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IMMUNIZATION/ORT/CHILD SURVIVAL PROGRAM,  
GUATEMALA  
PROJECT PAPER SUPPLEMENT,  
CONCEPT DEVELOPMENT

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TECHNOLOGIES FOR PRIMARY HEALTH CARE (PRITECH) PROJECT

Supported By The:

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## TABLE OF CONTENTS

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### SUMMARY PROJECT DESCRIPTION SHEET

### INTRODUCTION

### EXECUTIVE SUMMARY

#### I. BACKGROUND

- A. Original Project Rationale and Strategies
  - 1. The epidemiological justification
- B. The Channelling Approach
- C. GOG Objectives and USAID Child Survival Priorities

#### II. PROJECT ACTIVITIES TO DATE

#### III. CURRENT SITUATION AND KEY ISSUES

- A. The Health Status Situation
  - 1. Programmatic implications
- B. The Coverage Situation
  - 1. The problem of infant mortality rates
- C. Implementation Delays
- D. Continuing Constraints to Acceleration of Implementation
  - 1. The AID Health Office
  - 2. The Project Administrative Unit (PAU)
  - 3. The MSPAS
- E. The Nature and Effects of Management Constraints
  - 1. Other management constraints
  - 2. Implications for channelling
- F. Problems, Proposed Solutions, and the Role of the H/MIS

#### IV. PROJECT DESCRIPTION

- A. Goal
- B. Purposes
- C. Project Rationale
  - 1. The issue of implementation delays
  - 2. Changes in basic assumptions
    - a. The channelling strategy
    - b. Expectations of other-donor support
    - c. The presence of many actors
    - d. The training and supervision cascade
    - e. The utilization of technical assistance
    - f. The commitment to decentralize
  - 3. Continuing constraints to implementation
    - a. The USAID
    - b. The PAU as a management solution
    - c. The MSPAS
    - d. Summary

- D. Activities and Inputs
- E. Implementation Plan
- F. Evaluation Plan

(NOTE: Sections IV.D-F being produced by USAID)

## V. OTHER DONORS AND COOPERATING INSTITUTIONS

### ANNEXES

- A. Technical Studies
  - 1. Institutional and Management Analysis
  - 2. Health/Management Information Systems Analysis
  - 3. Human Resources Development Analysis
    - a. Training
    - b. Supervision
  - 4. Economic Analysis (to be done by USAID)
  - 5. Financial Analysis (to be done by USAID)
  - 6. Social Soundness Analysis (to be done by USAID)
- B. Logical Framework (to be done by USAID)
- C. Persons Interviewed
- D. Bibliography
- E. Acronyms

### TABLES

---

- II.1 Project Activities to Date: Summary of Quarterly Reports and Implementation Letters
- II.2 Major Project Outputs
- II.3 Project Expenditures
- III.1 Immunization Coverage, Children 0-12 Months and 13-36 Months, Guatemala 1986
- III.2 Guatemala: Variance in Infant Mortality Rates
- V.1 Funding to the MSPAS/Guatemala for Child Survival Activities, According to the 1987 Child Survival Plan (in US\$)
- V.2 Other-Donor Contributions to Project 520-0339, as Indicated in the Project Paper and Its Amendment

SUMMARY PROJECT DESCRIPTION SHEET  
(as of 3/31/87)

PROJECT TITLE AND NUMBER: Immunization and Oral Rehydration Therapy  
Services for Child Survival (520-0339)

PROJECT HISTORY:

1. Immunization for Child Survival Project, signed 27 August 1985, provided US\$6.7 million to establish a functional and permanent national immunization program.
2. Project Amendment signed 31 July 1986 increased 520-0339 by US\$3.0 million, to support establishment of national ORT Program.

PROJECT OBJECTIVES:

1. To increase immunization coverage of the six immunopreventable diseases (polio, measles, diphtheria, pertussis, tetanus, and tuberculosis) among children 5 years and under, and tetanus toxoid coverage for pregnant women, from 27% and 0.4% respectively, to 80% by the end of the Project.
2. To increase ORT use from 0.9% to 80%.

TOTAL AMOUNT AUTHORIZED AND OBLIGATED: (all Grant funds)	<u>Date</u>	<u>Amount</u> (000)
	8/27/85	3,300
	3/4/86	3,400
	4/30/86	3,000
LOP Total:		9,700

PACD Initial: 8/31/88  
Amendment: 8/31/89

% OF TIME ELAPSED SINCE INITIAL OBLIGATION: 33%  
% OF FUNDS EXPENDED SINCE INITIAL OBLIGATION: 10%

IMPLEMENTATION AGENCIES: DGSS, Applied Programs Unit through Depts. of  
Epidemiological Surveillance and Disease  
Control, and Maternal and Child Health

MAJOR CONTRACTORS:

Host Country: Jon Kraker, Project Administrator  
Osvaldo Ortega, Assistant Administrator  
Arturo Palomo, Computer Specialist  
USAID/G Direct: HealthCom (AED)  
AID/W: None

PROJECT MANAGER(S): AID: Liliana Ayalde  
Host Country: Dr. Gonzalo Saenz Aguilar  
Dr. Otto Zeissig Docanegra  
Dr. Juan Jose Arroyo

## INTRODUCTION

In attempting to implement national Immunizations and ORT programs under Project 520-0339, both the USAID and the Ministry of Health and Social Welfare (MSPAS) have recognized that the necessary support systems to effectively establish sustainable Child Survival interventions in the short term are limited in a number of important respects. For a number of historical and circumstantial reasons, the MSPAS finds itself lacking the managerial experience, adequately developed management subsystems, and correspondingly trained human resources needed to successfully carry out a Child Survival program on a nationwide basis. And, for the MSPAS to effectively manage these programs, accurate and timely health information and service statistics must be accessible at all delivery levels for programming, monitoring, and evaluation. In this context, the MSPAS has requested AID's continued support in the areas of training and supervision and, newly, in Health and Management Information Systems (H/MIS).\*

These needs will be addressed in a Project Paper Amendment, which will capitalize both on these expressions of interest in management strengthening and on the new government of Guatemala's stated commitment to delegation of authority and responsibility for national development through a policy of decentralization and regionalization.

To develop the requisite analyses for the Project Paper Amendment, the USAID has utilized PD&S (Child Survival) funds for a level of effort of 91 person/days of technical services to be provided by five specialists in:

- a. Child Survival (Team Leader)
- b. Management
- c. Health and Management Information Systems
- d. Human Resources Development
- e. Program Analyst/Editor.

Upon arrival, the team reviewed the Scope of Work with its AID Liaison Official and submitted a detailed document outline to that Official and to PDSO for approval. That approved outline structures this document.

Team methodology was based on the usual procedures of document review (see Annex D); group and individual interviews at MSPAS Central and field levels, as well as with other key agencies (see Annex C); and the analyses necessary to produce the technical sections on Information Systems, Management, and Human Resource Development asked for in the PIO/T.\* Considerable team time and energy were spent testing the direction of preliminary conclusions and recommendations with MSPAS counterparts and key officials, so that those recommendations would reflect not just what might be called "objectively verifiable" technical needs, but, as much as possible, GOG and MSPAS philosophy, criteria, and preferences.

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\* Letters from: Tejada de la Vega, 11/13/86, and Werner Ramirez, 1/29/87) (see Annex F).

\*\* The purpose of this consultancy is presented in detail, together with its terms of reference, in PIO/T 520-0000.6-3-70026 (see Annex E).

## EXECUTIVE SUMMARY

### I. BACKGROUND

#### A. Original Project Rationales and Strategies

The original Project Paper, signed August 1985, and its Amendment, signed July 1986, had somewhat different rationales, though both shared the goal of reducing infant/child mortality and morbidity. The PP focused on "Immunization for Child Survival," and was predicated on a new approach to increasing coverage against immunopreventable diseases that seemed more promising than the two major strategies used to date in Guatemala: 1) the passive response to "demand" for vaccinations in fixed MSPAS facilities (late 1960s) and 2) the semi-annual campaigns model (1972-1984). Neither of these had produced the coverage, infrastructure, and durable motivation that could assure acceptable levels of epidemiological control.

The "new approach," supported by PAHO and derived from quite positive experience in Colombia, was "canalizacion" (channelling), a fusion of ongoing health service delivery and proactive, census-based promotion of vaccination activities. The Project's main objective was to increase immunization coverage for the six immunopreventable diseases (diphtheria/pertussis/tetanus, polio, measles, tuberculosis) in children under five, and tetanus toxoid for pregnant women, from 27%\* and 0.4%, respectively, to 80% by the end of the project. The project would proceed in phased fashion to cover all Health Areas but Guatemala Norte, Sur, and Amatitlan. The main Project components were: installation of an effective national cold chain system; a functional supervisory system; MOH staff trained to fulfill the project's objectives; transport, fuel, and per diems; and a permanent surveillance system to identify and refer the target groups for immunization. In addition to this Project-funded support, there would be other-donor support in the form of vaccines, syringes, and some technical assistance from UNICEF, PAHO, and Rotary Club International. The principal output was establishment of a routine, permanent immunization program predicated on system-supported outreach. The project was counterparted to the Division de Vigilancia y Control de Enfermedades (DVCE) of the Direccion General de Servicios de Salud (DGSS).

The Project Amendment increased available funding for Child Survival by US\$3.0 million to support establishment of a national Oral Rehydration Therapy (ORT) Program. Its purpose was to increase use of ORT from 0.9% to 80% by the end of the Project. Its strategic core was: 1) continued use of channelling as the principal health delivery methodology and 2) its integrated character. Since the original Project signing, the MSPAS had expressed growing concern about the administrative, technical, and philosophical implications of "vertical" programs. It was increasingly committed to a horizontal, integrated approach to Child Survival and most uninterested in more pilot programs. Like the other countries of the region, Guatemala prefers to consider Child Survival within the framework of maternal-child health and primary health care. Thus, while there was agreement that staffing and organization should not violate the integrity of ORT as a special health intervention in its own right, there was also agreement that it was institutionally and pragmatically appropriate to

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\* Rate for completion of all series of all EPI vaccines in children <5 (birth through age 4, i.e., till midnight before their fifth birthday).

integrate ORT with I/CS. As a result, the head of the Maternal-Child Health Department was added to the MSPAS counterpart group and that Department was added to the DGSS and the DVCE as an Implementing Agency.

## II. CURRENT SITUATION AND KEY ISSUES

### A. Implementation Delays

Pipeline expenditures, project activities, and procurement are interactive: pipeline does not flow without activities or procurement, and activities and procurement do not occur if the pipeline is gets clogged. Thus, the topic of pipeline expenditure delays and the course of project activities, procurement, and contracting, are addressed here jointly.

At first blush, there seems to have been significant slowness in implementation measured against the implementation plans in the PP and PPA, as well as in terms of pipeline movement. The first ProAg was signed on 31 July 1985; the revised PACD that ensued from the PPA is 31 May 1989. As of 31 March 1987, 43% of the total planned implementation period had therefore passed while, on the expenditure side, only 5% of the budget had actually been spent; commitments and earmarked funds accounted for an additional 6% and 9%, respectively. Of that total of 20%, about two-thirds (68%) of pipeline movement came from commodity purchases (vehicles and motorcycles [58%], boats, audiovisual equipment, cold chain tools, spare parts, and computer equipment) which comprise only 38% of the budget. The balance went to Management (13%; Project Administration Unit [PAU] and short-term TA for ORS production, survey work, promotion, and training); Maintenance (13%); Training (5%); and Promotion (5%).

This analysis, however, is only a superficial picture of reality. Events made the Project's illustrative Implementation Plan unduly optimistic. For example, meeting the original Project's Conditions Precedent took 7.5 months instead of the 4 programmed. The primary reason for this was the change in government, from a military regime to the first democratically elected government in Guatemala in over 30 years. This in turn led to two restructurings of the MSPAS and two changes in the Project's principal counterparts. During this period of understandable and predictable instability, senior officials had other things to be concerned about besides this Project's CPs. It is significant that the next round of CPs, this time for the ORT Amendment, were met in a little over 4 months. This suggests not only a certain amount of settling down but a growing commitment to the Project and a perception that its objectives were not unharmonious with the new government's own sectoral priorities.

Other factors on the host-country side affected Project implementation. One was strong pressure from some donors to adopt a vaccination campaign strategy in 1986, diverting much MSPAS staff time. Two major strikes by doctors and 18,000 MSPAS employees in August were further disruptive.

Unanticipated events on the AID side also contributed to delays. AID/W created the Child Survival Account and expanded funding for Central America, thus providing funds for the ORT Amendment. Preparation of that Amendment took significant time which might have been spent on implementation. There was also almost complete turnover in the PDSO, which was

assigned additional responsibilities; there were staff changes and losses in OHRD; and a new Mission Director arrived. And, since the original ProAg approval, the OHRD portfolio increased rapidly: from US\$..... in July 1985 to US\$ ..... in March 1987, while direct hire staff levels fell from .. to .. officers, a pattern for USAID/G overall.

The impact of these circumstances would have been more severe, had the original Project design not permitted technical assistance and commodity procurement to proceed as the CPs were being met. As a result, 38% of the funds for commodities have been earmarked in 43% of the programmed time, i.e., very close to schedule. In the period since the first round of CPs were met (mid-April 1986, less than a year), only 10% of the non-commodity line items of the Project's budget have been earmarked, committed, or expended. While this is at the "alarm" level, the difference may be at least partly attributable to the fact that expenditures for other than TA and US-source commodities and services are mainly in quetzales. The initial project budget of US\$6.7 million included expenditures of over \$4.2 million in quetzales that have since depreciated relative to the dollar by more than 60%, nearly doubling the purchasing power of the original project budget.

Expressed in project activities, it is noteworthy that the Training Element of the Project has performed in the range of from 35% to 100% of the activities targeted (see Attachment 1), although the percent of budget expended to date under the training rubric has been quite small.

## B. Changes in Basic Assumptions

Four important assumptions guided the formulation of both the Project and its Amendment: 1) that channelling could be easily replicated in all contexts; 2) that the high levels of technical assistance from PAHO, particularly in training, supervision, and materials development, would persist; 3) that cascade training and supervision would work optimally; and 4) that the GOG was, and would continue to be, resistant to bilateral TA, and that an adequate adaptation could be made through the use of short-term support. A fifth assumption, born with the PPA, was that establishment of a Project Administration Unit would resolve most management issues. And sixth, the PPA assumed that there was little need for major technical assistance in management information systems because of what was being supplied by other agencies; it provided only six months of TA for coordination purposes, "with the ultimate goal of producing a coherent, integrated H/MIS of minimal complexity and cost."

Our analysis indicates that, in different kind and degree and for various reasons, these assumptions no longer hold.

### 1. Channelling

The theory guiding channelling is full coverage of its target populations, a powerful but demanding goal. It requires great commitment and time, good supervision, functioning logistics, well-trained human resources, and thoughtful planning, at the same time that it must be adaptive to different environments. As a relatively untested methodology in Guatemala, it had barely begun to expand into other areas when staff energies

up and down the delivery pyramid were diverted to the campaigns. The methodology is just now regaining its footing and it is already clear that there will be no single model of this population-based approach that will apply to all settings. It is also clear that the strategy can only succeed if there is logistic and supervisory support for the channellers to do their job. The MSPAS must also determine the central core that can be called "channelling," while being sure that its basic intent is not deformed. And, two major questions remain: a) assuming success, what do you do with the channelling investment when all but new mothers and new infants are vaccinated? and b) how do you develop and supervise the logical next step, that is, risk-oriented surveillance?

## 2. PAHO Support

The justification for adopting channelling as a nationwide strategy was its perceived success in Escuintla and, later, Santa Rosa and El Progreso. Much of this perceived success came from intense commitment and hard work by PAHO and the Project predicated much of its design on the continuance of PAHO involvement. However, in recent months, PAHO's ability to proceed at the same level of involvement has become constrained. This raises major questions for the USAID: how does the project adapt to this change and what are the implications for follow-on funding and TA?

## 3. The Training and Supervision Cascade

The assumption that cascade training works has increasingly surfaced as a worldwide primary health care issue. The issue is particularly vibrant in the area of management, where there is no accumulated pool of experience to draw from as there is, for instance, in community development. The management training cascade begins with doctors who have only recently begun to confront the reality that they are trained as scientists, not administrators. Neither do their training and medical culture prepare them to be collegial educators and supervisors. The question is: is it fair or realistic to expect a cascade approach to training in the various management sub-systems to work under these circumstances?

## 4. The Potential for Technical Assistance

There appears to be GOG interest in technical assistance, after a period of resistance and AID support has been requested. Analysis indicates that technical collaboration could, indeed, be useful. The question for the USAID is: what kind, for how long, and according to what criteria, mutually agreed upon by the Mission and the MSPAS?

## 5. The PAU as a Management Solution

The PAU faces some problems and, in the absence of modifications, may increasingly create instead of solve them. In its justifiable concern with correct utilization of funds, the PAU is falling into a pattern of relatively centralized financial management systems. Given its current staffing level, such centralization could choke the rate at which funds can be utilized. Philosophically, that same centralization runs counter to GOG commitment to decentralize. Furthermore, the MSPAS sees the Unit as a support entity, not a technical shop or a decision-making focus. This effectively pushes many management decisions back to AID or up to

unnecessarily high MSPAS levels. Functionally located between AID and the MSPAS, the PAU requires support from both sides, as well as considerable diplomatic skills and reasonable understanding both of management and the demands of public health delivery. Lacking any of these, the PAU could become a whipping boy and a point of friction. The question is: what needs to be done to arrest any such tendency?

#### 6. A Minimalist Position on H/MIS Development

As in the case of channelling, the Project design did not contemplate any real input of TA for H/MIS. Keenly sensitive to the growing presence of other donors in the Child Survival field, the Project designers went to great lengths to complement and not compete with the other efforts, especially when such efforts seemed to be welcomed by the MSPAS and perceived as adequate to their needs. This situation is no longer the case and the MSPAS has formally asked for USAID support in the development and implementation of its proposal for a national, unified Health and Management Information System. AID has responded preliminarily through the presence of this team. The question is: what should AID do next?

#### C. Continuing Constraints to Acceleration of Implementation

Continuing constraints to accelerated implementation fall into three groups, each pertaining to one of the three principal organizations responsible for Project implementation: the USAID HPN Office, the PAU, and the MSPAS. To better understand the constraints which affect each of these, the Project should be put in the following context. Its budget is now US\$9.7 million, much of which is for expenditures frequently classified as recurrent costs. In addition, the GOG handles donated funds using the same mechanisms it uses for national funds. The US\$9.7 million Project is now equivalent to approximately Q30.0 million or .....% of the national health budget and ..... % of the accumulated "social debt" in the health sector. The proper expenditure of these funds, over the remaining period of only 33 months, must appear to Guatemalan officials as a major task and responsibility.

##### 1. The USAID

The disparity between workload and staff which contributed to implementation delays persists and will grow worse as funding levels mount, especially in the favored area of Child Survival. In contrast, in Honduras, throughout most of the life of the Health Sector I Project, implementation has been supported by: a full-time direct-hire project manager, and a full-time American assistant administrator, as well as by a large amount of long- and short-term TA. Although Health Sector I is longer, its average rate of expenditures, about US\$4.0 million/yr., is roughly equivalent to the rate at which expenditures must be made during the remaining life of Project 0339 in order to completely use the funds by PACD, that is, US\$9.2 million in 29 months. The restricted number of AID personnel available to implement the Project, combined with an incremental approach to design and the need to manage ever more individual PSCs, will remain a constraint to accelerated implementation.

## 2. The PAU

The PAU's problems are partially discussed above. Suggestions for their solution are offered below as part of the discussion of TA which structurally, if for no other reason, could contribute to reduction of the pressures on that Unit and the enhancement of its utility.

## 3. The MSPAS

At present, the Project is counterparted to the Chief of the Applied Programs Unit, a logical location given the technical focus of the Project. However, since a number of activities financed by the Project fall under other units, e.g., Human Resources and Supervision and Evaluation, some delays have arisen at least partly due to this diffusion.

Beyond this, there are the commonly recognized deficiencies in the Ministry's management systems,\* addressed in the National Five-Year Plan, the President's Memorandum to the Nation, and the November 1986 Health Program Plan. These limitations affect the H/MIS, logistics, supervision, and equipment and maintenance subsystems. The problems in the information system, summarized in the MSPAS Restructuring Proposal, are a major factor affecting the rate of Project implementation. None of the systems have been up to the task of quickly absorbing the volume of resources available through the Project, nor are they helped by the bureaucratic rigidities common to large government institutions everywhere. The new Guatemalan government has publicly committed itself to decentralization to combat this, but the task goes against the grain of over 400 years of tradition.

In sum, organizational, personnel, and technical policy instability, plus common bureaucratic constraints all around, have combined with the absence of technical collaboration in management to constrain Project implementation. The Project Amendment alternative suggested below is meant to overcome some of these constraints and act as a test -- a large Condition Precedent in itself -- of the feasibility of further major investment in the Guatemalan public health sector.

## II. SUGGESTED SOLUTION

### A. Goal

The goal of the Child Survival Project remains the same.

### B. Purpose

The original purpose remains the same but is supplemented by a second purpose as follows: "to increase the capacity of the Ministry of Public Health and Social Assistance to support and sustain Child Survival services by development of management and health information systems."

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\* Summary analyses of the management systems analysis for H/MIS and Human Resources Development are attached herewith as Attachment 2.

### C. Strategy

The core of the any amendment to Project 520-0339 is long-term technical assistance consisting of four positions.

