORT  
ECONOMIC REPERCUSSIONS OF MALARIA  
IN PARAGUAY

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ANNEX III, Page 11 of 12  
Exhibit 4, Page 1 of 2

Malaria in Paraguay constitutes an important public health problem, causing a serious impact on the economy of the country and interfering with the economic development of the population.

With the exception of Asunción, the capital, the entire country is malarious. The disease has been endemic in the rural population and periodically serious epidemics have been observed causing a large number of cases and deaths.

In view of the fact that the principal sources of the country's economy are found in agriculture, cattle and forestry, and that the productive population is distributed in the rural area, this disease is causing a tremendous repercussion on the productivity of the population. The loss of productive man power, the fear of many people to move into colonies in the endemic area and, in some cases, the abandonment of cultivated areas, have been causing serious obstacles to the social and economic development of the country. A study made by Mr. Julio Romero Ortiz, Technical Secretary of Planning in Paraguay, indicates that at least 20% of the productive capacity of the area was lost in 1965 based on estimates of the number of sick days resulting from malaria in the area of colonization. He estimated 90,000 cases of malaria in 1965 among the workers under agricultural development and an average of 44 working days lost in a year for each case. The direct loss of productivity resulting from this incapacity for 1965 was estimated at 6.5 million US dollars without taking into consideration the costs of medical attention. The long term or permanent loss to society from interference with education of its children is incalculable.

The construction of roads and the penetration of non-immune immigrants into undeveloped areas in Paraguay at the same time, increase the epidemiological factors favorable for malaria transmission. It is precisely the Departments of Caaguazú, Alto Paraná and San Pedro, with more than 350,000 inhabitants, where agricultural exploitation is considered to be the most important project for the country's economic development in the last five years, which are the most malarious in the country, producing 25,160 known cases in 1966, or 85% of all the cases notified in Paraguay.

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As the Malaria Eradication Program in Paraguay has not been started, the case finding scheme is not adequately organized. Up to the present, the information on malaria incidence has been obtained only through the notification by some limited number of health units and voluntary collaborators. Since 1964, the following malaria cases have been microscopically confirmed among the blood samples sent through the notification system.

<u>Year</u>	<u>NO Slides examined</u>	<u>Positive cases</u>	<u>% Positive</u>
1963	92,806	3,443	3.7
1964	103,169	8,851	8.6
1965	82,848	6,732	8.1
1966 (Jan-Nov)	117,345	29,597	25.2

It must be noted that both the number of malaria cases and the positivity have been increasing in the last four years. These cases are only those notified and, therefore, represent only a fraction of the total number of malaria cases in the country. Attached is a map, showing the general distribution of malaria cases in relation to the three principal departments now under economic development in Paraguay.

LOAN AUTHORIZATION

D R A F T

Provided from: Alliance for Progress  
PARAGUAY: Malaria Eradication

Pursuant to the authority vested in the Deputy U. S. Coordinator, Alliance for Progress, by the Foreign Assistance Act of 1961, as amended, and the delegations of authority issued thereunder, I hereby authorize the establishment of a loan pursuant to Part I, Chapter 2, Title VI, Alliance for Progress, of said Act, to the Republic of Paraguay ("Borrower") of not to exceed one million nine hundred thousand United States dollars (\$1,900,000) to assist in financing the United States dollar and local currency costs of equipment, material, and services necessary for the conduct of a program for the eradication of malaria from Paraguay ("Project"), this loan to be subject to the following terms and conditions:

1. Interest and Terms of Repayment. Borrower shall repay the loan to the Agency for International Development ("A.I.D.") in United States dollars within forty (40) years from the first disbursement under the loan, including a grace period not to exceed ten (10) years. The Borrower shall pay interest to A.I.D. in United States dollars on the disbursed balance of the loan of one (1) percent per annum during the grace period and two and one-half (2½) percent per annum thereafter.
2. Other Terms and Conditions.
  - (a) Prior to the execution of the Loan Agreement, all payments on all of the Borrower's debts to A.I.D. or its predecessor agencies shall be current.
  - (b) Prior to the execution of the Loan Agreement, the Borrower shall furnish A.I.D., in form and substance satisfactory to A.I.D., evidence that the contributions to the Project scheduled for UNICEF and PAHO will be available on a timely basis and that UNICEF and PAHO have agreed to give full cooperation to the USPRS/PASA personnel assigned to the project.

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- (c) Prior to the execution of the Loan Agreement, the Borrower shall furnish A.I.D., in form and substance satisfactory to A.I.D., a schedule of the expected amounts of its contributions to the project to be derived from the  $1\frac{1}{2}$  percent IPS tax during the estimated eight year program, 1967-1974. The Borrower shall accompany that schedule with: (1) evidence satisfactory to A.I.D. that arrangements have been made for automatic retention of said  $1\frac{1}{2}$  percent IPS tax revenues by the Central Bank of Paraguay, acting as trustee for SENEPA, or such other means of assuring fund availability as A.I.D. may agree to in writing; (2) evidence that its budgeted 1967 contribution to the project is current; and (3) evidence that any shortfall in the ~~first three years~~ of the project will be met out of general GOP funds.
- (d) Prior to the execution of the Loan Agreement, the Borrower shall covenant to provide the resources in addition to the A.I.D. loan (including any increases required over the presently scheduled commitment resulting from increased costs) necessary to achieve the eradication of malaria within its territory and to use its best efforts to prevent the reappearance of malaria in that territory; and in furtherance of that undertaking the Borrower shall covenant to consult periodically with representatives of A.I.D., or such persons as A.I.D. may nominate, during at least three years after the last disbursement.
- (e) Borrower shall covenant to give full cooperation to the USPHS/PASA personnel assigned to the Project.
- (f) Borrower shall covenant that all clothing provided by SENEPA to working personnel as part of this program shall bear Alliance for Progress markings satisfactory to A.I.D.
- (g) Borrower shall covenant faithfully to carry out the Paraguayan Plan of Operations and to obtain the approval of A.I.D., PHS, UNICEF and PAHO prior to modification of the Plan.
- (h) Borrower shall covenant that it will maintain, for the full eight years of the Project or such other period as A.I.D. and Borrower shall agree, the Servicio Nacional de Eradicacion del Paludismo (SENEPA) as a separate administrative and technical entity within its Ministry of Health and Social Welfare, for purpose of implementing the Project.

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- (i) Borrower shall covenant to coordinate its program with those of its neighboring countries in the manner recommended by the USPHS/PASA advisors.
- (j) Equipment, materials and services (except marine insurance) financed under the loan shall have their origin in and be procured from the United States or Paraguay. Marine insurance financed under the loan shall be placed in the United States with a company authorized to do marine insurance business in any state of the United States.
- (k) United States dollars utilized under the loan to finance local currency costs shall be made available to Borrower or its designee through S.L.C. procedures and shall be used only for procurement in the United States.
- (l) Borrower shall covenant to promulgate administrative regulations satisfactory to A.I.D. for SENEPA and to cooperate in the formation of a Malaria Advisory Council and a Personnel Committee satisfactory to A.I.D.
- (m) Prior to the execution of the Loan Agreement, the Borrower shall have agreed with A.I.D. on the establishment of the SENEPA joint fund account and the scope and nature of the U.S. Co-Administrator's duties.
- (n) The loan shall be subject to such other terms and conditions as A.I.D. may deem advisable.

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Deputy U.S. Coordinator  
Alliance for Progress

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Date

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