1. Management Advisor
2. Health/Management Information Systems Advisors
  - a. H/MIS Advisor counterpart to the Computer Section of the restructured Unidad de Informacion (hardware/software design specialist)
  - b. H/MIS Advisor counterpart to the Health Information Section of the UI and/or the Sistema Unico de Supervision (systems analyst, with experience in MCH/PHC)
3. Human Resources Development/Training Advisor

Of these positions, the only one which would be a completely new concept for the MSPAS would be the Management Advisor who, ideally, would serve as Project Coordinator. Consideration should be given to the possibility of officially counterparting the amended Project to either the Director General of Health Services or to the Vice-Minister for Technical Affairs.

Position 3, originally called Training/Supervision Advisor, already existed as a medium-term position and continuance of that TA role has been requested in writing (letter Tejada de la Vega to Ayalde, 13 November 1986).

Assistance was formally requested for the development of the restructuring of the Unidad de Informatica and the MSPAS information system. The two H/MIS Advisors have been discussed with key MSPAS officials in increasingly precise, if not perfectly concrete terms, and they are philosophically congenial with the MSPAS view of integrating H/MIS for disease surveillance and maternal-child health with the Unified Supervision System and pilot efforts at nutritional surveillance.

Other principal categories of expenditure would be:

- Management training
- Participant training/scholarships
- Training materials
- Computer equipment
- Revolving fund to finance Project activities at the Health Area level

If thought necessary or advisable to achieve a significant degree of financial decentralization to the Health Areas, AID might consider proposing the use of Economic Support Funds to hire an administrator or accountant at the Health Area level.

## I. BACKGROUND

### A. Original Project Rationales and Strategies

The original Project Paper (PP; ProAg dated 27 August 1985) and its Amendment (PPA; ProAg dated 30 July 1986) had somewhat different rationales, although both shared the ultimate goal of reducing infant/child mortality and morbidity. The PP focused on "Immunization for Child Survival" (I/CS). The basic project strategy was to provide technical assistance and funding to strengthen existing health services related to the immunization program, in all 24 Health Areas except the three around Guatemala City (Norte, Sur, and Amatitlan). There were basically two target populations and corresponding objectives: to increase vaccination coverage for 1) the six immunopreventable diseases (polio, measles, diphtheria, pertussis, tetanus, and tuberculosis) among children under age five (with emphasis on completion of full series for children under age one), and 2) tetanus toxoid for pregnant women. Coverage increase objectives were from 27%\* for children under five and 0.4% for pregnant women, to 80% coverage for both groups by the end of the project.

The central project strategy was to support an approach to increasing coverage against immunopreventable diseases that seemed more promising than the two major strategies used to date in Guatemala: 1) passive response to "demand" for immunization in fixed MSPAS facilities (late 1960s) and 2) semi-annual campaigns (1972-1984). Neither of these had produced the coverage, infrastructure, and durable motivation that could assure acceptable levels of epidemiological control. The "new" approach, supported by PAHO and derived from quite positive experience in Colombia, was "canalización" (channelling), a fusion of ongoing health service delivery and proactive, census-based promotion of vaccination activities. (This strategy is discussed in detail in Section I.B and Annex A.3 [Human Resources Development Analysis]). While many aspects of this approach were not, in fact, new to Guatemala, the approach as a health delivery package had been limited to date to pilot areas or what were considered by the MSPAS as "vertical programs", or had been put into place by PVOs in limited areas. In contrast, the I/CS Project was designed to be national in scope, although proceeding in carefully phased fashion.

When more Child Survival funds became available, the decision was made to add ORT to immunization. A Project Paper Amendment was written, entitled "Immunization and Oral Rehydration Therapy for Child Survival." Its strategic core was: 1) continued use of channelling as the principal health delivery methodology and 2) its integrated character. Since the original Project signing, the MSPAS had expressed growing concern about the administrative and technical implications of "vertical" programs. It was increasingly committed to a horizontal, integrated approach to Child Survival and most uninterested in more pilot programs. Like the other countries of the region, Guatemala prefers to consider Child Survival within the framework of maternal-child health and primary health care.

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\* These baseline coverage rates were determined through the 1985 EPI Coverage Survey carried out under a Special Covenant to the PP. At the time the PP was written, no reliable coverage data were available.

Thus, as PPA design progressed, support grew, both in USAID and the MSPAS, for integrating ORT with I/CS. At the same time, there was agreement that staffing and organization should not violate the integrity of ORT as a special health intervention in its own right. ORT was defined as "use of Oral Rehydration Salts/ORS and/or home-made rehydration solutions, together with appropriate feeding practices." As such, it was a potentially broad and powerful weapon in a global health strategy to reduce incidence and severity of diarrheal disease, not only through rehydration but through better child care, including promotion of breastfeeding and proper weaning practices; use of safe water and adequate sanitation facilities; and detection and timely disease control through improved epidemiologic surveillance. The conclusion at the time was that, despite medical and logistical differences between the two interventions, the channelling model could absorb and integrate both interventions while continuing to achieve the national goal of extension of coverage.

### 1. The Epidemiological Justification

The fundamental justification for Project 520-0339 was Guatemala's mortality and morbidity statistics. The PPA noted that, while children under age five are only 18% of the total Guatemalan population (8,434,339; 1987 est.), those children account for over 50% of all deaths; children under age one account for 36%. Women in fertile age (15-44) make up another 22%, and all women and all children under five counted together equal 68% of Guatemala's population. The poor health status of this group is the major contributor to high national mortality and morbidity rates.

The sad irony of these data is that about 75% of all deaths in that population group, attributable to five major causal groups, were at least theoretically preventable: diarrheal disease (27%), acute respiratory infections (24%), perinatal causes (10%), immunopreventable diseases (9.2%), and malnutrition (5%).

Overall infant mortality in Guatemala has fallen substantially since 1965, and mortality due to enteritis and other diarrheal diseases has dropped correspondingly. According to PAHO (Franky de Borrero, 1986), death rates due to diarrheal disease fell in Guatemala between 1970 and 1980 from 1817.8/100,000 children under 1 and 807.6/100,000 children ages 1-4, to 1088.6/100,000 and 370.2/100,000, respectively. Still, the rate for children ages 1-4 years in Guatemala was the highest in the Americas for that year and the rate for children under age 1 was the fourth highest. Furthermore, the decline was only moderate compared to declines registered in Costa Rica and Chile. In 1983, mortality due to diarrheas in children under five was 72.2/10,000; 31.27% of deaths due to diarrheal disease were in children under age 1, 33.43% in children 1-4 years of age.

As for diarrhea morbidity, the 1986 Encuesta Simplificada, carried out by the MSPAS and INCAP in 120 sentinel areas (communities of 1000 +/- 250 pop.) in all 24 departments, found that in the two weeks prior to survey, 20% of children under 36 months had had some diarrheal illness of one to two days' duration. In a marginal area of Guatemala City, that rate was 45%, ranging from 36.5% in families in a more developed section, to 66.7% in sections with poor environmental sanitation and crowded housing. A recently-completed, Project-supported 18,000-household national KAP survey is producing much additional data on infant mortality and morbidity.

## B. The Channelling Approach

The channelling strategy is defined as a close relationship between health services and the community, by means of direct actions of promotion and prevention which the health technician and promoter or volunteer carry out through house-to-house visits. Such visits aim at, among other things, achieving effective vaccination coverage of the susceptible population. This strategy implies the active participation and effort of the community so that its members will receive basic health delivery services such as vaccinations. Channelling does not limit its objectives to achievement of effective vaccination coverage, but aims at changing attitudes in the client population which serve to isolate them and limit their demand for services. The strategy also strives to change attitudes on the delivery side: to modify the traditional, passive attitude of the health system which, instead of reaching out to the community with actions directed toward prevention and control of the most common (but most potentially deleterious) health problems and promotion of their most feasible resolution, has typically limited itself to responding to demand which arrives, self-generated, at fixed facilities.

The theory guiding channelling is full coverage of its target populations, a powerful but demanding goal. It requires great commitment and time, good supervision, functioning logistics, well-trained human resources, and thoughtful planning, at the same time that it must be adaptive to different environments. As a relatively untested methodology in Guatemala, it had barely begun to expand into other areas when staff energies up and down the delivery pyramid were diverted to the vaccination campaigns. The methodology is just now regaining its footing and it is already clear that there will be no single model of this population-based approach that will apply to all settings. In some places, it is already evolving to meet the Guatemalan reality, either through adjustments in frequency of censusing or utilization of the "mini-concentracion" or "rally post" technique. This is occurring in areas which are simply too distant or dispersed, or where the necessary human resource support is inadequate to meet the mandated frequency of all-household, house-to-house coverage. As might be expected, coverage through mini-concentration is said to be lower, but no precise data were available. This suggests a useful area for future Operations Research.

In addition, while in the long run preventive health actions should reduce demand for curative care, in the short run the channelling approach could actually motivate more demand for services from a government that looks like it "cares." The MSPAS wants to be able to respond to such demand as is reasonable. It also wants to expedite the support, well funded under 0339, for the health workers on whom primary health care depends. The channelling methodology is already finding itself charged with an ever-growing burden of health interventions. In addition to EPI and ORT, there are now responsibilities for: ARI, including TBC; growth monitoring; community organization; intra- and extra-sectorial coordination; environmental sanitation; food and nutrition, sometimes including promotion of home gardens; early childhood stimulation; mental health; dental health; "family orientation". Binding these all together are the home visit and health education. This is a heavy load to put on the time and energy of health workers, who typically have about half their work week to spend on channelling, with the balance in the facility to

respond to demand. To this must be added: censusing; training and being trained; supervision and being supervised; administration; materials supply and procurement; the maintenance of the health/management information system; and, in the best of all possible worlds, integration of the understanding the H/MIS provides into adjustments to programming and implementation at the local level.

In sum, channelling and associated home-visiting may be nearing the brink of the problems that historically came to plague primary health care and the PHC worker. That worker came to be known as "the skinny Hercules" who, with little support and few incentives, became so burdened by the accumulating demands of health ministries and donor agencies that s/he crumbled. In the absence of material rewards for health promoters, with worker salaries low and demands ever-growing, the best incentive the MSPAS can provide is a steady flow of logistical support, training, and per diems, and a health/management information system which does not crush but serves and motivates at each delivery level.

### C. GOG Objectives and USAID/Child Survival Priorities

Four basic GOG documents set Health Sector directions for the near and longer term: the National Five-Year Plan (SEGEPLAN, 1986), the President's "Memorandum a los Guatemaltecos" (March 1987), the Plan de Salud (MSPAS, November 1986), and the National Child Survival Plan (February 1987). The scope of these documents is large; we select here only items which relate to the Project under discussion, as it is now and as it might be amended.

Two areas of special interest in the Five-Year Plan are its commitment to:

1. Increased coverage and expanded health programs and services. This entails development and strengthening of primary health care, particularly for the most marginated populations.

2. Institutional and administrative development of the Health Sector. Subsumed are: improvement of operational capacity, economic and administrative decentralization, development of human resources for efficient program and project execution, regionalization of the service network, and strengthening of technological and operational research.

The Five-Year Plan is emphatic on what is needed in the second area. It notes, in a section bluntly entitled "La Ineficiencia del Sector Público":

"In the recent past, the public sector has not acted with the motivation and firmness needed to confront the critical circumstances which have faced the country for a long time. In most cases, the administrative apparatus has not only not an engine of development but has been, instead, an obstacle to social and productive programs and projects. Instead of serving as an arbitrator among sectoral interests and a conciliator acting in the interest of the larger collectivity, the State has been partisan and protective of special interests, disregarded the needs and demands of the marginated majority, and has been politically and historically blind. This ineffectiveness with regard to national problems cannot be explained by 'interventionism' on the part of the public sector or by its weight in the society, but rather by its weakness and timid participation in the tasks of economic and social development. Its deficiencies derive from different governmental orientations, inappropriate political decisions, and inadequate resources."

The President's Memorandum commits the new Government of Guatemala to redress this condition by effectively reorganizing the way the GOG does its business, "so as to encourage greater participation, pluralism, and solidarity." The objective is to move from vertical, hierarchical governmental organization, to horizontal, participatory project identification, design, and implementation. This horizontality is multi-sectoral not only in its inclusion of all the traditional technical public subsectors, but in its extension to the private sector. That sector is asked not only to become engaged in the planning process, but to assume responsibility for implementation in given project or problem areas. The basic working modality for addressing specific problem areas is the "Action Group," an explicitly non-hierarchical, problem-solving, multi-disciplinary organism. This will not be easy: hierarchical administrative

structures have characterized administration in Guatemala at least since its discovery, and in no country are relationships between the private and public sectors simple, especially in fragile political and economic times.

As part of the solution, the Memorandum flags as a key project area the professionalization of public service. This implies a new mystique and dissolution of traditional "feudos," as well as specific subprojects:

1. Human resources development
2. Information systems
3. Project evaluation
4. Financial planning and management
5. Communication and public opinion
6. Decentralization
7. Regionalization
8. Urban and rural development councils
9. Technological development.

The Memorandum charges each Ministry with reviewing its objectives and determining which of these subprojects it can make operational in 1987.

The MOH Annual Health Plan follows these directives in its own sectoral objectives, which address both the content of health delivery and the process. The MOH has identified as strategic areas of technical concentration: monitoring of child growth and development through national nutrition surveillance, oral rehydration therapy, expanded immunization, acute respiratory infections, birth spacing, breastfeeding, complementary feeding, and measurement of progress and results. The MOH also states as an objective promotion of operational research and appropriate technology in improving services delivery and utilization.

The MOH Plan also recognizes the role of institutional deficiencies and administrative weaknesses in its limited success in expanding preventive health care and lauds such systems qualities as agility, equity, effectiveness, efficiency, and rational use and deployment of available human and material resources, including those provided by external donors and NGOs. At the same time that it intends to coordinate those resources more vigorously, it will also seek efficiencies through regional restructuring and decentralization of services to the Area level.

USAID's Health/Population/Nutrition Sector Strategy is precisely congenial with GOG objectives. It views Child Survival interventions as an effective, focused way to lay foundations for a more comprehensive primary health care system, and for incremental strengthening of the management subsystems needed to implement delivery (e.g., improved training and supervision, logistics, and information). Its key features are:

1. Institutionalization of services and support systems
2. Utilization of the private sector
3. Utilization of modern social communication
4. Collaboration with other donors
5. Monitoring and evaluation.

It also sets forth as a crucial policy dialogue issue the decentralization of health service planning and management to the Health Area level.

(NOTE: While the USAID might not want to include the following calculations in the final document, we think they are worthy of contemplation. When the USAID formally approves this document, it should indicate whether it wants this section included.)

### 1. The Concept of the Social Debt ("La Deuda Social")

One of the central concepts in the President's Memorandum is the concept of the Social Debt ("La Deuda Social"). The calculation of this debt is predicated on the percentage of the Guatemalan GNP dedicated to health, education, and housing in the years between 1977 and 1983, compared to the rest of Latin America. The estimated average investment in the Health Sector over that period was .7%, compared to 1.5% for the rest of Latin America. With this as a base, the estimated Social Debt is Q3784.76 million; health accounts for Q211.09 million (5.58%) of this total. When this total is projected over the 1976-1986 decade, the accumulated Social Debt amounts to Q5000 million. Using the proportion of 5.58%, the accumulation of such debt in the Health Sector is Q279.0 million. This is equivalent to approximately US\$111.6 million at the official exchange rate of Q2.50=US\$1.00.

This leads to an interesting calculation. The amount now in the pipeline for the Immunization/ORT Project is US\$9.7 million, with approximately US\$4.3 million being contemplated for a Management for Child Survival Supplement for that Project. During the period that these analyses were being carried out, another US\$2.5 million was offered to USAID/G for Child Survival activities, and it is not impossible that another US\$20 million could be available over the next two Fiscal Years. This is a total of US\$36.5 million or approximately 33% of the Guatemalan Social Debt in the Health Sector. If to that are added the US\$8.686 million obligated for Project 0288 (Expansion of Family Planning Services), which can be legitimately viewed as part of the Child Survival initiative, that figure rises to almost 41%.

## II. PROJECT ACTIVITIES TO DATE

It was hard to assess just exactly what has been achieved under the Project to date, due to:

1. The way the USAID Quarterly Reporting System is set up.\* The narrative format used does not permit comfortable comparison of what was supposed to happen in the Quarter under discussion, what actually happened in that Quarter, and what should happen in the forthcoming Quarter.

This lack of clarity is further complicated by the fact that the narrative reporting is not integrated with or keyed to the section on progress against Major Output Indicators. This problem has, in its turn, been compounded by the addition of new indicators required by the Project Paper Amendment and corresponding difficulties in "blending" the indicators for two major Project Components, EPI and ORT.

Last, while a CP for both Project Components was provision of Annual and Life-of-Project Action Plans, no record is carried in the Quarterly Reports, of progress against those Plans.

2. The fact that no project monitoring system has been established, in either the MSPAS or the USAID or between the two, to follow Project progress. Though the MSPAS has obviously labored long and hard to produce the required Action Plans, and has even generated very elaborate computerized Path Analyses, there is no system that is in any way useful or accessible to project managers in the MSPAS, the PAU, or the USAID, so that progress can be tracked.

3. The staffing shortages which have increasingly pushed the USAID Office of Human Resources Development (OHRD) toward crisis management, as opposed to the ongoing monitoring that Project Officers (both in a USAID Mission and in a Ministry of Health) can and should provide. As discussed in Annex A.1, "Institutional and Management Analysis," both institutions suffer from extremely difficult personnel constraints which will need to be rectified if the Project is to advance as it should.

This suggests that, if there is another Project Amendment, the Evaluation Plan for the Project as a whole should be systematically restructured with the appropriate indicators consonant with a revised LogFrame. Quarterly Reports which track the evolution of 0339 should carefully note the sequence of events and chronicle those adjustments and there should be an associated Implementation Letter exchange on that topic. More on this topic will appear in Section IV-F below, "Evaluation Plan."

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\* The USAID plans to modify the Quarterly Reporting System and it was not the team's mandate to evaluate that system. It is noted here as an issue which both affects the Project and reflects some of its problems.

A. Summary of Quarterly Reports and Implementation Letters

Through painstaking detective work and interpretation, the analysis team put together Table II.1, which provides a project history. It reflects a combination of data from USAID Quarterly Reports and from PILs, with any resulting confusion clarified (we hope accurately) by personal discussions with Project personnel. Its purpose was simply to get a Project history on paper, both for the record and for any subsequent project design.

The exercise also helped the analysis team get at some of the major project constraints and where responsibility for those lay. Those constraints are addressed in detail in the various Technical Analyses in the Annexes and in Sections III.C, D, and E. The principal message of those analyses is that responsibility for Project delays is well distributed among the USAID, the MSPAS, the PAU, and the political and economic situation in which all those entities have had to function. Increasingly, the problems of the Project have become management problems.

B. Major Project Outputs

Table II.2 reflects achievement of Major Project Outputs, as reported in the March 1987 USAID Quarterly Report. What that table seems to indicate is that most of the achievement to date has occurred in relation to training, that progress toward coverage targets is limited, and that there has been almost no "achievement" in supervision and promotion.

However, such flat numbers do not reflect three important dimensions of achievement. The first is the dimension of quality: the fact that 67% of the "area-level" seminars projected have been completed does not reflect the quality of the seminars that have been carried out.

The second dimension is that of pace: the table does not indicate the appropriateness of the pace: in other words, has the training occurred on schedule, that is, in accordance with the Action Plan the MSPAS was required to produce?

The third and final dimension that goes unreflected by the table is that of process. The apparently scant achievement under the Supervision Subcomponent loses the fact that, since the change of government, the MSPAS has begun to put into place the Sistema Unico de Supervision and has made a start at a local-level system of monitoring achievement against targets which could be extremely important. Similarly, the apparent lack of achievement in the Promotion Subcomponent does not show time spent in institution-building, training new staff with little or no previous experience in health promotion, and the elaboration of an elaborate work plan which required laborious building of consensus by a number of institutional players, nor the considerable delays in getting the baseline data meant to

provide the substance of health education materials and messages. Implementation of the baseline KAP surveys was seriously delayed inter-institutional political problems, by MOH desire to expand the KAP beyond the limits of EPI and ORT to all Child Survival intervention areas, and by a decision (whose wisdom is still open to question) to enlarge the community sample to support the gathering of mortality data.

Finally, because of the way the project has evolved and become integrated -- for example, training in EPI has increasingly incorporated training in ORT -- it is hard to tease out how much has been achieved under the EPI Component and how much under the ORT Component, in the area of training. The same will be true for Supervision. At the same time, the Output Indicators do not include some major activities which were contemplated in the design of the ORT Component, e.g., establishment of Oral Rehydration Training Units and decision on a national recipe for homemade Oral Rehydration Solutions (ORS); there has been little or no progress in either of these crucial activity areas. The indicators also do not include Management achievements (although there is a budget line item for management), such as setting up the Project Administration Unit, contracting technical assistance, and strengthening H/MIS capability, yet there has been some progress in all those areas.

#### C. Project Expenditures to Date

Table II.3 records Project Expenditures as of 31 March 1987. The bulk of expenditure has been under the Transportation line item (54%), principally vehicle procurement, followed at some distance by Management (14%), including Technical Assistance.

The general low level of disbursement is analyzed in Section III and is considered a major project issue. The point of presenting that information here is to add evidence to the major thrust of this section. That thrust is that, there are areas of progress under the Project at the same time there are important areas of stagnation, but the way progress is monitored and reported are so poorly articulated that only major sleuthing can get at a holistic perception of what is really going on.

For this reason, whether or not Project 0339 is amended, it is crucial that technical assistance be provided to the USAID, as soon as possible, in the design of a Project MIS. Ideally, this should be a subset of a revised, integrated national H/MIS and should be further integrated with the subregional Child Survival Reporting activity. Achieving this kind of coherence will not be easy, however, and the project's managers should really not have to wait that long to see how things are going. They should be speedily assisted in a review of the Project objectives, major output indicators, and process indicators as expressed in the Action Plans, to produce a user-friendly monitoring system that will feed into mid-term and end-of-project evaluations.

TABLE II.1. PROJECT ACTIVITIES TO DATE (520-0339)

SUMMARY OF QUARTERLY REPORTS AND IMPLEMENTATION LETTERS, 3/31/85 TO 3/31/87

ACTIVITIES AND ISSUES :	1st Quarter (till 3/31/85)	2nd Quarter (till 6/30/85)	3rd Quarter (till 9/30/85)	4th Quarter (till 12/31/85)	1st Quarter (till 3/31/86)	2nd Quarter (till 6/30/86)	3rd Quarter (till 9/30/86)	4th Quarter (till 12/31/86)	1st Quarter (till 3/31/87)
PROJECT PREP. PERIOD :	PROJECT PREP. PERIOD:	PROJECT PREP. PERIOD:	PROJECT PREP. PERIOD:	PROJECT PREP. PERIOD:	(Simult. w/ implem.)				
PID Submission	17 May	17 May	No OR in file. Proj. decision made to dev				On July 30 AID & HSP		PROJECT PREP. PERIOD:
PP Submission	July	31 August	520-0339 (immunizat-its develop, expand, sim/Child Survival) is promotional system for DRT in support a	Decision made to dev			0339 adding DRT to a		Team brought in to
Est. Date Proj. Review & Approval	June	31 August	authorized & obligat-	March-April			clude Health Areas of		Co analyses prepara-
Est. Date Proj. Signing	August	15 September	ted 8/27 with PACD				Sanatitan. Approves		story to possible impo-
Proj. Prog. Progress to Date	Draft PID circulating in USAID	Draft PP circulating within Mission	606 implementation	PID design team prep: initial doc. in Nov. Prelin. negotiations with authorities.	PIL No 4 (1/15/86)		grant funds bringing		Proj. Supplement to
Major Prog. Steps Expected Next Quarter	PID completion & Mission approval	PP review & Mission approval: 8/31	002 immunization coverage for child. (S & pregnant women resident outside Dept. of Health for most common immunoprevent. diseases: TB, polio, diphtheria, pertussis, tetanus & measles.	Design team report reviewed: Jan '86	obligated for EPI		called Immunization		strengthen HSP cap-
	PP design team dev's: PP documents: PP reviewed & approved by Mission: Proj signed:	SEGEPLAN: Aug-Sept: Proj signed: 9/15		purpose: increase up to 002 immunization coverage for child. (S & pregnant women resident outside Dept. of Health for most common immunoprevent. diseases: TB, polio, diphtheria, pertussis, tetanus & measles.	suppl. reviewed & approved by Mission: March-April '86		Child Survival) to 1		ability to manage
							16.7 mil. already ob		Child Survival prog-
							date. Revised Proj.		in response to HSP
							002 DRT & immuniz. c		request for assis-
							80% immun. coverage		stance in H/MIS &
							002 extended 1 yr t		associated TA,
							Jose Arroyo head, MC		training & HSD.
							HSP counterparts & t		
							002SS and Vigilancia		
							Agency.		
							NOTE: New CP's genera		
							4.2.(a)2, 4.2.2(a)3,		
Financial Summary (5000):									
Authorized (BA)	N.A.	N.A.	N.A.	16,700	16,700	16,700	16,700	16,700	19,700
Obligated (BA)				3,300	3,300	3,300	3,400	16,700	19,700
Expenses (BA)				3,400	3,400	3,400	3,400	16,700	19,700
Committed					11,150	11,291	161	11,561	134
Expansures						534	534	932	1,071
Disbursements						8	8	398	987
Finalize				3,300		2	35	37	595
FY Expenditures (5000)	N.A.	N.A.	N.A.		16,692	3,392	16,307	(385)	9,105
1st Quarter									154
2nd Quarter				52	57	44	8	44	3
3rd Quarter				292	292	191	191	294	191
4th Quarter				794	794	662	662	662	662
Finalize				1,129	1,129	317	917	402	442
Counterpart (5000)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Cash Income Total

3,836	1,683	5,626
306	—	306
31700	2	319

Progress report  
Due w/o this report  
Rec'd w/o report

with counterpart con  
OVERALL STATUS, ACCOMP  
LISHMENTS & FOLLOW-UP  
ACTIONS TAKEN

Account No. 2, due

Status CPs & Covenants:

CPs

4.1 Statement names) H. A.  
of personal acting in  
office of Grantee &  
add'l reps, with  
specimen signatures

H. A.

H. A.

Statement rec'd.  
to be approved  
through PIL No. 1  
early 1st quarter  
FY-86

PIL No. 5 (4/14) HSP nominates Drs.  
provides HSP w/ info: Eduardo Tejada de la  
to implement Project: Vega & Otto Zeissig;  
includes CPs, coven: USAID approves thro  
ants, eval. audits. issuance PIL No. 7  
prac't & disbursement: 4/18  
procedures). Adds  
special covenant for  
2 issues. Coverage  
Surveys. HSP desig-  
nates Drs. Tejada &  
Zeissig; USAID app-  
roves thru PIL NO. 7  
4/18.

4.2(a) satisfactory H. A.  
evidence all contract  
positions financed by  
EGG under 520-0252  
continued to support  
520-0339

H. A.

H. A.

pending; steps satisfi- pending; no change  
fy requirements; in status  
satisfac. evidence  
unavailable till end  
Jan '86 with approv.  
HSP budget

PIL No 6 (4/15) act- (all CPs approved  
knowledges receipt issuance PIL No. 7  
letters Drs. Tejada  
& Zeissig informing  
that CPs in section  
4.2 of Proj. act;  
funds earmarked &  
account'd to finance  
86 Work Plan activ-  
ities

HSP transfer of vehic-  
les, furniture, equip  
& materials from 0251  
to support 0339

pending; receipt AID; pending; upon comp-  
copy official order: lation inventory  
requesting transfer: underway, HSP will  
anticip. 1st quarter: provide AID w/ sati-  
FY-86  
satisfactory evidence  
for this transfer

completed; inventory  
& transfer per  
Zeissig letter 4/16

HSP provides address  
create space for HSP  
and 240 sq. meters

pending; steps aren't completed; division  
to move office out: relocated 1/16  
action incomplete

completed

4.2(b) details time H. A.  
elapsed Project: HSP  
acceleration plan

H. A.

H. A.

pending; preparation: pending; to be com- completed  
submission & review: dated 3/7 Feb.  
schedules: complete  
1st quarter 1986

4.2(c) Procurement Plan	N.A.	N.A.	N.A.	pending	pending; to be completed by 7 Feb.				
4.2.2(a)(1) detailed time-phased Project Implementation Plan for DRT component	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending	pending	PIL No. 15 (12/5) accepts overall COP Implementation Plan for DRT activities submitted by MSP
4.2.2(a)(2) Presentation contract for production, supply, & distribution of D&S between MSP & USAC/LAFROMED	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending	PIL No. 13 (12/5) accepts agreement tech. cooperation bet. MSP & USAC/LAFROMED. CP net	
4.2.2(a)(3) presentation of copy contract bet. MSP & private transport company for distribution	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending	pending	PIL No. 20 (12/18) acknowledges receipt contract for G&S transport. proc t plan for DRT contract w/ appropriate supporting documentation. fulfilling CPs 4.2.2(a)(2) & (b), permitting response to requests for disbursement under that contract
4.2.2(b) Procurement Plan for DRT component	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending	pending	
<b>Covenants</b>									
5.1(a) evidence of other donor funding for vaccines, needles & syringes per contract II of project (within 245 days)	N.A.	N.A.	N.A.	pending	pending	pending	pending	PIL No. 12 (12/2) acknowledges receipt by MSP of vaccines from Guate. Rotary Club & UNICEF fulfilling covenant	
5.1(b) designation in writing by all Area Chiefs, of EPI coordinator	N.A.	N.A.	N.A.	pending	pending	pending	pending; under DRT Amendment, each Area Chief becomes responsible for implementation & success of EPI/DRT activities in his Area & can appoint 1 or more persons in support of the program	PIL No. 10 (10/2) of Area Chiefs as possible for implementation & success of EPI/DRT activities in his Area & can appoint 1 or more persons in support of the program	
5.1(c) signed statements re assignment & use of vehicles to EPI activities exclusively	N.A.	N.A.	N.A.	pending	pending	pending	pending; DRT Agents evaluate use of vehicles currently	PIL No. 9 (10/2) accepts transfer of vehicles to health by assigned to program currently	

3.1.(d) detailed time-phased Annual Implementation Plan by April of each CY	pending	pending	being prepared	letter of 1/16 from & Implementing Unit; Jossig covers overall Impl. Plan for approved by AID through PIL by 11/30 for 1st yr. Not acknowledged till 4/15 by PIL No. 6	letter of 1/16 from & Implementing Unit; Jossig covers overall Impl. Plan for approved by AID through PIL by 11/30 for 1st yr. Not acknowledged till 4/15 by PIL No. 6	letter of 1/16 from & Implementing Unit; Jossig covers overall Impl. Plan for approved by AID through PIL by 11/30 for 1st yr. Not acknowledged till 4/15 by PIL No. 6	letter of 1/16 from & Implementing Unit; Jossig covers overall Impl. Plan for approved by AID through PIL by 11/30 for 1st yr. Not acknowledged till 4/15 by PIL No. 6	letter of 1/16 from & Implementing Unit; Jossig covers overall Impl. Plan for approved by AID through PIL by 11/30 for 1st yr. Not acknowledged till 4/15 by PIL No. 6	letter of 1/16 from & Implementing Unit; Jossig covers overall Impl. Plan for approved by AID through PIL by 11/30 for 1st yr. Not acknowledged till 4/15 by PIL No. 6	letter of 1/16 from & Implementing Unit; Jossig covers overall Impl. Plan for approved by AID through PIL by 11/30 for 1st yr. Not acknowledged till 4/15 by PIL No. 6	activ' plus support implementing EPI consistent w/ Child Survival objectives. HSP also to provide list of vehicles locations & persons assigned to them
5.1(a) NSF ensures provision adequate TA from INCAP & PAHO plus UNICEF provision of packets during 1966, as well as coordination among donors in relation to EPI/ORT activities	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending; ORT Acoord't pending changes required submission date to June 30 & requests inclusion to budget & procurement plan
5.1(f) annual report financial inflows & investment expenses at end each FY to SOB Acct' Div., SEGEPLAN, & Dirección de Finanzamiento Externo y Fideicomisos	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending
Audits (1 at end each implement' yr.)											
Last Audit	N.A.	N.A.	N.A.	none							
Outstanding Accs.				none							
Next Audit				May 1986	May 1986	October 1986	none scheduled	none scheduled	none	none	
Evaluations											
(1 mid-term & 1 EEP)											
Last Evaluation	N.A.	N.A.	N.A.	none							
Outstanding Actions				none							
Next Evaluation				Sept. 1986	Sept. 1986	Feb. 1987	Feb. 1987	Sept. 1988	none	none	
Procurement of											
Commodities & Contracting of Technical &				In PIL No. 7, USAID agrees to act as procurement agent for vehicles, boats, motorcycles, ccis chain eqpt & spare							

Administ. Services

Proc't of vehicles, boats, cold chain & spare parts for these capacities initiated prior to meeting all CPs (exception per Section 4.2a of ProAg)

N.A.

N.A.

N.A.

parts; as contract agent for outside & local hire TA PIL No.3 approves RSP request spare parts for cold chain exp't tools & test exp't & AV exp't. PID/Co circulating in USAID for clearance

Contracts for 29 vehicles, 4 boats w/ motors, 45 notes & spare parts awarded during Jan. Contract for cold chain proc't through UNICEF pending AID/N action

29 vehicles arrive Guate. June. Note delivery pending. Transfer of AV exp't to RSP completed. Contract cold chain proc't from UNICEF processed by AID/N, arrival exp't pend'g 4 boats distributed & assigned to Paten, Solola & Isabal

Contracting for 3 Proj. funded consultants (technical services with source & origin outside Guatemala)

N.A.

N.A.

N.A.

PID/Is circulating for these positions; neg. underway for contracting anthropologist, training & supervision spec't & TA for promotional aspects Project

Contracts TA anthropologist signed 3/8, training & superv. spec't 1/27. TA promotion through buy-in to HealthCon 1/22 pending final AID/N action

PIL No. 8 (4/21) HealthCon Resident Advisor for TA to promotional activit' arrives

Contract for train'g supervision spec'ts extended 3 months

Contracting for 3 local hires to provide admin. support to Project

N.A.

N.A.

N.A.

pending till all CPs fulfilled

N.D.

application these positions rec'd; selection & contracting pending

selection made 9/11; security clearance by Embassy pending

security clearance rec'd early Nov. contract signed 11/16 (see Problems & Delays)

PIL No. 17 authorizes for 4 & 11 calendar months, respectively, to be charged to Promotion Element

TABLE 11.1. PROJECT ACTIVITIES TO DATE (520-0339)

SUMMARY OF QUARTERLY REPORTS AND IMPLEMENTATION LETTERS, 3/31/85 TO 3/31/87

ACTIVITIES AND ISSUES :	1st Quarter (till 3/31/85)	2nd Quarter (till 6/30/85)	3rd Quarter (till 9/30/85)	4th Quarter (till 12/31/85)	1st Quarter (till 3/31/86)	2nd Quarter (till 6/30/86)	3rd Quarter (till 9/30/86)	4th Quarter (till 12/31/86)	1st Quarter (till 3/31/87)
OVERALL STATUS, ACCOMPLISHMENTS & FOLLOW-UP ACTIONS TAKEN									
Status CPs & Covenants:									
CPs									
4.1 Statement name(s) of person(s) acting in office of Grantee & add'l res. with specimen signatures	N.A.	N.A.	N.A.	statement rec'd. to be approved through PIL No. 1 early 1st quarter FY-86		PIL No. 5 (4/14) provides MSP w/ info: Eduardo Tejada de la Vega & Otto Zeissig; includes CPs, covt-USAID approves thru inants, eval. audits, issuance PIL No. 7 proc't & disbursement: 6/18 procedures). Adds special covenant for 2 Inaun. Coverage Surveys. MSP designates Drs. Tejada & Zeissig; USAID approves thru PIL NO. 7 6/18.			
4.2(a) satisfactory evidence all contract positions financed by 626 under 529-8252 continued to support 520-6339	N.A.	N.A.	N.A.	pending; steps satisfied; requirements; satisfac. evidence unavailable till mid-Jan '86 with approv. MSP budget	pending; no change in status	PIL No 6 (4/15) acknowledges receipt letters Drs. Tejada & Zeissig informing that CPs in section 4.2 of Prody act; funds earmarked & commit'd to finance 86 work Plan activities			
and									
MSP transfer of vehicles, furniture, equip & materials from 4251 to support 5329				pending; receipt AID; copy official order requesting transfer anticip. 1st quarter FY-86	pending; upon completion inventory underway, MSP will provide AID w/ satisfactory evidence of this transfer	completed; inventory to transfer per Zeissig letter 4/14			
and									
MSP provides central office space for JIC and PM in 4251				pending; steps taken to move office out of 4251; action incomplete	relocates 1/16	completed			
4.2(b) detailed time sheet Project CPs implementation Plan	N.A.	N.A.	N.A.	pending; preparations submission & review scheduled completion:	pending; to be completed letter by 7 Feb.	completed			

			1st quarter 1966						
(Immization Comp.)									
4.2(c) Procurement Plan (Immization Component)	N.A.	N.A.	N.A.	pending	pending; to be completed listed by 7 Feb.				
4.2.2(a)(1) detailed time-phased Project Immu't Plan for GRT comment	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending	pending	PIL No. 13 (12/5) accepts overall LGP Implementation Plan for GRT activities submitted by HSP
4.2.2(a)(2) Presentation contract for production, supply, & distribution of DRS between HSP & USAC/LAFRONED	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending	pending	PIL No. 13 (12/5) accepts agreement tech. cooperation bet. HSP & USAC/ LAFRONED. CP set
4.2.2(a)(3) presentation of copy contract bet. HSP & private transport company for distribution	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending	pending	PIL No. 20 (12/18) acknowledges receipt contract for DRS transport, erect plan for DRT coop't w/ appropriate supporting documents station, fulfilling ICPs 4.2.2(a)(3) & (1b), permitting res- ponse to requests for disbursement under that coop't
4.2.2(b) Procurement Plan for GRT coop't	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	pending	pending	
<u>Covenants</u>									
5.1(a) evidence of other donor funding for vaccines, needles & syringes per coop't II of project (within 305 days)	N.A.	N.A.	N.A.	pending	pending	pending	pending	pending	PIL No. 12 (12/2) acknowledges receipt by HSP of vaccines from Guate. Rotary Club & UNICEF, ful- filling covenant
5.1(b) designation in writing by all Area Chiefs of EPI coordinator	N.A.	N.A.	N.A.	pending	pending	pending	pending	pending	pending; under GRT Agreement, each Area Chief becomes res- ponsible for imple- mentation & success of EPI/ORT activit. in his Area & can appoint 1 or more persons in support of the program
5.1(c) storage state- ments re assignment & use of vehicles to EPI:	N.A.	N.A.	N.A.	pending	pending	pending	pending	pending	pending; GRT Agreement. expands use of vehicles "principal- vehicles to health

17

18

activities exclusively:					for program use	ily* assigned to Proj:	Areas currently	
S.1(i)d detailed time-phased Annual Implementation Plan by April of each CY	pending	pending	being prepared by DGSS & implementing Unit to be reviewed and approved by AID through PIL by 11/30/86	letter of 1/16 from Zeissig covers over-all Impl. Plan for 1986. Conn't Detailed Impl. Plan for 1st yr. Not acknowledged till 14/15 by PIL No. 6		ORY Amend't	implementing EPI	pending
S.1(i)e HSP ensures provision adequate TA from INCAP & PCMD plus UNICEF provision of packets during 1986, as well as coordination among donors in relation to EPI/CRT activities	N.A.	N.A.	N.A.	N.A.	N.A.	pending	changes required	met
S.1(i)f annual report financial inflows & implement' expenses at end each Ff to GCG Acc to Div. SEGEPLAN, & Direccion de Finanzas Externas v Finanzas	N.A.	N.A.	N.A.	N.A.	N.A.	pending	submission date to June 30 & requests inclusion of budget & procurement plan	met
Audits (1 at end each implement yr.:								
Last Audit Outstanding Recs. Next Audit	N.A.	N.A.	none	none	none	none	none	none
Evaluations			May 1986	May 1986	October 1986	none scheduled	none scheduled	August 1987
1 mid-term & 1 EEP)								
Last Evaluation Outstanding actions Next Evaluation	N.A.	N.A.	none	none	none	none	none	none
Procurement of			Sept. 1986	Sept. 1986	Feb. 1987	Feb. 1987	Sept. 1987	Aug. 1987
Construction & Contracting of Technical &			In PIL No. 2, SEADIS agrees to act as direct agent for vehicles, boats, motorcycles, cold					



TABLE II.1. PROJECT ACTIVITIES TO DATE (520-0339):  
 SUMMARY OF QUARTERLY REPORTS AND IMPLEMENTATION LETTERS, 3/31/85 TO 3/31/87

ACTIVITIES AND ISSUES :	1st Quarter (till 3/31/85)	2nd Quarter (till 6/30/85)	3rd Quarter (till 9/30/85)	4th Quarter (till 12/31/85)	1st Quarter (till 3/31/86)	2nd Quarter (till 6/30/86)	3rd Quarter (till 9/30/86)	4th Quarter (till 12/31/86)	1st Quarter (till 3/31/87)
PROBLEMS AND DELAYS	N.A.	N.A.	N.A.	1a. BGSS receives letter from Min. Fin. since that 0339 Grant will be deposited soon fund. Issued Health, Finance & AID 1b. Issue of establishment line item within MSP covering IVA costs of local purchases being discussed w/ BGSS, to be handled simultaneously w/ preceding issue 1c. EPI Coverage Survey delayed due to need for approval Chief of State to use original cartographic materials. Approval received; field work & data analysis scheduled for completion 1st quarter '86 1d. BGSS requests AID financing for repair of house for offices of FP Unit & UNFPA Proj. Due lack funds for repair, transfer of 0339 Implement Unit to BGSS to meet CP 4.2(a) delayed.	Discussion held bet. Health & USAID to determine mechanism whereby Grant funds would form part of National Budget. Negotiations caused major setback in CP fulfillment	Primary Health Care Environmental Sanitation Comp'ts of Project 0251 disagree as to who/owned eq't for transfer to 0339. This created inconsistencies in eq't lists provided by Totonicapan Regional Warehouse, causing delay in meeting CP	1a. First round vaccination campaigns (Jornadas) slowed by inqt. procedures in Implement. Unit, since same Unit responsible for both strategies. 1b. During this quarter, MSP structure changed, necessitating intensive negotiations to respond appropriately to changes w/o affecting Project progress & objectives	1a. Nat'l strike by HSP workers responsible for delaying Health Area level personnel training	1a. PIL No. 8 authorizing 1st advance for 8411.04 signed 7/23, but was not rec'd by MSP till 11/2. Cash to Mexico requesting funds lost. 1b. Security clearance by Embassy Project Accounts Support delayed for 2 months. Selections made 9/11 but contracts not signed till 11/1c. Lack of admin. support creates bottlenecks in Proj. activities & procurement. Addition of \$2.0 million for 1st activities required. 1st admin. negotiation, operational integration of EPI activities within ongoing communications prog. This grant includes 1st Admin. Support Units start and 1st time organizing startup phase 1c. Arrival cold chain req't delayed. UNICEF Copenhagen notified Mission request. No answer given. Specs. had to be changed. 1d. End-of-year annual leave for MSP staff in local offices delayed. Proj. activities of EPI Coordinator chartered new car to be used in activities.

TABLE II.2

MAJOR PROJECT OUTPUTS

ACTIVITY -----	LDP ---	TO DATE -----	% ACHIEVED -----
1. Training Sessions -----			
1.1 Health Area Operative Diagnosis	24	16	66.7%
1.2 Central level seminars	3	3	100.0%
1.3 Area level seminars	24	16	66.7%
1.4 District level training courses	218	144	66.1%
1.5 Health Posts training courses	698	240	34.4%
1.6 Area level personnel trained	96	64	66.7%
1.7 District level personnel trained	2,190	1,332	60.8%
1.8 Health Community Volunteers Trained	12,603	4,409	35.0%
2. Supervision of Channelling -----			
2.1 Central level to Areas	672	-	
2.2 Area level to districts	2,700	-	
2.3 District to Health Post	6,000	-	

MAJOR PROJECT OUTPUTS (Table II.2 continued)

ACTIVITY -----	LOP ---	TO DATE -----	% ACHIEVED -----
<b>3. Immunization</b> -----			
<b>3.1 % doses applied</b> (target pop: 1,050,851 children < 1 year)			
DPT (3rd dose)	100.0%	13.1%	
Polio (3rd dose)	100.0%	14.1%	
Measles	100.0%	22.1%	
<b>3.2 % doses applied</b> (target pop: 1,786,935 children 1-4 yrs)			
DPT (3rd dose)	100.0%	27.1%	
Polio (3rd dose)	100.0%	27.1%	
Measles	100.0%	19.1%	
<b>3.3 % doses of tetanus toxoid applied two doses (pop: 1,250,698 pregnant women)</b>			
TT (2nd dose)	100.0%	0.5%	
<b>4. Promotion</b> -----			
4.1 Agreement Revision	4	0	
4.2 Research	9	1	
4.3 Training	15	2	
4.4 Communication radio spots	55	0	
4.5 Radio spots	24,640	0	
4.6 Radio programs production	156	0	
4.7 Pamphlets produced	2,000,000	0	
4.8 Posters produced	3,500	0	
4.9 Flipcharts produced	5,000	0	
4.10 Workshop on promotion techniques	8	0	

MAJOR PROJECT OUTPUTS (Table II.2 concluded)

ACTIVITY =====	LOP ===	TO DATE =====	% ACHIEVED =====
4.11 Production and television spots	25	0	
4.12 Television spots broadcasting	2,000	0	
4.13 Production TV programs	30	0	
4.14 Production broadcasting	900	0	
5. Maintenance			
5.1 Cold chain training courses	4	2	
5.2 Vehicle maintenance training courses	4	1	
5.3 Maintenance supervision visits from Central to Area level	600	-	
5.4 Maintenance visits to Health Posts & Districts (for 2nd quarter '87)	17,040	-	

TABLE II.3

PROJECT EXPENDITURES

PROJECT ELEMENT	OBLIGATED	DISBURSED	% SPENT
1. TRAINING	696,221	33,557	4.8%
2. PROMOTION	341,750	16,525	4.8%
3. COLD CHAIN	320,411	0	
4. TRANSPORTATION	780,057	419,741	53.8%
5. MAINTENANCE	393,777	50,913	12.9%
6. MANAGEMENT	584,400	81,057	13.9%
	3,116,616	601,793	19.3%

### III. CURRENT SITUATION AND KEY ISSUES

#### A. The Health Status Situation

It is unreasonable to expect a relatively young project to have had measurable impact on levels of infant/child mortality and morbidity. This is similarly true of all the Child Survival interventions in the Central American subregion. In addition, as subsequent sections make clear, the data base for making such asseverations has, until recently, been lacking. Rectification of that situation is, in fact, a major objective of follow-on AID health sector project activity. Beyond this, precise attributions of such impact are hard work (cf. Mosley and Chen, 1984) and will have to be carefully integrated into the Project's Evaluation Plan.

Since the Project and its Amendment were designed, some baseline data have been taken which, thoughtfully repeated at appropriate intervals, should permit assessment of change over time, attributable or not. The Encuesta Simplificada (MSPAS/INCAP) and the First National Nutritional Status Census (USIPE/INCAP, 1986) provide important information on health status in 1986, recorded in summary in Tables III.A.1-3 below.

Review of those tables makes it clear that any attempt to improve health status in Guatemala not only confronts high infant/child mortality and morbidity rates but some of their powerful correlates, for example, high national illiteracy rates (males 48%, females 65%, with such highs in the indigenous highlands as 93.5% among females in El Quiché) and low access to health-related amenities (32% with electricity, with lows around zero in the Peten, Jalapa, and Alta Verapaz; 31% with good water, with lows of zero in the Peten, Alta Verapaz, and Suchitepequez); and 50% without sewerage, with highs again in Jalapa, El Quiché, and Suchitepequez).

In addition, there is the longstanding problem of chronic malnutrition in Guatemala which at least one recent analysis (Franklin, et al., 1986) suggests may have worsened over the last five years compared to the five preceding years. The Encuesta Simplificada found that 34% of children under 36 months of age at nutritional risk, that is with a weight-for-age ratio below two standard deviations from the standard recommended by the World Health Organization\*. The national pattern is for weight retardation to increase from birth, with the most dramatic increases beginning at six months of age until 12-17 months, at which point stabilization occurs. Thus, it is the group of children from 0 to 24 months that is at greatest risk, with the 6- to 18-month cohorts in most acute peril. This pattern varies in distressing ways in some departments. For instance, in San Marcos, unlike the national pattern, rates of growth retardation remain high and even increase in older cohorts, i.e., 24-36 months, suggesting more repeated and more durable insult. The USIPE/INCAP census of primary schools indicates that seven highland departments account for at least 10% of the population attending school (ages 6-10 years) is

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\* The Encuesta Simplificada combined all the nutritional data from the sentinel areas and expressed weight-for-age in terms of Z scores based on comparison with reference population data recommended by the WHO.

is severely retarded in height-for-age; that is, chronically malnourished. Since over 60% of the school-aged population in Guatemala does not attend school, this percentage is probably a substantial understatement. The MSPAS/INCAP data indicate that those same seven departments also have from 28 to 49% of their pre-school children (under age five) classified as severely underweight for their ages. The malnutrition problem in Guatemala appears to be almost exclusively a rural problem. In terms of relative risk, the chance of finding a severely stunted child in the school-aged population in the rural departments ranges from a low of twice for the rural part of the Department of Guatemala to 7.2 times for Solola, in comparison to Guatemala City which is reported to have only a 2.8% prevalence of severely chronic malnutrition among its school-aged population.

#### 1. Programmatic Implications

Among the many programmatic implications that emerge from this brief review of health status, perhaps the most germane to the present discussion are the following:

- a. This age group requires meticulous care and follow-up.
- b. Information about this group has corresponding priority, a priority not attended to in the aggregations prevailing in the current information system: "children < 1 year" and "children 1-4 years."
- c. The Encuesta Simplificada Final Report notes that the presence of one such malnourished child in a family should be considered indicative of greater risk for the total family in terms of its health status. This suggests that outreach efforts should focus not just on high-risk children or high-risk mothers, but on high-risk families.
- d. Despite the MSPAS's understandable resistance to any more pilot projects, the distribution of malnutrition suggests at least some justification for thinking about health-risk priorities and corresponding phasing. This comment recognizes that channelling will be hardest to do in the worst-off departments for virtually the same reasons that engendered severe and/or chronic malnutrition in the first place.
- e. Given the interaction among environment, health care coverage, nutrition, morbidity and, ultimately, mortality, it does not seem reasonable to divorce health status and delivery statistics from nutritional surveillance data. This affects the conformation of the H/MIS in ways that will be discussed later.

## B. The Coverage Situation

As indicated in Section I, while the rationale for the Project Paper and its Amendment was low immunization and ORT-use coverage, the dimensions of coverage were not quantifiable in any reliable, up-to-date way. Since then, the EPI Coverage Survey and the Encuesta Simplificada have provided that quantification.

Among some of the most provocative statistics, only recently available, are the data for the first trimester of 1986 (MSPAS/DGSS/UI, March 1987) on: number of births by age of mother, birth site, and attendant. Of the 149,743 births reported in that period, only 19% were hospital-attended and only 17% by a doctor; 25% were attended by a comadrona (trained midwife), 49% by an empirico (untrained midwife), and 9% were unattended. This reflects some improvement since 1975, when 16% of births were attended by a doctor, 16% by a trained midwife, and 62% by an empirico (DGSS Statistics Unit, cited in USAID Health Sector Assessment, 1977). However, the current national averages disguise substantial skews: in San Marcos 87% of births were attended by untrained midwives, with under 1% attended by a doctor. This contrasts starkly with Guatemala Norte and Sur, with only 6% of births attended by untrained midwives. As for birth site, 78% of births in Guatemala in the first quarter of 1986 were attended at home, compared to 80% in 1975, a minuscule change which may only be an artifice of statistics. Again, the skew is extreme: in 1986, 97-98% of births in El Quiche, Totonicapan, and San Marcos were at home, compared to the 2-3% in Guatemala Norte and Sur.

Such statistics partly explain high infant mortality rates and such facts as: of the last child born to women in fertile age interviewed through the Encuesta Simplificada in 582 homes in San Marcos, 25% had died. Fifty-five percent of those women had had no prenatal care for their last child and 88% had received no tetanus toxoid. None of this is helped by the fact that San Marcos also had, of all Guatemala's Health Areas, the highest number of women over 40 giving birth and the third highest number giving birth under age 19. San Marcos does not, however, diverge significantly from national averages: 86% of all women interviewed nationally had had no dose of tetanus toxoid and only 47% had had any prenatal care during their last pregnancy.

These figures suggest that any project pretending to provide health care to mothers and children should direct special attention to prenatal care, including tetanus toxoid, and to training of midwives. As of 1983, there were 6,695 trained midwives in Guatemala, according to data from the Unidad de Programacion of the DGSS (cited in the Condiciones de Eficiencia Evaluation). The 1977 USAID Health Sector Assessment reported that a 1975 survey found 16,000 midwives recorded, as required by law, in municipal registries; 11% of that number had been recently trained by the MSPAS, between 1971 and 1975, leaving the large majority either untrained altogether or without any refresher training and/or supervision.

Immunization coverage for the six immunopreventable diseases is still less than desirable, even considering the intense campaign-like efforts of 1986. Table III. 1 presents coverage figures from recent surveys.

TABLE III. 1. IMMUNIZATION COVERAGE,  
CHILDREN 0 TO 12 MONTHS (<1) AND CHILDREN 13 to 36 MONTHS (<3),  
GUATEMALA, 1986

Data Source	Polio		DPT		Measles		BCG	
	yrs.		yrs.		yrs.		yrs.	
	<1	< 3	<1	< 3	<1	< 3	<1	< 3
1985 EPI Coverage Survey*	5%	44%	51%	45%	11%	56%	41%	54%
Encuesta Nacional Simplificada**	11%	51.6%	11%	51.5%	25%	73.2%	32%	70.7%
1986 Evaluation***	34.5%	ND	33%	ND	46%	ND	ND	ND

\* MSPAS, AID, and PAHO. INFORME ENCUESTA DE COBERTURA DEL P.A.I. Guatemala: November 1985.

\*\* MSPAS and INCAP. ENCUESTA NACIONAL SIMPLIFICADA DE SALUD Y NUTRICION MATERNO INFANTIL. Guatemala: August 1986.

\*\*\* USAID. HEALTH, POPULATION, AND NUTRITION SECTOR STRATEGY. Guatemala: Office of Human Resources Development. 1986?. No source is given for these figures. The text suggests that they come from a post-campaign evaluation but no formal document was available.

It would be very helpful to be able to make a clear statement about changes in immunization coverage on the basis of these figures. However, because of the variations in age parameters and definitions used in each of the reported studies, no statements about trends can be responsibly made. To elaborate: "3 yrs." is defined by the Encuesta Simplificada as from 24-35 months but is not precisely defined by the 1985 Coverage Survey. The data reported from the "1986 Evaluation" are only provided for children under one year of age and for children five years and under; the data in the 1985 Coverage Survey include only children "1 to 4 years of age," presented fortunately by one-year cohorts; and the Encuesta Simplificada provides data only on children under 36 months (3 years) of age, again fortunately by one-year cohorts. It is even possible to look at the data and conclude that vaccination coverage has actually declined. Data on the number of children with immunization carnets is no more helpful: the 1985 Coverage Survey reports that 49% of the children age 3 years have such carnets, the 1986 Encuesta Simplificada reports a figure of 43.9%, suggesting either a decline, some shift in the distribution of vaccinated children up into older age cohorts as might be demographically expected, or that mothers are losing cards.

The obvious comment on this state of affairs is that, until the MSPAS takes a policy position on its target populations and the crucial disaggregations of data it requires for what purposes, and insists that all data-gathering activity under its auspices hew to that position, its ability to make reputable statements about the effects of Child Survival health interventions is going to be seriously constrained. Such determinations are an appropriate and necessary part of the H/MIS activity which the MSPAS is contemplating.

#### 1. The Problem of Infant Mortality Rates (IMR)

The two surveys mentioned above offer baselines against which to project change over time and assess program effectiveness and impact. However, they are supplements to, not substitutes for, a solid national Health/Management Information System (H/MIS). The mortality data base for the preceding section is both ragged and fragile. This does not mean that the health needs of the children and mothers about whom we speak statistically are thereby unreal. Yet, without integration and improvement of the MSPAS H/MIS, we will be unable to talk confidently about whether Child Survival interventions on their behalf are making any directly attributable difference, such attributions being difficult enough in any case. Lack of accurate morbidity rates. As just one example, Table III. 2 displays the variance in IMRs that will make trend and change analysis extremely tenuous, in the absence of a trustworthy baseline and ongoing, timely submission of reliable data.

TABLE III . 2. GUATEMALA: VARIANCE IN INFANT MORTALITY RATES

Place Where Cited	Date	Rate/M	Original Source
Evaluación, Condiciones de Eficiencia, Jul.-Aug.1985, MSPAS, with INCAP, PAHO, and UNICEF, Nov.1985	1960	91.8	B. Sajche R., MSPAS, MCH Dept., 1983
	1965	92.6	
	1970	87.1	
	1975	81.0	
	1980	64.8	
	1982	64.3	
	1983	64.9	
	1984	79.82*	
Anuario Estadístico (Cuadro 15), MSPAS, 1985	1981	54.2	
	1982	60.2	
	1983	64.9	
520-0339 PP, p.1 USAID, 1985	1983	64.0	
		100.0 **	
PP Amendment, p.1 USAID, 1986 p.2 p.25	1983	65.0	
	1984	108.0 ***	
	1985	51.0 ***	
	1985	79.82*	
USAID HPN, Strategy, 1986	p.2	1984	79.14
	p.8	1984	68.0
	Obj.10	1984	79.8
	"	1985	73.4
	"	1984	80.0 ****
	"	1985	78.0 ****

\* This is the most commonly used figure and appears in the MSPAS Norms for Health Posts emitted by the Maternal-Child Health Department, as well as in the basic data sheets for 1984 put out by the MSPAS Unidad de Programación for general distribution.

\*\* For indigenous areas.

\*\*\* Data from municipality of Taxisco.

\*\*\*\* Data from MSPAS/INCAP, ENCUESTA NACIONAL SIMPLIFICADA DE SALUD Y NUTRICION MATERNO INFANTIL, Guatemala, August 1986.

### C. Implementation Delays

Implicit, at times explicit, in the discussion of Project Activities to Date (see Section II) is a significant slowness in the implementation of the Project as measured against the implementation plans contained in the Project Paper and its Amendment. Slowness is also apparent from a superficial review of the Project's financial pipeline. The first ProAg was signed on 31 July 1985; the revised PACD that emerged from the PFA is May 1989. As of 31 March 1987, 43% of the total planned implementation period has passed while, on the expenditure side, only 5% of the budget has actually been spent, with commitments and earmarked funds accounting for an additional 6% and 9%, respectively. Of that 20% total, about two-thirds (68%) of pipeline movement came from commodity purchases; the balance went to Management; the Project Administration Unit (PAU); and short-term TA for ORS production, baseline surveys, promotion, and training. While this appears to be at the "alarm" level, there are a number of factors which attenuate these apparently distressing ratios.

First, part of the explanation is attributable to the fact that expenditures for other than TA and US-source commodities and services are mainly in quetzales. The initial project budget of US\$6.7 million included expenditures of over \$4.2 million in quetzales that have since depreciated relative to the dollar by more than 60%, nearly doubling the purchasing power of the original project budget.

Second, the original Project Implementation Plan was overtaken by a variety of other largely unforeseeable events. For example, it took 7.5 months instead of the 4 programmed for the Conditions Precedent (CPs) in the original Project Paper to be met. The primary reason was the change in government, from a military regime to the first democratically elected government in Guatemala in over 30 years. This in turn led to two restructurings of the MSPAS, two changes in the Project's principal counterparts, and an appropriate rethinking in the GOB of its development objectives. This was accompanied by a period of instability, in which MSPAS personnel had other priorities besides the CPs to Project 0339, as well as concerns about their own futures.

Third, understandably anxious to display commitment to national welfare and an ability to perform in the health sector, the MSPAS acceded to strong pressure from several donors to adopt a strategy of vaccination campaigns. While the costs and benefits of the strategy can be debated, the three campaigns of 1986 clearly absorbed much MSPAS staff time and all other activities suffered significant delays.

Fourth, two major strikes by doctors (29 July to 5 August 1986) and 18,000 MSPAS employees (14 August to 22 August 1986) were very disruptive and caused further delays.

Finally, consideration of the pipeline issue should take into account that the first round of CPs were not signed off on by the USAID until mid-April 1986, 7.5 months after the ProAg was signed or less than a year ago. The CPs for the DRT Amendment were met more rapidly, in February 1987, approximately 6 months after signing of that ProAg. While not a dramatic difference, this historical sequence suggests three things: 1) that procedures have speeded up somewhat; 2) that relatively little time has

elapsed since first disbursement against the project as a whole became possible; and 3) that, given the volatility of the political and institutional environment and a need to learn about the way AID does business, the pace at which the CPs were met was not unreasonable. Given the nationalistic nature of the new government, its relatively prompt action in this regard can also be interpreted as a realization that the Project objectives were not discordant with the new government's policies in the health sector.

It is useful to remember that, of the period of 18 months from the time the first ProAg was signed, there have only been about 6 months in which the Project as a whole has been absolutely "free" of CP requirements: the period between mid-April 1986, when the first round of CPs was met and approved, until the end of July 1986, when new CPs were imposed as part of the ORT Amendment; and then again from early February 1987 when the last CP was met for that Amendment, until the present (31 March 1987). To look at it another way, the Project has been relatively free of CP requirements since 15 April 1986, when the first round was met, a total of 11.5 months in which full implementation of at least immunization activities has been possible, or 25% of the entire extended project lifetime of 46 months. Full implementation of the ORT Component has only been possible since February 1987, when the final CP was met and approved. In this light, the fact that just 10% of non-commodity line items of the Project's budget have been earmarked, committed, and/or expended, seems less alarming.

The impact of these circumstances would have been more severe, had the Project design not included an exception which permitted procurement and contracting for TA to proceed while CPs were being met. This foresight accounts for the fact that 38% of the funds for commodities were earmarked in 43% of the programmed time, that is, very close to schedule.

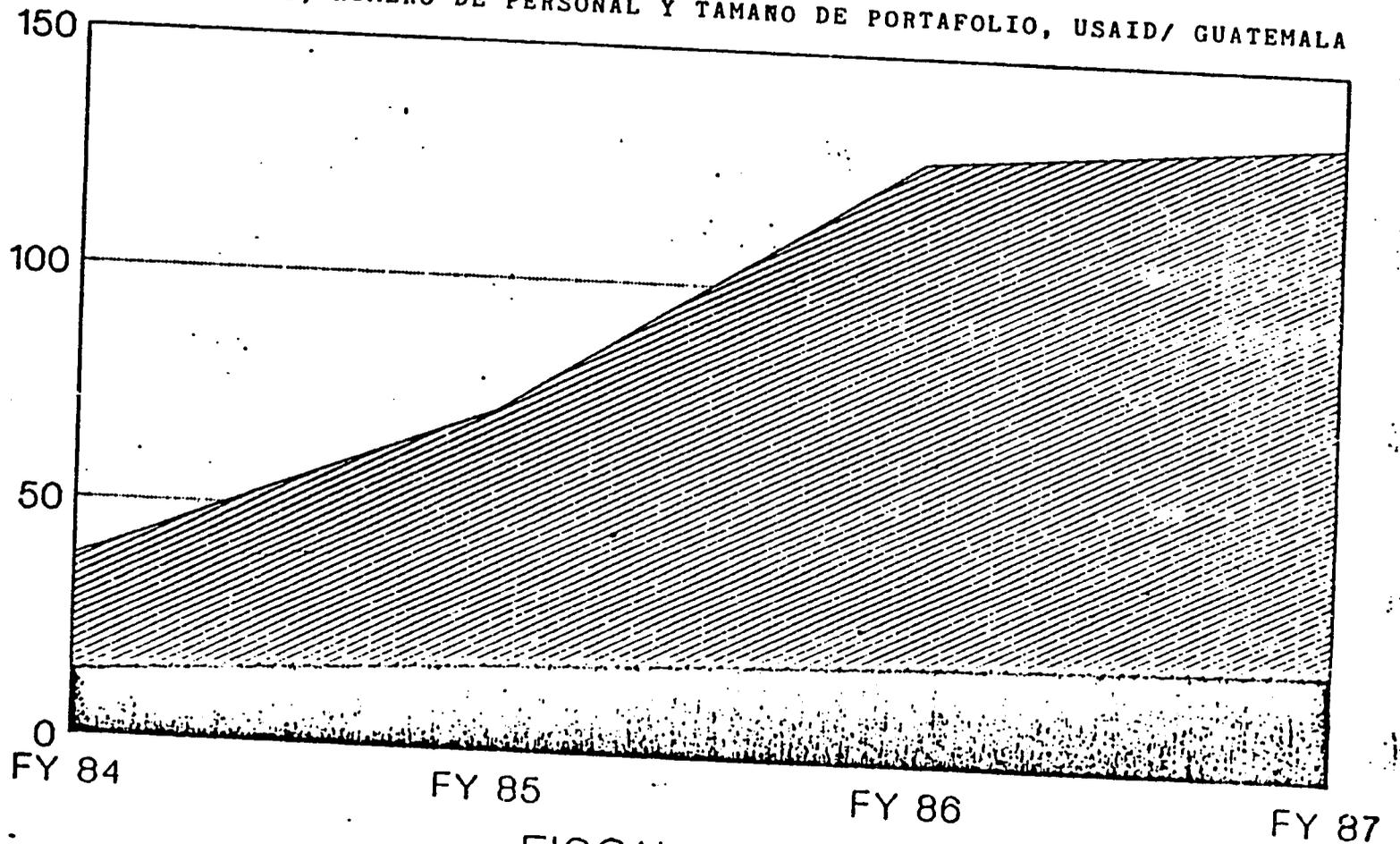
If one also considers that creation of the Project Administration Unit/PAU was a key step in the development of Project capacity to utilize the resources in its budget, and that the Unit was only established in November (one month before Christmas), it becomes even clearer why pipeline movement to date has been slow.

Unanticipated events in the USAID Mission also contributed to delays. AID/W created the Child Survival Account and expanded funding for Central America, thus providing the funds for the ORT Amendment. Preparation of that amendment required significant time on the part of AID/Guatemala officials which might otherwise have been spent on implementation. Furthermore, ever since approval of the original ProAg, the Mission's Health, Population and Nutrition portfolio has increased rapidly, from \$..... in July 1985 to \$..... in March 1987, while direct-hire staff levels have been cut from ..... to .... officers. This pattern is not atypical for USAID/Guatemala as a whole (see Figure III.C.1).

In summary, though many Project activities have suffered delays and its pipeline remains large, implementation delays are attributable in no small measure to events external to the Project. In fact, the pace of implementation has increased under the democratically elected government. Substantial funds, however, remain in the pipeline. Their expenditure will require acceleration of Project implementation. The next section will examine enduring constraints to that acceleration.

# STAFFING AND PORTFOLIO TRENDS USAID/GUATEMALA

TENDENCIAS, NUMERO DE PERSONAL Y TAMANO DE PORTAFOLIO, USAID/ GUATEMALA



USDH POSITIONS  
Plazas



AMOUNT OF FUNDING  
Fondos

(Años Fiscales)

D. Continuing Constraints to Acceleration of Implementation\*

The continuing constraints to accelerated project implementation fall into three groups, each pertaining to one of the three principal organizations responsible for Project implementation: the Health/ Population/Nutrition Office of USAID/Guatemala, the Project Administration Unit, and the Ministry of Public Health and Social Assistance.

To better understand the constraints which affect each of these, the Project should be put in context. Its budget is now US\$9.7 million, much of which is for expenditures which are frequently classified as recurrent costs. Furthermore, the Government of Guatemala handles donated funds using the same mechanisms that it uses for national funds. The US\$9.7 million Project budget is now equivalent to approximately Q30,000,000, or ..... % of the national health budget. The proper expenditure of these funds, over the remaining LOP period of only 29 months, must appear to Guatemalan officials as a major task and responsibility.

1. The AID Health Office

As mentioned in the previous section, the workload of the AID Health and Population Office has mounted significantly in the past several years. This can only continue, especially in the favored area of Child Survival. At the same time, the person responsible for this office was made an acting General Development Officer, with responsibilities for the education portfolio, as well as those of health and population.

This situation contrasts markedly with that of Honduras for example where, throughout most of the life of the Health Sector I Project, implementation has been supported by a full-time direct-hire health and population officer, a full-time direct-hire project manager, and a full-time American assistant administrator, as well as by a substantial amount of long- and short-term TA. Although the Health Sector I Project is longer, its average rate of expenditures, approximately US\$4.0 million/yr., is roughly equivalent to the rate at which expenditures need to be made during the remaining life of Project 0339 in order to completely use the funds by PACD, that is, US\$9.2 in 29 months.

Without major changes in the way USAID/G has, in the past, successfully implemented projects, there is only so much an individual officer can do. The restricted number of AID personnel available to implement the Project, combined with the incremental approach to design imposed by circumstances which have led to two major project amendments in two years, have been and will continue to be constraints which will severely limit the rate at which implementation can be accelerated.

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\* The reader is referred to a fuller description of the various factors which impinge on implementation in: P. N. Cross, Annex A.1, Institutional and Management Analysis, which includes supporting tabular and graphic material.

## 2. Project Administration Unit (PAU)

The DRT Amendment included as a "key support to the regular MOH bureaucracy ... a special office within the Applied Programs Unit to provide administrative support for the implementation of DRT and Immunization activities under this project." This is spelled out in detail in PIL #19 (3 Feb. 1987) as follows: "the Applied Programs Unit will be charged with the responsibility of organizing the reinforcement of the Administrative Unit with an Administrator and two Administrative Assistants who will be financed with Grant funds. The contracted persons will receive a salary no more than 10% above their last salary and they will be paid in Quetzales.... AID Grant resources will also fund (in Quetzales) a computer specialist (10 person-months) who will work under the Applied Programs Unit to systematize the Project technical, administrative, financial, and accounting activities. AID Grant resources will also finance the purchase of computer equipment compatible with the computerized system existent in the General Directorate of Health Services and necessary support equipment for the Project."

As mentioned above, the Project Administrator and one of the Assistant Administrators were hired only in November of 1986. The staffing of the PAU now includes the following personnel:

1. Project Administrator
2. Assistant Administrator/DRT
3. Assistant Administrator/EPI (MSPAS counterpart funds)
4. Bookkeeper
5. Purchasing Officer
6. Storekeepers (2).

At present, at least partly because it is so new and a lot of ironing out needs to occur, that Project Administrative Unit (PAU) faces some problems. These need to be addressed and, in several promising ways, this is already happening. This is fortuitous and meritorious of AID support since, in the absence of modifications, the PAU -- either because of the systems it adopts or simply because it is misperceived -- could increasingly create problems instead of solving them.

The PAU has already begun to develop standard procedures for the management of funds for per diems and local purchases. The staff of the Unit is naturally and appropriately concerned that the funds for which they are responsible be effectively utilized to attain the Project's objectives. However, current Guatemalan practice (e.g., the Auditoria bottleneck with which the MSPAS must deal as a whole), plus staffing patterns at the Health Area level where adequate administrative skills are often lacking, are leading the Project Administration Unit to develop relatively centralized financial management systems. Given the fact that the PAU is presently understaffed, its response capability is limited; thus, excessive dependence on centralized systems may constrain the rate at which project funds can be utilized. Such centralization also runs counter to GOG commitment to decentralize.

The Project Administrator, the functional head of the Project Administration Unit, is a trained and experienced manager and administrator. However, his lack of academic training and experience in medicine or

public health, in general, and Child Survival, in particular, represent a significant knowledge deficiency for the Unit. There are and will continue to be numerous occasions when implementation decisions will require technical input. One example concerns the correctness/quality of training and educational materials, production of which is financed by the Project. It is not appropriate for the PAU to make technical judgment calls in this area, particularly in light of the fact that the Project's three principal counterparts are physicians. Supervision of technical quality falls within the purview and is the responsibility of the MSPAS and the AID Health Office.

At the heart of the matter is the reality that the roles and inter-relationships of the three organizations involved in implementation are still evolving empirically. As currently constituted, the Unit has little institutionally legitimized decision-making power and is not seen in the MSPAS as a technical shop or locus of major decision-making. At the same time, perhaps because of the AID Health Office's workload, the PAU has been pushed by those realities on the AID side into expectations of a fairly substantial decision-making responsibility.

A major issue for the MSPAS has been the integration of the PAU into the philosophy and objectives of the public health sector. The sense in the Ministry is that, until the PAU staff grasp that philosophy and those objectives, they will fall into the trap of being seen as and, corollarily, acting as accountants and paper-pushers who will tend more and more toward obstructionism. It is expressed wish of the MSPAS that the PAU act as facilitators and true support staff and some efforts have been made to integrate the PAU into its activities by inviting some PAU staff to make presentations at recent raining sessions for Health Area technical teams in Jalapa and Guatemala City. The purpose of those presentations was to explain the processes for getting per diems for training, supervision, and channelling; transportation payments; fuel; and other inputs. While some spectators perceived the PAU as having been somewhat scapegoated, some operational staff were grateful for the PAU presence and saw it as truly useful and informative.

This is not a healthy situation. Both AID and the MSPAS are large, powerful institutions whose interests have not, and will not, always coincide. Each seems to have a somewhat different perception of the role of the PAU. On the AID side, perceptions derive from necessity, that is, lack of adequate staff, so that the PAU is looked to for administrative support and a certain amount of decision-making. On the MSPAS side, perceptions derive from bureaucratic traditions which are, nevertheless, at odds with the Ministry's own growing sense of the need to modernize and delegate. Functionally located between these institutions and caught between discrepant needs and perspectives, unless something is done, the PAU will be constantly pulled in one direction or another.

#### a. Programmatic implications

The management of the PAU requires support from both sides, as well as considerable diplomatic skills. Lack of either will result in turf competition which will negatively affect the implementation of the Project. As for practical activities that can alleviate the stress, there are several possibilities. The first is that staff positions contemplated

for the PAU be reviewed and rationalized; the resulting restructuring of positions should then be staffed up. The second is that the USAID and MSPAS agree on a schedule of field-level visits by PAU staff; if adequate personnel are brought on board, the time of the PAU Administrators and his Assistant Administrators would be freed up to do more field visiting. A corollary of this would be inclusion of the PAU Administrator in more of the substantive, technical meetings at the Ministry, for instance, the presentation of Implementation Plans and discussions of technical impediments to Project progress; the effect of this would be to imbue the PAU with MSPAS health objectives and a fuller grasp of obstacles to realization of those objectives. Finally, the presence of a technical assistance team oriented toward issues of management and health information systems can contribute in important ways to diluting the stressful expectations placed on the PAU by the two principal institutional actors between which it is located.

### 3. The Ministry of Public Health and Social Assistance

At present, the Project is counterparted to the Chief of the Applied Programs Unit. Since both technical areas supported by the Project, immunizations and oral rehydration therapy, are under this Unit, this counterparting was logical. However, since many of the activities financed by the Project fall under other units, e.g., Human Resources and Education for Health, and Supervision and Evaluation, certain delays have arisen, at least partly because of the Project's institutional location.

As mentioned earlier, the Ministry has gone through several major organizational and structural changes since the Project Paper was written. These have been accompanied by widespread personnel changes. This instability has had a negative impact on Project implementation. Recent changes and continuing speculation about future changes -- at this time a new organizational chart is pending official ratification -- suggest that this constraint to implementation remains a factor.

Another element of instability has been the introduction of the vaccination campaign strategy. With the strong encouragement of UNICEF and the support of at least some other donors, the MSPAS adopted a campaign strategy for raising vaccination levels. This strategy has advantages and disadvantages, and, in the absence of a rigorous, formal evaluation, it is difficult to objectively determine whether or not this strategy was or continues to be appropriate in Guatemala. It is clear, nevertheless, that this strategy redirected resources away from implementation of Project 0339. Furthermore, the lack of support for this strategy in some Health Areas clearly indicates a strong feeling that it is inappropriate for Guatemala at this time as a global approach.

This situation has been exacerbated by commonly recognized deficiencies in the management systems of the Ministry including, but not limited to, the health and management information systems, the logistics system, the supervision system, and the equipment and maintenance systems. The underdevelopment of the Ministry's information systems is a major factor affecting the rate of implementation of the Project and none of the systems have been up to the task of quickly absorbing the volume of resources available through the Project.

Finally, bureaucratic rigidities common to most large government institutions in both developing and industrialized nations, constrain the rapid acceleration of project-funded activities. Of particular relevance to Project 0339 is the centralization of the management of Project funds, particularly per diems, gasoline, spare parts, and other Project-financed supplies. Currently, almost all funds for those purposes are disbursed directly by the Project Administration Unit. Decentralization of financial management authority is hindered by Guatemalan law, a condition frequently found in other countries as well, which requires that persons responsible for government funds purchase, usually with their own funds, an insurance policy or "fianza" that guarantees the appropriate use of funds. The degree to which this will be a factor in the move to decentralize MSPAS financial and other management responsibilities to the Health Areas is not clear.

In summary, organizational, personnel, and common bureaucratic constraints have combined with changes in technical policy and lack of management technical assistance to constrain Project implementation. The Project Amendment under consideration is meant to address these limitations.

#### E. The Nature and Effects of Management Constraints

##### 1. Other Management Constraints

The major structural and functional constraints affecting the potential for accelerating the implementation of Project 0339 are discussed above. This following brief discussion simply sketches the setting in which all three principal institutional actors must operate.

In July-August 1985, the MSPAS/DGSS, in collaboration with INCAP, PAHO, and UNICEF, undertook the "Evaluacion de las Condiciones de Eficiencia de los Servicios de Salud Materno Infantil." The purpose was to provide a base for identifying priority systems problems and management strengthening needs, with particular attention to implications for Maternal/Infant/Family health and financing potential under the National and subregional Child Survival Plans. The evaluation focused on the following elements: resources; planning, organization, and administration; supervision; training; information systems; logistics; and education. health promotion, and community participation. The parameters explored permitted the calculation of percentages of efficiency. While INCAP and the MSPAS plan to simplify and improve the Condiciones methodology, it still represents the most systematic assessment of the health delivery system's capacity to produce that has been undertaken in many years.

In summary, the results of the study indicated the following problem areas as priority concerns, disaggregated by level and element:

##### a. Health Posts (score = < 50% of efficiency)

- supervision
- information system
- planning, organization, and administration
- training

b. Health Centers (score < 60% of efficiency)

- supervision
- information system
- resources

c. Hospital Pediatric Depts. (score < 50% of efficiency)

- training
- resources
- planning, organization, and administration

d. Hospital Obstetrics Depts. (score < 50% of efficiency)

- training
- planning, organization, and administration
- resources

## 2. Implications for Channelling

The theory guiding channelling is full coverage of its target populations, a powerful but demanding goal. It requires great commitment and time, good supervision, functioning logistics, well-trained human resources, and thoughtful planning, at the same time that it must be adaptive to different environments. While, in the long run, preventive health actions should reduce demand for curative care, in the short run the channelling approach could actually motivate more demand for services from a government that looks like it "cares." The MSPAS wants to be able to respond to such demands as are reasonable. It also wants to expedite the support, well funded under 0339, for the health workers on whom primary health care depends.

The channelling methodology is already finding itself charged with an ever-growing burden of health interventions. In addition to EPI and ORT, some Health Areas are adding responsibilities for: ARI, including TBC; growth monitoring; community organization; intra- and extra-sectorial coordination; environmental sanitation; food and nutrition, sometimes including promotion of home gardens; early childhood stimulation; mental health; dental health; "family orientation". Binding these all together are the home visit and health education. This is a heavy load to put on the time and energy of health workers, who typically have about half their work week to spend on channelling, with the balance in the facility to respond to demand. To this must be added: censusing; training and being trained; supervision and being supervised; administration; materials supply and procurement; the maintenance of the health/management information system; and, in the best of all possible worlds, integration of the understanding the H/MIS provides into adjustments to programming and implementation at the local level.

Channelling and associated home-visiting may be nearing the brink of the problems that historically came to plague primary health care and the PHC worker. That worker came to be known as "the skinny Hercules" who, with little support and few incentives, became so burdened by the accumulating

demands of health ministries and donor agencies that s/he crumbled. In the absence of material rewards for health promoters, with worker salaries low and demands ever-growing, the best incentive the MSPAS can provide is a steady flow of logistical support, training, and per diems, and a health/management information system which does not crush but serves and motivates at each delivery level.

Although channelling is just starting in some Health Areas and resuming its pre-jornada pace in others, it is still timely to think not only about next steps for the methodology once it is functioning at least fairly well nationwide, but rationalizing its current focus. After full immunization coverage of the presently susceptible population is achieved, ideally it will only be necessary to keep up with vaccinating new infants, newly pregnant women, and monitoring the status of immigrants. That will allow "space" for a couple of very important things to happen: a) nutrition monitoring could be reasonably sustained; b) it could feasibly be integrated into the overall Health/Management Information system; and c) it could constitute a major piece of a high-risk strategy that would delimit the health worker's ambit of responsibility and, simultaneously, focus it to greater effect.

The MSPAS is facing the proliferation of unprioritized outreach responsibilities which weakened primary health care and could decimate channelling and other similar, population-based, outreach models. Unless priorities are set -- and the suggestion here is that they be organized around a focus on high-risk families --, the channelling methodology will both constrain itself and be more likely to be constrained by limitations in management subsystems.

## F. Problems, Proposed Solutions, and the Role of the H/MIS

The focus of the technical analyses carried out under this Scope of Work was on the management dimensions of Project 0339, with emphasis on information systems as those relate to delivery of maternal-child health services. The evolution of that focus not only reflects Project experience to date but the way in which the MOH is interpreting various dimensions of new national mandates.

Following the directives of the Five-Year Plan and the President's Memorandum, the MOH selected as a priority the improvement of its health and management information system. A special commission was set up, through the Oficina Coordinadora de Informatica y Computacion, to study MOH information problems and quickly set forth some general guidelines.

The major output from that group was a Project Proposal for Restructuring the Information Unit (IU). Among the changes recommended are:

- a. Creation of a new organizational structure headed by a managing director, with two principal departments: a Health Information Department and a Computer Department
- b. Adoption of a subsystem model with modular components
- c. Design and implementation of a responsive, unified health and management information system (Sistema Unico de Informacion).

On 29 January 1987, the MSPAS formally requested support from AID for further development and implementation of that Proposal and designated a counterpart for follow up. The technical assistance which produced this document and the foundation studies responded to that request.

### 1. Problems

The MOH IU Restructuring Project document observes that "over the last few years, the field of health information has been one of the weakest and most controversial in the Ministry of Health," at the same time it has been identified as one of the most critical areas of need for decision-making. Meetings of the Supervision and Evaluation Unit with heads of the normative departments and Area Chiefs produced the following conclusions:

- a. The Health Sector is very far from having a unified information system.
- b. The data-collection instruments in current use are generally of poor quality and excessive in number.
- c. The amount of data gathered is excessive, redundant and, due to the fact that data are often generated in response to discrete programs or projects and/or to other-donor requirements, their purpose is unknown or misunderstood.
- d. Too many indicators, many of them inappropriate, are being "utilized."

- e. Collection, processing, and analysis of those data (not to mention their application) are mechanical, slow, careless, and imprecise; furthermore, these activities are unduly and unproductively centralized.
- f. Resulting information is thus basically useless for making decisions, monitoring, supervision, or evaluation, and so is disvalued.
- g. In consequence, the Information Unit has typically received little high-level support and corresponding budget, completing a vicious circle of almost total dysfunction.

The H/MIS Analysis carried out under this assignment described the existing MOH information system as: complex, detailed, and redundant. It collects information in not less than 30 areas, ranging from births (including condition and birth size), to quarterly distribution of hospital expenditures, by service, across major cost-accounting categories. There are 48 official information forms now in use at the national level. These are not standardized in size, format, print, use of acronyms, nor do they carry revision dates or authorizations. Field staff often do not have copies of all the forms they are expected to fill out. Some facilities have developed their own forms for recording information of particular interest at their level; these may be useful but they proliferate the sheer amount of paperwork or may even induce neglect of nationally-required information.

As for use, data collected locally are not used locally, thus raising concern about data quality. The data quality problem is compounded by infrequent quality control checks. When such checks do occur, they do so at higher-level data-processing points and are just sample manual comparisons. Informal quality control is conducted by supervisors at lower levels; the effectiveness of this procedure is not routinely audited or evaluated. In general, while health information is collected nationwide, not all facilities do, in fact, send in reports. Data that are collected are not routinely analyzed, interpreted, or used at any normative or operational level of the national health system.

## 2. Proposed Solutions

Over the past few years, PAHO technical assistance has developed a maternal-child health information system which has been partially tested in Zacapa. Consideration is being given to launching that system nationwide without further testing or further modification. It would then become the point of departure for restructuring the new Sistema Unico de Informacion and the IU.

Based on interviews, field trips, and careful review of this system (see Annex A-2), the evidence is that it has contributed substantially to the diminution of some of the problems that have plagued health information in Guatemala: the number of forms has been reduced; fundamental data appear to be captured, with reduced redundancy; and forms have been somewhat standardized. The revised system also encourages more involvement of

field staff, although the volume of data required and the difficulty in using some of the forms and inserting adaptations for local programming and evaluation purposes are still perceived as limitations by some field personnel. At the same time, forms recording births and deaths are not included in the revised, integrated system, nor are forms reporting monthly public hospital admissions and discharges, total lengths of stay, bed utilization, distributions of hospital expenditures across major cost-accounting categories, etc. The system provides little opportunity for auditing recorded information, nor are there clear procedures for tracing services back to individual providers or linking recorded information back to individual data sources. There is also premature aggregation of data at lower levels, most crucially in age cohort data so crucial for targeting of health services.

But most importantly, considering global MSPAS needs for the longer term, the key issue in the decision on an immediate, full launch of the "Zacapa System" is the following fact: the system has been tested only in three districts of one Health Area which has used only the first 8 of 14 forms. By way of contrast, the "Sabre" information system for Eastern Airlines (in many ways a poor example of good management) took seven years to develop, test, and launch. This is very far from a feasible time frame for the MSPAS, but it does suggest that limited testing prior to a major national investment is simply inadequate and fraught with risk.

Beyond this, the entire restructuring enterprise does not yet take into adequate account some other very basic issues:

- a. The need for solid and sufficient systems analysis
- b. Realistic phasing for development of the entire H/MIS, that is, the management components that go beyond MCH and epidemiological needs
- c. Feasibility, timing, training, and maintenance requirements for deployment of microcomputers to the Area level
- d. Training needs in data-collection, management, processing, analysis, and application of information
- e. Upgrading of the IU so as to serve as a training nucleus for the health system as a whole.

Finally, representatives of the MSPAS are concerned that the system leaves aside two new and potentially valuable information systems which should be integrated -- theoretically and empirically -- into any MCH system. These are: a) the Unified Information System and b) the pilot Nutrition Surveillance System which has been tested in Progreso and soon to be tested in Santa Rosa and Chimaltenango. This system may be too new and untried, and presently lacks a strong resource base within the MSPAS, to provide a solid footing for a revised, integrated system. Nevertheless, at some point a nutritional surveillance dimension may well have to be incorporated into the system and the Progreso experience would be instructive.

On the other hand, the Sistema Unico de Supervision, which embraces the novel and crucial concept of monitoring achievement against targets, could well serve as a point of departure for systems analysis and design, a refreshing change from the usual top-down approach to health management -- a change which the new government, and the MOH, have committed themselves to make.

In fact, a good argument can be made for analyzing and refining/reorienting the system "from the bottom up." That is, the system begins conceptually with the kinds of epidemiological, health, and management information that is useful at the lowest levels, working up through the system, making decisions about what is really needed at each level. Decision-makers and normative entities and the Central level then discriminate among the data universes generated, to see what they really need for policy and global planning, and to keep the donors reasonably happy.

### 3. The Role of an H/MIS

A Health and Management Information System has four basic goals:

- a. Finding out how healthy a national population is and which portions of that population need the most care (the epidemiologic and nutritional baseline);
- b. Deciding what kind of care needs to be delivered and how best to deliver it (application of information to policy, planning, and management systems design);
- c. Understanding the delivery process and/or project status at any given time, to make changes or corrections necessary to attain stated objectives (monitoring and supervision);
- d. Determining whether the system is having effect on health behavior and, ultimately, impact on health status (assessment/evaluation of effectiveness and impact).

An associated goal is documenting program performance and achievements, projected against original or readjusted objectives, for reporting to those individuals or entities for whom that documentation has relevance.

Monitoring and evaluation are fundamental management tools, based on the proposition that accurate and relevant information, collected, analyzed, and presented in timely fashion to decision-makers (at any level) will enhance decision-making, project performance and, eventually, impact. Together, they tell a story and form the logical connection among objectives, targets, status of inputs, status of outputs and activities, indications of effectiveness, progress toward stated objectives, and corrective actions are needed.

While monitoring and evaluation are usually considered together -- and should be designed together, systematically -- there are a few significant differences between them: in frequency of collection, level of detail, and

use. Monitoring is a routine, ongoing part of project management and supervision at all levels of decision-making; monitoring information is reported frequently and at various levels of aggregation to meet the daily, weekly, and monthly needs of various project staff actively implementing and managing the project in the field. Evaluations are formalized, periodic, less frequent episodes of collection and analysis of information and feedback to project managers and implementers; it typically is reported at higher levels of aggregation so that the evaluators will have some perspective on whether the project has or will accomplish its stated objectives. The same information used for monitoring will provide the basis for evaluation; information collected for monitoring purposes should guide the need for and focus evaluations.

In developing a monitoring and evaluation system, selection of the most important information for routine collection and analysis is a critical activity. An indicator should provide this useful information. To do this, an indicator must:

- a. Indicate something; that is, it must be representative of something about a project or program which we want to know.
- b. Be useful; an indicator is worth collecting only if it us something which will allow someone to make better decisions or change some behavior.
- c. Be measurable, quantitatively or qualitatively.
- c. Be worth collecting, since each indicator costs time and money.

In sum, indicators are measurable, representative information which will be used to improve decision-making or actions and which is worth the cost of collection.

An MIS is more than a series of indicators, however. It is a plan and it is a system: for collecting, analyzing, and presenting information used for monitoring and evaluative purposes. It should provide all the necessary information for program monitoring and daily management. It should also provide the bulk of information for evaluation purposes, though additional information may be needed to supplement data generated from the MIS. The totality constitutes the Health and Management Information System (H/MIS).

It is not too strong a statement to say that good management cannot occur in a large health delivery institution in the absence of such a system. The Ministry of Health and Social Assistance of Guatemala does not now have a Health and Management Information System, nor do the internal and external institutions which collaborate with that Ministry themselves have systems which can provide much help. On the contrary; it is in large measure the demands of those institutions which have contributed to many of the problems the MOH now confronts.

#### IV. PROJECT DESCRIPTION

##### A. Goal

The goal of the original Immunization/Child Survival Project was: "to reduce morbidity and mortality throughout Guatemala caused by the common early childhood diseases of tuberculosis, polio, diphtheria, pertussis, tetanus, and measles."

When the Project was amended and retitled "Immunization and Oral Rehydration Therapy for Child Survival," the goal was modified as follows: "to reduce infant/child mortality and morbidity throughout Guatemala due to or correlated with diarrheal disease, or caused by the early childhood diseases of tuberculosis, polio, diphtheria, pertussis, tetanus, and measles."

This goal will remain unchanged for the present Amendment.

##### B. Purposes

###### 1. Purpose 1

The purpose of the Project as first amended is to increase immunization and ORT use coverage for children under five years of age, as well as tetanus toxoid coverage for pregnant women, to 80% by the end of the Project.

###### 2. Purpose 2

This purpose remains the same in the second Project amendment but is supplemented by a second purpose, as follows: "to increase the capacity of the Ministry of Public Health and Social Assistance (MSPAS) to support and sustain Child Survival services by development of management and health information systems."

##### C. Project Rationale

The rationale for the second Amendment which is being proposed to Project 520-0339 derives from a Spanish word in frequent current use. The word is "coyuntura": a time when things fall into place and needs and opportunities become clear.

Two questions have been raised about this Amendment: why were its contents not part of the original Project design and why do it now? The answers to those questions come from the institutional and management analyses done in preparation for the Amendment. Those explored the history of the project, issues that have arisen since its design, changes in political and institutional orientations, and what can be foreseen for the future.

## 1. The Issue of Implementation Delays

At first blush, there seems to have been significant slowness in implementation, measured against PP and PPA implementation plans, and in terms of pipeline movement. The first ProAg was signed on 31 July 1985; the revised PACD that ensued from the PPA is 31 May 1989. As of 31 March 1987, 43% of the total planned implementation period had therefore passed while, on the expenditure side, only 5% of the budget had actually been spent; commitments and earmarked funds accounted for an additional 6% and 9%, respectively. Of that 20% total, about two-thirds (68%) of pipeline movement came from commodity purchases; the balance went to Management; the Project Administration Unit (PAU); and short-term TA for ORS production, baseline surveys, promotion, and training. While this is at the "alarm" level, part of the explanation is at least partly attributable to the fact that expenditures for other than TA and US-source commodities and services are mainly in quetzales. The initial project budget of US\$6.7 million included expenditures of over \$4.2 million in quetzales that have since depreciated relative to the dollar by more than 60%, nearly doubling the purchasing power of the original project budget.

Another contributor to delay was meeting the CPs, which took more time than planned: 7.5 months instead of the 4 programmed. The primary reason was the change in government, from a military regime to the first democratically elected government in Guatemala in over 30 years. This in turn led to two restructurings of the MSPAS, two changes in the Project's principal counterparts, and an appropriate rethinking in the GOG of its development objectives. The MSPAS also had to deal with the demands of a national immunization campaign strategy during 1986, for which there was strong pressure from some donors which coincided with a new government's understandable desire to display commitment to national welfare and an ability to perform. Two major strikes by doctors and 18,000 MSPAS employees in August 1986 were further disruptive. Thus, consideration of the pipeline issue should take into account that the first round of CPs were not signed off on by the USAID until mid-April 1986, less than a year ago. The CPs for the DRT Amendment were met much more rapidly, in approximately 4 months, in February 1987, meaning that there has been really very little time elapsed since full disbursement against the Project as a whole has been possible.

There were disruptive events on the AID side as well. AID/W created the Child Survival Account and expanded funding for Central America, thus providing unanticipated funding for the DRT Amendment, the preparation of which diverted time from implementation. There was major staff turnover throughout the USAID, with more or less static staff levels while the portfolio swelled. And, the AID Health Office, sensitive to the flood of donor interest in Child Survival, determinedly pursued a collaborative posture, more complex and slower than going it alone.

The impact of these circumstances would have been more severe, had the original Project design not permitted commodity procurement and initial technical assistance contracting to proceed as the CPs were being met. As a result, 38% of the funds for commodities have been earmarked in 43% of the programmed time, i.e., very close to schedule.

## 2. Changes in Basic Assumptions

### a. The channelling strategy

The theory guiding channelling is full coverage of its target populations, a powerful but demanding goal. It requires great commitment and time, good supervision, functioning logistics, well-trained human resources, and thoughtful planning, at the same time that it must be adaptive to different environments. As a relatively untested methodology in Guatemala, it had barely begun to expand into other areas when staff energies up and down the delivery pyramid were diverted to the vaccination campaigns. The methodology is just now regaining its footing and it is already clear that there will be no single model of this population-based approach that will apply to all settings. Furthermore, while in the long run preventive health actions should reduce demand for curative care, in the short run the channelling approach could actually motivate more demand for services from a government that looks like it cares. The MSPAS wants to be able to respond to such demand as is reasonable. It also wants to expedite the support, well funded under 0339, for the health workers on whom primary health care depends. The original perception of channelling as primarily another way of immunizing was affected by the inclusion of DRT, to which are now being added health education in all the other Child Survival areas. In the absence of material rewards for health promoters, with worker salaries low and demands ever growing, the best incentive the MSPAS can provide is a steady flow of logistical support, training, and per diems, and a health and management information system which does not burden but serves and motivates each delivery level. In the absence of these management supports, channelling and the hopes it generates will crumble.

### b. Expectations of other-donor support

The justification for adopting channelling as a nationwide strategy was its perceived success in Escuintla and, later, Santa Rosa and El Progreso. Much of this perceived success came from intense commitment and hard work by PAHO, and the Project predicated much of its design on the continuance of PAHO involvement in training and production of training materials, monitoring, and coordination. However, in recent months, PAHO's ability to proceed at the same level of involvement has become seriously constrained. The essentially collaborative design strategy, in which AID's role was largely supportive of what was being done by another major donor, now requires rethinking if the Project is to advance.

### c. The presence of many actors

At the same time, as hard as AID has tried to coordinate, the sheer number of donors in Child Survival makes it difficult for anyone to know at any given time, who is doing what and where there is overlap. All things considered, the MSPAS does fairly well at keeping track of all the national and subregional Child Survival ventures, but the effort is constant and stressful. AID has, nevertheless, been able to play a catalytic role, rather than a competitive one, and that posture appears to be appreciated. And, while there is all kinds of subregional planning and designing going on, much of the utilization of what has been planned and designed will depend on access to AID funding. That, too, is appreciated.

#### d. The training and supervision cascade

The assumption that cascade training and supervision are really functional has increasingly surfaced as a worldwide primary health care issue. The issue is particularly vibrant in the area of management, where there is no accumulated pool of experience to draw from as there is, for instance, in community development. The management training cascade begins with doctors who have only recently begun to confront the reality that they are trained as scientists, not administrators. Neither do their training and medical culture prepare them to be collegial educators and supervisors. The MSPAS has wisely perceived the limitations of full-cascade training and is seeking strategies that move it away from dependence on amateurs teaching neophytes. Similarly, it has developed, through an intense process of consensus-building, a new model of supervision (Sistema Unico de Supervision) which integrates the concepts of supervision and evaluation and is predicated on precise and timely information at each operative level.

#### e. The utilization of technical assistance

The design of Project 520-0339 was not only predicated heavily on the availability of in-country PAHO technical assistance but on the perception that there was little receptivity in the GOG for long-term technical assistance. The basic construction was: PAHO for long-term needs and a series of short-term consultants for help in research, training and supervision, ORS production and promotion, logistics, and information systems. To date, TA in each of these areas has been provided. The conclusion reached by the USAID and, it would appear, by a number of individuals in the MSPAS is that, when the TA is of good quality, supportive, and selected jointly by AID and the MSPAS, both productivity and human relationships have been good and return visits have been requested. Advantages are seen in both short- and longer-term technical assistance and whatever general antipathy may have existed, there now seems to be receptivity to reasonable suggestions. There have been written requests both for continued TA in training/supervision and for new assistance in health/management information systems.

#### f. The commitment to decentralize

The new government is intent on decentralization, de facto and de jure, of both resources and decision-making. It attributes many of the country's historical problems to a tradition of macrocephalic management and appears determined to defy that tradition. This offers the opportunity for moving funds more fully and appropriately to the user level, potentially helpful for AID as a well-endowed donor. At the same time, it will require a fairly rapid proliferation of administrative and management skills which exist, even at the central level of the MSPAS, only in the most empirical form. Management can, however, be learned and the Ministry is determined to do so.

### 3. Continuing Constraints to Implementation

Continuing constraints to accelerated implementation fall into three groups, each pertaining to one of the three principal organizations responsible for Project implementation: the USAID HPN Office, the PAU, and the MSPAS. To better understand the constraints which affect each of these, the Project should be put in the following context. Its budget is now US\$9.7 million, much of which is for expenditures frequently classified as recurrent costs. In addition, the GOG handles donated funds using the same mechanisms it uses for national funds. The US\$9.7 million Project is now equivalent to approximately Q30.0 million or .....% of the national health budget and ..... % of the accumulated "social debt" in the health sector. The proper expenditure of these funds, over the remaining period of only 33 months, must appear to Guatemalan officials as a major task and responsibility.

#### a. The USAID

The disparity between workload and staff which contributed to implementation delays persists and will grow worse as funding levels mount, especially in the favored area of Child Survival. In contrast, in Honduras, throughout most of the life of the Health Sector I Project, implementation has been supported by: a full-time direct-hire project manager, and a full-time American assistant administrator, as well as by a large amount of long- and short-term TA. Although Health Sector I is longer, its average rate of expenditures, about US\$4.0 million/yr., is roughly equivalent to the rate at which expenditures must be made during the remaining life of Project 0339 in order to completely use the funds by PACD, that is, US\$9.2 million in 29 months. The restricted number of AID personnel available to implement the Project, combined with an incremental approach to design and the need to manage ever more individual PSCs, will remain a constraint to accelerated implementation.

#### b. The PAU as a management solution

The ORT Amendment included as a "key support to the regular MOH bureaucracy...a special office within the Applied Programs Unit to provide administrative support for the implementation of ORT and Immunization activities under this project," consisting of a 36-month ORT/Immunization Project Administrator, a 36-month Assistant Administrator for Immunization, and a 36-month Assistant Administrator for ORT-related services. All technical assistance, including a 6-month consultant in information systems, was to be channelled through the Administrative Unit.

However, that Project Administrative Unit (PAU), faces some problems and, in the absence of modifications, may increasingly create instead of solve them. In its justifiable concern with correct utilization of funds, the PAU is falling into a pattern of relatively centralized financial management systems. Given the fact that its current staffing level is \_\_\_\_\_ positions under what was planned, such centralization could choke the rate at which funds can be utilized. Philosophically, that same centralization runs counter to GOG commitment to decentralize. Furthermore, the MSPAS sees the Unit as a support entity, not a technical shop or a decision-making focus. This effectively pushes many management decisions back to AID or up to unnecessarily high MSPAS levels. Functionally located

between AID and the MSPAS, the PAU requires support from both sides, as well as considerable diplomatic skills and reasonable understanding both of management and the demands of public health delivery. Lacking any of these, the PAU could become a whipping boy and a point of friction.

### 3. The MSPAS

At present, the Project is counterparted to the Chief of the Applied Programs Unit, a logical location given the technical focus of the Project. However, since a number of activities financed by the Project fall under other units, e.g., Human Resources and Supervision and Evaluation, some delays have arisen at least partly due to this diffusion.

Beyond this, there are the commonly recognized deficiencies in the Ministry's management systems, addressed in the National Five-Year Plan, the President's Memorandum to the Nation, and the November 1986 Health Program Plan. These limitations affect the H/MIS, logistics, supervision, and equipment and maintenance subsystems. The problems in the information system, summarized in the MSPAS Restructuring Proposal, are a major factor affecting the rate of Project implementation. None of the systems have been up to the task of quickly absorbing the volume of resources available through the Project, nor are they helped by the bureaucratic rigidities common to large government institutions everywhere. The new Guatemalan government has publicly committed itself to decentralization to combat this, but the task goes against the grain of over 400 years of tradition.

### 4. Summary

In sum, organizational, personnel, and technical policy instability, plus common bureaucratic constraints all around, have combined with the absence of technical collaboration in management to constrain Project implementation. The Project Amendment alternative suggested below is meant to overcome some of these constraints and act as a test -- a large Condition Precedent in itself -- of the feasibility of further major investment in the Guatemalan public health sector.

## V. OTHER DONORS AND COOPERATING INSTITUTIONS

The Five-Year Plan published in November 1986 by the MSPAS Unidad Sectorial de Planificacion is explicitly committed to a national health system with a unified policy, to avoid duplication and dispersion of effort and to utilize resources more efficiently. It also sets forth as a general objective greater technical cooperation among the developing countries and establishment of adequate coordinating mechanisms.

Until recently, MOH efforts at coordinating among donors and NGOs have been erratic and, according to the Ministry's own report, not very successful. The entry into office of a new administration determined to maximize efficiency of donor resources and assert its own national prerogatives has encountered in the Child Survival initiative rather more donor coordination than is typically the case. This is partly due to a certain amount of collaboration around Child Survival among international agencies such as the WHO/PAHO, AID, UNICEF, and the Centers for Disease Control which has not been characteristic of prior ventures in the health sector. In Central America, which sometimes seems to be awash with funds and seething with eager donors, collaborative agreements have been signed (e.g., PAHO, UNICEF, INCAP, AID) and subregional Technical Groups established, as ways of grappling with proliferation of donors and resources. The results are imperfect but the effort seems genuine.

A major attempt by the MOH to address these phenomena is the 1987 Plan de Accion, generated by the Maternal-Child Health Department of the DGSS, which serves as the implementing document for the National Child Survival Plan. Formulario 3 of that document groups Child Survival activities in a matrix which crosses objectives with MOH implementing unit with cooperating agency (where applicable), by month. Table V.1 is a summary presentation of Child Survival donor funding according to that Plan.

TABLE V.1

FUNDING TO THE MSPAS/GUATEMALA FOR CHILD SURVIVAL ACTIVITIES,  
ACCORDING TO THE 1987 CHILD SURVIVAL ACTION PLAN  
(in US\$)

ACTIVITY	COOPERATING AGENCY				
	UNICEF	WHO/PAHO	UNFPA	INCAP	AID
Cont. contracting for tech. & admin. staff fixed	100,382				
temporary	20,000				
Purchase & distrib., office materials	28,690				
	20,678				
Purchase of transport for regional and local supervision	678,750?*				
Maintenance, office equipment and vehicles	42,900?*				
Health Post re- furbishing	50,000				
Final report Condiciones, 1987				X**	X
Study of the informa- tion system				X	X
Support for Sentinel Area diagnostics				X	X
Strengthen Sentinel Areas				X	X
Maternal-child health survey				X	X
Distribution of audio- visual materials and bulletins				X	X
Increase use of contra- ceptive methods by 2%					X

Distribution of contra- ceptives through health services, on demand		X
Proaote referral of high-risk WIF to family planning services, through auxiliaries, TSRs, and EPS		54,000?*
Vaccinate 40% of pregnant women with tetanus toxoid	X	
Distribution of 2000 midwives kits	X	
Purchase 50 sets of growth monitoring materials for use at the community level	1,100 900 1,000	
Review and distribu- tion, 200,000 infant feeding fichas	8,000	
Production and dis- tribution, 100,000 pamphlets on low-cost diet for use in 2 Health Regions	2,000	
Purchase of basic equipment for 13 SERN	2,500	
Distribution of material on early childhood stimulation to all Health Centers	X	
Design and produc- tion of brochures on psychomotor develop- ment	X	
Production of mater- ials on benefits of breastfeeding, for radio, TV, and press campaign	15,000	

Printing of 5,000 sets of norms for breastfeeding promotion	5,000		
National seminar for policy-makers on the breastfeeding and weaning situation in Guatemala, in coordination with INCAP, UNICEF, WHO/PAHO, and La Leche League	10,150		
Design, print, and distribute 50,000 brochures in the public & private sectors on rights of working women and techniques for breastmilk expression and feeding	26,530		
Planning and implementation of 5 seminars on scientific aspects of breastfeeding for nutritionists, doctors, social workers, nurses, & home educators	1,500		
Production & reproduction, 5000 manuals on breastfeeding for above populations	50,000		
Tetanus toxoid promotion:			
- 1232 radio spots	5,000	3,000	125,800
- 10 TV programs	4,200		148,400
- 100,000 brochures,			54,720
- 3 research studies	4,207		102,000
Cold chains:			
- 217 refrigerators			156,450
- 52,312 gals. kerosene			65,390

Transport:			
- 46 motor-			
motorcycles			49,910
- 13,059 gals.fuel			150,985
Maintenance:			
- Spare parts and			
material, 200 pre-			
ventive maint.visits			266,363
- Per diem			25,290
Administration:			
- TA: 3 or more			
consultants			140,500
- Contracting of			
10 local-hire			
administrative			
staff			86,000
- 3 computers			40,000
- Materials prep.			15,000
- 1 Audit			10,000
Vaccines &			
Supplies			
- Polio			
2,447,000 doses			
("Other"?*)			
- DPT			
200,000 doses	6,384		
- Measles			
372,000 doses	47,616		
- Tetanus toxoid			
360,000 doses	5,663		
- BCB			
694,000 doses	37,309		
- Syringes and			
needles	63,350		
Polio erradi-			
cations:- Case followup		2,200	
- Quarantine action	1,200		
- Virologic studies			4,600
- Epidemiologic			
surveillance	10,200		
- Laboratory			
materials	4,600		
- Transport: 1 4-			
wheel drive	20,000		
- Contracting 1 local			
physician in charge			
of EPI program	15,000		

ORS production:		
- Remodelling LAPROMED		14,946
- Production equipment		126,000
- Contracting 7 technicians		3,384
- Raw materials		70,656
- Packing material for 1.8 million packets		90,000
- Quality control	X	
- Logistics system analysis	X	X
ORS distrib.:		
- Contract with pvt. sector distributor		50,349
- Establish distrib. system in 21 Areas		223,938
- Recondition warehouse Drogueria		5,520
- Reconditioning temporary central warehouse		4,500
- Set up controls for distrib.syst.		1,800
- Office supplies		3,600
Promotion system for 21 Health Areas, including evaluation seminar		
		291,760
Review and standardization of ORT norms; per diems		
		720
Training materials:		
- 3,500 modules		
- 9,110 flip charts		
- 1,110 posters		
- 1,100 brochures		
- 3,500 manuals on norms		594,552
Administration:		
- secretary and clerk, 12 mos.		3,432
- TA:		
Logistics		
Info. systems		
Production spec.		
Information		
Trainer in ORS prod.		220,800

Equipment:		
- Computers		
- Printer		
- Plotter		
- Monitor		
- Typewriters		
- Calculators		
- Audiovisual		34,384
Office furniture		4,284
ORT supplies (glasses, spoons, etc., to 110 facilities)		14,889
1 Audit		600
Instruments for disease control & surveillance		X
Acute Respiratory Infections		
- Materials production:		
Norms manual	40,000	
Training modules	40,000	
Brochures	10,000	
Flipcharts	5,000	
Posters	10,000	
Forms	2,000	
Questionnaires	400	
Hour glasses	50,000	
- 2 Operations Research Studies	4,000	
- 1 4-wheel drive vehicle	20,000	
- Vehicle maintenance	5,000	
Supervision		
- Monthly supervisory visits, Health Areas 1,568		22,064
- Annual supervisory visits, Districts		65,340
- Annual health post visits		79,520
- Annual supervisory to communities		3,600

Monitoring, polio eradication		2,000			
32 meetings on Child Survival Plan implementation	5,600				
EPI coverage survey					30,000
EPI evaluation		3,500			
Supervisory visits, Areas	17,280				
Supervisory visits, Districts	30,528				
Supervisory visits, Health Posts	67,200				
Training supervision visits, Areas	3,456				
Retraining supervision visits, Areas	1,536				
Supervision visits, Condiciones de Eficiencia evaluations	6,911				
Supervision, family planning, breastfeeding, & growth monitoring					83,200
<b>TOTALS</b>	<b>\$1,864,274</b>	<b>\$59,500</b>	<b>\$2,200</b>	<b>\$4,600</b>	<b>\$3,229,660</b>

\* Because of the quality of the photocopy, all the figures were not legible and time did not permit re-checking these with the donors.

\*\* X = donor making contribution but not (yet) quantified.

AID is clearly the largest donor, with a total contribution to the Child Survival Plan of US\$3,229,660, with an additional unquantified contribution to miscellaneous activities, most of these listed on the first page of Table V.1. UNICEF follows in the size of its contributions, with WHO/PAHO, UNFPA, and INCAP far behind in monetary terms, although both WHO/PAHO and INCAP actively provide technical assistance. Dollar equivalent figures for those technical assistance activities were not available.

AID's Diarrheal Disease Control Strategy (draft, 5/86) sets forth the following recommendation at the top of a list of factors critical to operational program success:

"Active coordination and collaboration with other donors should be a part of every program plan. Given the nearly universal prevalence of diarrhea, its origins in the fundamental problems of poverty and difficult environments, and the persistent commitment and support needed to build the infrastructure needed for durable change, AID must join with other donors, particularly WHO and UNICEF, in planning regional and individual country programs, sharing investment, commodity and implementation costs, and evaluating progress. AID should support, with commitment of resources, staff time and leadership, mechanisms to improve the communications necessary for more effective collaboration, not only in programs but also in basic and operational research. To further assist in ensuring collaboration, budgets submitted for diarrhea disease control projects and other Child Survival related activities should show the inputs to the national program from all donors, as well as the AID contribution."

Both the Immunization/Child Survival Project and its Oral Rehydration Therapy Amendment committed themselves to extensive other-donor collaboration. In fact, their design was largely predicated on a variety of other-donor inputs and intended to fill funding and technical assistance gaps about which there appeared to be consensus.

The Immunization PP summarized the contributions of eight other donors then programmed in the health sector (IDB, CARE, CABEI, ACDI, UNFPA, UNICEF, UNDP/PAHO (see PP, Table 1.2 and Annex 1.2). Rotary Club International was to provide polio vaccines through 1989 and UNICEF would provide the remainder of the vaccines to be used under the Project. Both PAHO and UNFPA had been working closely with the MSPAS to launch the "channelling" methodology, on which the Project was structured.

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\* Given the relative size of the AID portion and the slowness in pipeline disbursement, a useful component of any subsequent Financial Analysis might be an exploration into the relative disbursement speed being experienced by other donors, most importantly UNICEF. If UNICEF's disbursement speed is substantially faster than AID's, then the reasons for that would be worthy of scrutiny.

The Oral Rehydration Therapy Amendment did not diverge from this commitment, and noted other-donor ORT activities. UNICEF was providing ORT packets and collaborating with the MSPAS, INCAP, IGSS, the Roosevelt Hospital, and San Carlos University, in the "Program for Inter-Institutional Coordination and Extension of Coverage," begun in early 1985 in the Guatemala Sur Health Area. PAHO was continuing to provide substantial technical assistance to channelling and to the Guatemala Sur project. Both UNICEF and PAHO were providing support to IGSS, where ORT lectures have been given to its central pediatric staff and ORS packets distributed to affiliated members. Training was to be based on "guides already available through PAHO, UNICEF, and UNFPA...to be updated and modified as necessary." ORT supervision norms contained in the WHO/PAHO supervision manuals were to be incorporated into the supervision of ORT under the Project. PAHO was to provide a statistician and epidemiologist and INCAP was to provide ORT and evaluation specialists, in support of coverage surveys and project evaluations.

Table V.2 presents the other-donor contributions projected in the illustrative budgets drawn up for both components of Project 520-0339.

TABLE V.2

OTHER-DONOR CONTRIBUTIONS\* TO PROJECT 520-0339,  
AS INDICATED IN THE PROJECT PAPER AND ITS AMENDMENT

PROJECT PAPER	TRAINING, PROMOTION, SUPERVISION	COLD CHAIN, VACCINES, SUPPLIES	VEHICLES, TRANSPORT COLD CHAIN MAINT.	MGT. & PERSONNEL	ORT PROD.	TA & ADMIN. SUPPORT
Central-level trng., Area Chiefs, EPI Coords., Statisticians, & Mechanics	\$ 7,500		\$0	\$0		
Area-level training for Area health personnel & mechanics	15,045					
Polio vac.		\$ 93,759				
Other vaccs.		360,000				
Needles & syringes		210,000				
<b>AMENDMENT</b>						
Salaries, ORT prod. factory personnel & TA, quality control					17,520	
OR Salts purchase					105,000	
Community education	39,000					
TA & long-term trng., supervision	19,000					



DRAFT

IMMUNIZATION/ORT/CHILD SURVIVAL PROGRAM, GUATEMALA

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INSTITUTIONAL AND MANAGEMENT ANALYSIS

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Report Prepared by PRITECH Consultant:

Peter N. Cross

During the Period March-April 1987

TECHNOLOGIES FOR PRIMARY HEALTH CARE (PRITECH) PROJECT

Supported by the:

U. S. Agency for International Development  
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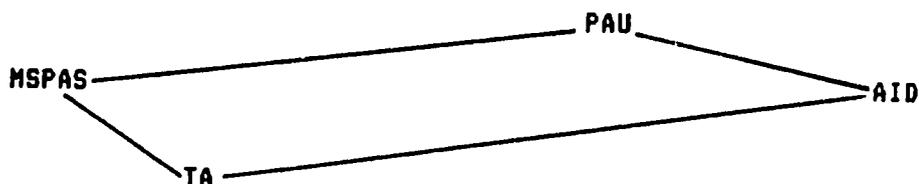
ANNEX A.1

INSTITUTIONAL AND MANAGEMENT ANALYSIS

I. BACKGROUND, THE CURRENT SITUATION, AND KEY ISSUES

The primary institution responsible for the implementation of Project 520-0339 is the Ministerio de Salud Publica y Asistencia Social (MSPAS), hereafter referred to as "the MSPAS". The funding agency, AID, provides a modest amount of implementation support. A Project Implementation Unit (PAU) has been created with personnel contracted with project funds and is situated in the MSPAS. A very modest amount of technical assistance has been provided to support Project activities. The relationship between these four institutions is illustrated below:

FIGURE A.1.1: ORGANIZATIONAL CONTEXT



The role of each of these elements in the implementation of the Project are discussed below. Specific recommendations are then made which should enhance the support which each element can provide to Project implementation. Many of these recommendations are based on experiences with implementation of a similar, but larger and broader health project in Honduras which, after several years of slow implementation, is now widely perceived to have been very successful.

A. The Ministerio de Salud Publica y Asistencia Social

As mentioned above, the MSPAS is directly responsible for project implementation. The MSPAS is a large, complex institution which has nearly 18,000 employees scattered in more than 1,000 health facilities in 24 Health Areas which correspond to the geographically defined Departments. In addition, the MSPAS has trained approximately 12,000 volunteer promoters, many of whom are currently inactive, to provide health services to some of the 18,000 communities which have populations of less than one thousand.

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The organizational chart presented in Figure A.1.2 illustrates how the MSPAS is currently organized at the central level. This organization has not yet been officially approved ("Reglamentado"). However, official approval with only minor changes is expected in the near future.

As mentioned in Section III.C of this document, changes have occurred in the MSPAS organization and most frequently in senior personnel, caused principally by the passage of government from a military to a democratically elected civilian one. These changes have affected project implementation.

The Project is currently counterparted to the Unit of Applied Programs, which is the Unit responsible for both EPI and DRT services. Currently the Project includes, among others: training and promotional activities, which fall under the purview of the Unit of Human Resources and Education for Health; and transportation support, which falls under the Transportation Department which, in turn, falls under Applied Programs. The health and management information systems support which has been requested will involve the Information Department, the Supervision and Education Unit, and various other departments and offices associated with administrative systems. To ensure coordination among all these activities, it would appear appropriate to officially counterpart the amended Project to the Dirección General de Servicios de Salud.

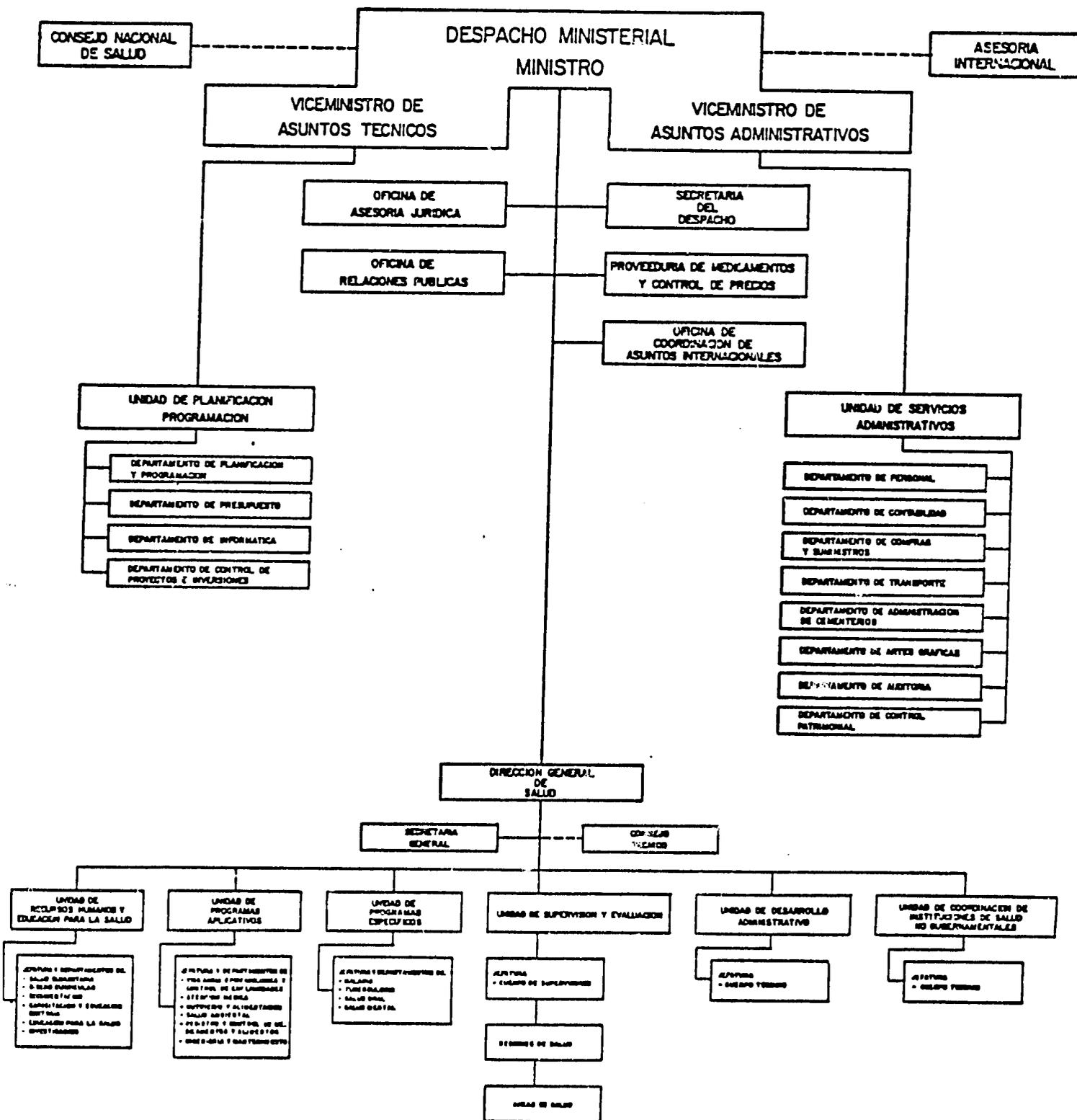
There has been growing consciousness and concern at the highest policy levels that, decision-making in the Government of Guatemala is excessively centralized. The Government has initiated efforts to decentralize responsibility and authority. The MSPAS is correspondingly concerned and most interested in participating in this process. To accomplish effective decentralization, however, much systems development work will be required. For example, in the area of information systems, almost all of the analysis of the data collected is done at the central level. Personnel in the health areas, districts, and establishments will need support in this field if they are to use local information for effective decision-making. Standard analytical procedures should be developed. Training should be provided in those procedures and in the interpretation and application of the results. Where computerization is appropriate, programs need to be developed and personnel trained in their use. The amended Project should be able to provide valuable support to this process of decentralization.

#### B. The Agency for International Development (AID)

The Project is financed through the Health and Population Office in the Division of Human Resources Development of AID. That office is responsible for all official communications with the MSPAS; for monitoring project activities; for initiation and follow-up of commodity procurements; for identification, recruitment and follow-up of technical assistance; and for budget planning and control. The Project is both large, with projected expenditures exceeding US\$3,000,000 per year, and complex, with many elements and a multitude of different activities.

FIGURE A.1.2

# ORGANIGRAMA DEL MINISTERIO DE SALUD



At present, the Health and Population Office has insufficient human resources to promote the implementation of the Project at the rate indicated in the implementation plan in the Project Paper. The Health Sector I Project in Honduras achieved an average of just under \$3,000,000/year during its first six years of existence. A comparison between the staffing patterns of AID/Honduras in early 1986, (see Figures A.1.3 and A.1.4) and present AID/Guatemala Health Offices are instructive.

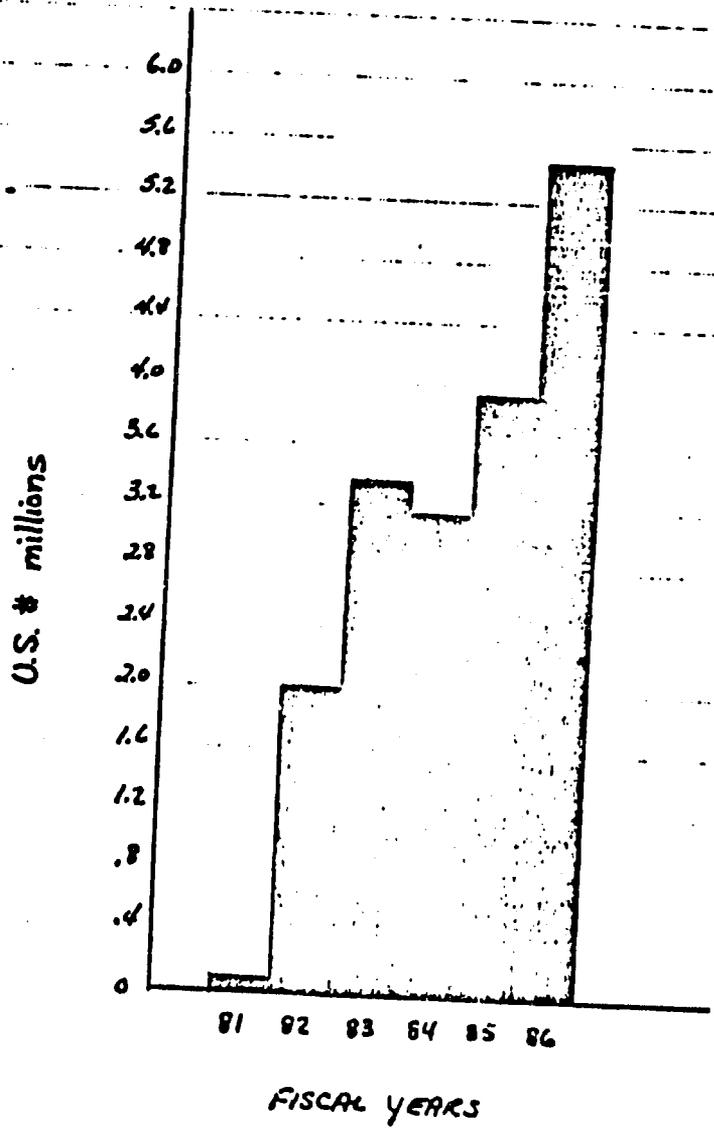
FIGURE A.1.3: AID HEALTH OFFICE STAFFING PATTERNS

	HONDURAS	GUATEMALA
1.	Human Resources Division Chief: Ken Martin	Human Resources Division Chief: Liliana Ayalde
2.	Health and Population Officer: Tom Park	Health and Population Officer: John Massey
3.	Project Officer: Dr. Barry Smith	- - - - -
4.	Assistant Project Administrator: Scott Taylor (PSC)	Project Officer: Dr. Jorge Chang (FSN)
5.	Project Monitoring Officer: Dr. Antonio Pinto (FSN)	- - - - -
<u>Family Planning</u>		
6.	International Dev't Intern: Anita Seagell	FP Program Assistant Jane Lyons, (PSC)
7.	Project Monitoring Officers: Dr. Maria del Carmen Miranda	- - - - -

Note: Both offices have good secretarial/administrative support.

FIGURE A.1.4a

HEALTH SECTOR I EXPENDITURES  
HONDURAS



9

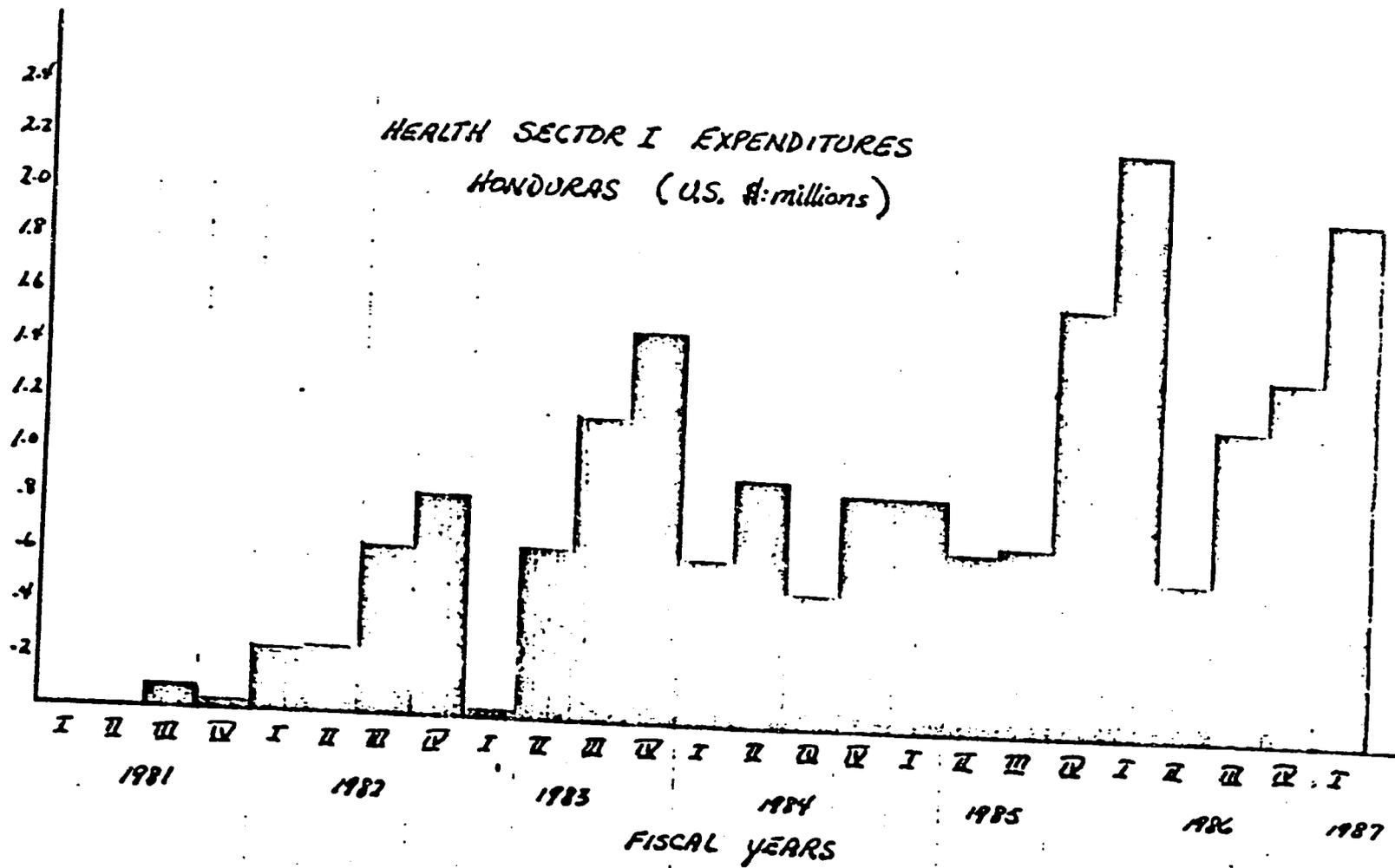


FIGURE A.1.4b

110

AID/Guatemala could do much to promote a more rapid implementation of the Project. At present it seems clear that it lacks the quantity of human resources required to do more than respond in crisis management fashion to the most urgent needs of the day. To accelerate project implementation, a full-time, qualified, and experienced Project Officer appears essential. Optimally, this person should be supported by an Assistant Administrator (not an Administrative Assistant), whose tasks would be directed to AID paperwork, while the current Project Officer's role would focus on technical matters and follow-up activities at the MSPAS. A draft job description for the recommended Project Officer is presented in Appendix A.1.1.

### C. The Project Administration Unit

The Project Administration Unit (PAU) has a critical role in the implementation of Project 520-0339. It is directly responsible for all local expenditures except for local technical assistance contracts. The quantity of money involved is substantial (several million dollars), but the average size of transactions is very small. For example, per diem payments are a big line item for the training element, but the average payment size is very small. Before the Project is terminated, many thousands of transactions will have been made, if current procedures remain the same.

At present, the PAU is only four months old. It is housed in cramped quarters and does not yet have enough desks and chairs for its personnel. The PAU's staffing is not complete. It is led by a capable and experienced manager who has a degree in business administration, but who brings little or no experience in public health administration to the job. He has made a thorough study of the project documentation and has initiated the development of essential control systems for managing the disbursement of funds. The fact that the PAU is devoting some time to the development of management systems for project management and is not spending all its resources confronting a continuous series of crises argues well for its future, as does the fact that the PAU administrator is increasingly making time to go to the field and talk with people at the operative level.

The Administrator of the PAU has also developed a useful diagram depicting some of the relationships and work of the Unit. This is reproduced on the following page, in Figure A.1.5.

There are two concerns related to the work of the PAU. First, despite the title of the diagram which suggests that the Unit's primary function is one of "support," its primary concern appears to be one of "control." This concern appears justified. The quantity of funds in Project 520-0339 is large and salary scales in the PAU are low, even though they are relatively higher than the Government's. In this situation, the cautious approach to money management is understandable. There have been complaints, however, that the Unit is excessively rigid in this respect. As the pace of implementation increases, similar complaints may become increasingly frequent, unless effective mechanisms are found to decentralize some of the financial management functions of the MSPAS in general and the Unit in particular.

FIGURE A.1.5: ADMINISTRATIVE SUPPORT ACTIONS

PROJECT  
ADMINISTRATION UNIT

PROMOTION	TRAINING AND SUPERVISION	MAINTENANCE	HEALTH AREAS
	Procedures		Supplies
	Plans		Per diems
	Budget		Fuel
	Purchasing Plan		Administrative
	--domestic		Support
	--foreign		Logistics
	Supplies		Support
	Fuel and Vehicles		
	Per diem		
	Personnel		
	Administrative and Logistics		
	Support		

Source: Translation of diagram contained in a draft of the Project Administrator's first Progress Report.

As an initial measure it seems appropriate to recommend that the Unit study the feasibility of establishing petty cash accounts or, preferably, larger revolving funds to finance project activities at the Health Area level. To achieve effective decentralization of financial authority, additional appropriately qualified personnel (administrators or accountants) should be hired, possibly using Economic Support Funds.

Anticipating the increasing burden of its centralized financial control system, the PAU Administrator has included a proposed organizational chart in his first Progress Report (see Figure A.1.6). It seems plausible that the additional positions will be required as the rate of project implementation increases. It is suggested, however, that detailed job descriptions be developed for each position and that the volume of work be estimated prior to the approval of any new positions which were not foreseen in the ProAg.

74

FIGURE A.1.6: ORGANIZATIONAL CHART OF THE PROJECT ADMINISTRATION UNIT\*

ADMINISTRATOR

Secretary\*

ADMINISTRATIVE  
ASSISTANT\*

ASSISTANT ADMINISTRATOR  
FOR EPI\*

ASSISTANT ADMINSTRATOR  
FOR ORT

Secretary\*

Secretary\*

Purchasing  
Officer\*

Purchasing  
Officer

Accountant

Accountant\*

Storekeeper

Storekeeper

\*Positions unfilled as of 12 March 1987, per conversation with PAU Staff.

Source: Translation of proposed organizational chart contained in a draft of the Project Administrator's first Progress Report.

It is also apparent that the PAU will frequently be called upon to make financial decisions regarding activities which are technical in nature. At present, the PAU has no recognized technical expertise. This significant shortcoming might be overcome by recruiting a physician to be the Assistant Administrator for the EPI component of the Project. This person should be able to facilitate technical decisions by the PAU as well as to improve communications with various Unit and Department chiefs, many of whom are physicians.

Finally, the PAU appears to have assumed responsibility for many decisions about which activities or commodities should or should not be financed by the Project. Since the primary role of the PAU is to facilitate project implementation and to assure that funds are expended for their intended

purpose, it would be more appropriate for the PAU to defer most, if not all judgments regarding specific resource-use requests to AID. By liberating it from this responsibility, the PAU should be able to assume a more facilitative and supportive role vis-a-vis unit and department chiefs in the MSPAS. Furthermore, this role would be enhanced if one of the senior persons in the PAU is a physician.

#### D. Technical Assistance

The original design of Project 520-0339 called for very little technical collaboration. The apparent reasons for this were primarily political, not technical. General instability in a large bureaucracy and a series of unfortunate experiences with inadequate technical assistance made it difficult to negotiate even minimal levels of technical assistance in the original agreements. In addition quality problems have been reported regarding Project-funded TA in the area of training.

The scarcity of TA is unquestionably partially responsible for the relatively slow rate of project implementation to date. Technical assistance is meant primarily to help the MSPAS develop certain technical capabilities. As such, the advisor's primary responsibility is to the MSPAS, in general, and to his counterpart, in particular, despite the fact that the costs associated with the TA are born directly by USAID. The work of technical advisors will be facilitated to the degree that they are perceived to be working primarily for the MSPAS. This perception can frequently be encouraged if, as is commonly the case, the advisor can help MSPAS counterparts prepare successful proposals for use of Project and other AID funds. To be effective, technical assistance should act and be perceived as the MSPAS's emissary to AID and not as AID's policeman in the MSPAS.

The MSPAS and AID have both identified inadequate development of management support systems as an impediment to project implementation and to the ultimate sustainability of the child survival interventions upon termination of the Project. At present the MSPAS has requested Project collaboration in the areas of health and management information systems. The amount of work and time required to develop these systems will be substantial. It can be anticipated, however, that improved information will help identify needs in other areas, such as logistics, personnel management, human resources development, maintenance, etc. For these reasons, it is clear that AID should anticipate a long-term relationship with the MSPAS as it seeks to achieve its goals for the year 2000.

#### E. Communication

Implementation of a large and complex project like Project 520-0339 requires a continuous and sustained effort by the personnel involved. In Honduras the Ministry of Public Health and AID decided that weekly meetings to resolve implementation issues would help to increase the rate at which the Project was implemented. There, every Wednesday morning the AID Health Officer meets with representatives of the Project Coordinating Unit (the Honduran equivalent of the PAU) and representatives of the

technical assistance team. Implementation issues are identified and those which can not be resolved directly are placed on the agenda for a Thursday afternoon meeting with the Director General and/or the Vice Minister.

In conclusion, it seems that the issues encountered during implementation of Project 520-0339 could be dealt with expeditiously in regular meetings among the four entities shown in figure A.1.1 at the beginning of this analysis.

#### F. Recommendations

1. Consideration should be given to the possibility of officially counterparting the amended Project to either the Director General of Health Services or to the Vice Minister for Technical Affairs.
2. The amended Project should provide support and/or technical collaboration to the MSPAS's efforts to bring about some significant level of decentralization of decision-making and financial authority.
3. The AID Health Office should be strengthened with the addition of a Project Officer and an Assistant Administrator, both for Project 520-0339.
4. The Project Administration Unit should formally and thoroughly study the feasibility of establishing a petty cash account or, preferably, a larger revolving fund to finance Project activities at the Health Area level.
5. If thought necessary to achieve a significant degree of financial decentralization to the Health Areas, AID might consider proposing the use of Economic Support Funds to hire an administrator or accountant at the Health Area or Regional level.
6. Additional new positions for the PAU may be warranted, but should be approved only upon presentation of detailed written job descriptions, estimations of the volume of work, and identification of the source of other inputs required to do that work, and identification of the source of other inputs required to do that work; e.g. office space, typewriters, calculators, desks, chairs, etc.
7. Careful consideration should be given to recruiting a Guatemalan physician with an interest in child survival to fill the position of Assistant Administrator for EPI.
8. AID should attempt to bear more of the decision-making responsibility with respect to the appropriateness of the MSPAS proposals for funding thereby enhancing the PAU's image role as a facilitator and decreasing its image as a controller.
9. AID/MSPAS should consider the advantages of holding regular weekly meetings among the principal entities involved to regularly consider and resolve issues that arise during the course of project implementation.

APPENDIX A.1.1

Job Description for Project Officer

General Responsibility: Responsible for all aspects of project implementation, monitoring and evaluation.

Specific Tasks:

1. Decide which specific activities, training efforts, material production, etc., are appropriate for Project funding.
2. In collaboration with MSPAS identify technical assistance; recruit and supervise the technical assistance.
3. Monitor the preparation of specifications for Project procured commodities, and follow-up the procurement process from preparation of the PID/C through to delivery to the appropriate units in the MSPAS.
4. Monitor and supervise the work of Project-funded contractors in the Project Administration Unit.
5. Supervise the preparation and monitor the execution of Project budgets.
6. Supervise the preparation and monitor the execution of annual Project budgets.
7. Draft quarterly reports for the AID Mission Review.
8. Draft Project Implementation Letters as required.
9. Chair regular meetings with the Project Administration Unit and with the technical assistance personnel.
10. Attend regular weekly meetings with Project Counterparts in the MSPAS to review and resolve issues arising in the process of project implementation that can not be resolved at the meeting referred to in #9 above.
11. Develop or supervise the development of Project amendments.
12. Monitor Project progress against progress indicators as defined in the Project log frame.
13. Design and supervise the execution of Project evaluations.
14. Other tasks assigned by the Health and Population Officer.

Qualifications:

Education: MPH or equivalent degree; MPH or MD preferred.

Experience: At least 2 years experience working in a developing country, preferably in Latin America

At least 2 years experience working as a project or program manager, preferably in a developing country.

Preferably at least some direct working experience in AID.

Language: Spanish: minimum S-3/R-3

Note: Given that the Health Office already has Dr. Jorge Chang, this new person should be an American, or at least not a Guatemalan.

DRAFT

TECHNICAL ANALYSIS:

HEALTH AND MANAGEMENT INFORMATION SYSTEMS

MINISTRY OF HEALTH AND SOCIAL WELFARE, GUATEMALA

Report Prepared by PRITECH Consultant:

Gary R. Heald

During the Period March-April 1987

TECHNOLOGIES FOR PRIMARY HEALTH CARE (PRITECH)

Supported by the:

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AUTHORIZATION:  
AID/S&T/HEA:  
ASSGN. NO.: SS-185

## ANNEX A.2

### EXECUTIVE SUMMARY

#### ANALYSIS OF HEALTH/MANAGEMENT INFORMATION SYSTEM

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This report presents an analysis of the past and present health and management information systems of the Ministry of Public Health and Social Assistance (MSPAS); discusses various information systems developed and implemented, their pitfalls and positive aspects; the capacity of the hardware for the required analyses; and makes recommendations for further development and implementation of a unified, effective, and useful health and management information system. Specifically, the report:

1. Summarizes the historical development of the information system;
2. Describes the proposed revisions of the hardware and software to be purchased by AID;
3. Discusses the Ministry's HIS network: number and types of forms; collection flow, in general, and specifically for vaccination activities, general and emergency consultations, the 60 diseases and injuries that must be reported weekly by telegram, and deaths;
4. Discusses the sets and estimated number of records processed annually and the Mb capacity needed to store the information collected; describes the computer center, the equipment capacity, procedures for backing up data files and, physical condition;
5. Presents the characteristics of the current health and management information system which make it unworkable;
6. Explains the Restructuring Project; the proposed organizational structure; the newly developed integrated forms and health indicators developed with PAHO assistance in the Department of Zacapa. The improvements in this system, as well as the still remaining flaws are enumerated.
7. The report ends by proposing a series of Recommendations and a strategy for the use of H/MIS as an entry point of an entire management project.

Standardization of the health information system in the Ministry of Health started in 1955 with the creation of a Biostatistics Unit within the Department of Epidemiology. Several systems have evolved since then. Initially, the system consisted of some 10 data collection forms. This has grown and proliferated to a present system consisting of not less than 68 data collection forms.

The Information Unit now in the Director General of Health Services was created in 1982. An Ohio Scientific minicomputer was acquired with three workstations and a 30 Mb hard disk. In 1984, after a hard disk failure, the system was donated to INCAP and PAHO donated, installed, and provided technical assistance for six microcomputers. These were distributed across various sections of the MSPAS.

The initiation of Project 520-0339 introduced the need for a "reliable up-to-date health information system through project-supported computerization of health records and ... manual record-keeping systems." For this activity AID budgeted approximately \$42,000 with an additional \$4,600 in MSPAS funding for purchase of computer equipment. In addition a short-term specialist was hired to develop project monitoring activities, and train administrative staff to run microcomputers and area-level staff to provide the necessary information. AID prepared and submitted a purchase order in January 1987 for four microcomputers, three printers and assorted software. At the request of the MSPAS and USAID, this order was reviewed and revised by this consultant; the full consultant's report includes the recommended changes and adjustments. None of the recommended modifications were expensive and will save time and money in the longer term. This suggests that the product of technical assistance may not only be welcome but can be ultimately cost-effective.

The Information Unit is functionally divided into three sections: Administration, Information Department and the Computer Center. These sections are physically located in the DGHS building except for the Director of the Unit and his secretary who sit at the Ministry.

The existing information system is best described as: complex, detailed, and redundant. It collects information in not less than 30 areas ranging from births, including condition and size, to quarterly distribution of hospital expenditures by service across major cost accounting categories. There are 48 information forms at the national level. These are not standardized. Their size, print, use of acronyms, etc., vary. In addition there are no revision dates or authorization on the forms. Field service personnel do not always have copies of all national collection forms. Some establishments have their own forms in which they record information of particular interest. Data collected locally are not used locally, thus raising concern about data quality. Data quality control checks are infrequent. When they occur, they are at higher-level data processing points and involve sample manual comparisons. Informal quality

control is conducted by supervisors at lower levels. The effectiveness of this procedure is not routinely audited or evaluated. In general, health information is collected throughout the nation, but not all establishments send in reports; furthermore, the data collected is not routinely analyzed, interpreted, or utilized.

A recent proposal for the Restructuring of the Information Unit refers to its excessive, poor-quality instruments, undue centralization of data processing, unbridled collection of data, and inappropriate indicators, among a number of other limitations. Some of the changes recommended in that proposal are:

- the creation of a new organizational structure headed by a managing director, with two principal departments: a Health Information Department and a Computer Department
- adoption of a subsystem model with modular components
- design and implementation of a responsive, unified health and management information system.

Over past few years, PAHO technical assistance has developed a maternal-child health information system, now partially tested in Zacapa. Consideration is being given to launching that system nationwide without further testing or further modification. It would then become the point of departure for restructuring the new data collection and processing activities for the UI. Based on interviews, field trips, and careful review of this system, the evidence is that it has contributed substantially to the diminution of some of the problems that have plagued health information in Guatemala: the number of forms has been reduced; fundamental data appear to be captured, with reduced redundancy; and forms have been somewhat standardized. The revised system also encourages more involvement of the field personnel, although the volume of data required and the difficulty in using some of the forms and inserting adaptations for local programming and evaluation purposes are still perceived as limitations by some field staff. At the same time, forms indicating births and deaths are absent from the revised, integrated system, as are forms addressing monthly public hospital reports of admissions and discharges, total lengths of stay, bed utilization, distributions of hospital expenditures across major cost accounting categories, and others. The system provides little opportunity for auditing recorded information, nor are there clear procedures for tracing services back to individual providers or linking recorded information back to individual data sources. There is also premature aggregation of data at lower levels, most crucially in age cohort data so crucial for targeting.

But most importantly, considering global MSPAS needs for the longer term, the key issue in the decision on an immediate, full launch of the "Zacapa System" is the following fact: the system has been tested only in three districts of one Health Area which has used only the first 8 of 14 forms. By way of contrast, the Sabre information system for Eastern Airlines (in many ways not a good example of good management, to be sure) took seven years to develop, test, and launch. This is far from a feasible time frame for the MSPAS but it does suggest that limited testing prior to a major national investment is simply inadequate and fraught with risk.

Finally, representatives of the MSPAS have noted, we feel correctly, that the system does not take into account two new and potentially valuable information systems which should be integrated, theoretically and empirically, in any MCH system. These are: 1) the Unified System of Supervision and Evaluation and 2) the pilot Nutrition Surveillance system which has been tested in Progreso and is imminently to be tested in Santa Rosa and Chimaltenango.

#### RECOMMENDATIONS

The original conclusion of this consultancy had been that there was good argument to be made for application of what is termed a "Beta-test" to the Zacapa system, utilizing the approach in three to five Health Areas with distinct needs, operational criteria, and health care opportunities. This procedure is detailed at the end of the full consultancy report.

However, subsequent discussions with key MSPAS decision-makers suggest that:

1. There is very limited constituency in the MSPAS for anything that looks like a pilot program.
2. At the same time, there is reluctance to proceed to a full launch of the "Zacapa model."
3. There is real interest in carrying out a systems analysis which would not, repeat not, go back to the drawing board but proceed to a systems analysis whose objective would be the disciplined integration of what has been developed and learned from the Zacapa experience, the purposes and initial instrument development that has occurred under the Sistema Unico de Supervision, and the nutrition surveillance experience from Progreso. There appears to be consensus that development of a national, integrated H/MIS should begin with disease surveillance, vital statistics, and maternal-child health care; this would be followed by development of subsystems for human resources, drugs, and logistics.
4. The integrated system should then proceed to testing in a phased time frame of not undue length. The MSPAS Proposal, produced in November, envisioned this activity as concluding by end-CY87 but this is not reasonable. However, some "bridge" technical assistance in the next few months could do a lot to get this process started.

Our conclusion is that this is a reasonable strategy and that the USAID should support it.

The consultant report terminates with specific technical recommendations on the criteria of any system which the MSPAS adopts. In their absence, no system can be expected to serve and prosper in the short or long term.

## ANNEX A.2

### H/MIS ANALYSIS

#### I. BACKGROUND

##### A. System Data Bases and Reporting

Guatemala's MOH began a standardized HIS in 1955, when it created a Bio-Statistics unit within the Department of Epidemiology. This early national system collected, summarized, and reported health-related data, used mainly for annual summaries of vital health statistics. Over the next 20 years, the system evolved to a point where it focused on 10 major health factors, each represented by a unique data-collection form which was used to record:

- o hospital admissions
- o outpatient diagnostic consultations
- o monthly consolidation of consultations by different medical professionals (physicians, nurses, auxiliary staff)
- o laboratory requests
- o immunizations
- o births
- o deaths
- o outpatient medical treatments
- o X-ray utilization
- o laboratory examinations.

The last three forms were eventually abandoned, and immunization, death, and birth records were substantially revised. The balance of those original forms are still in use, with minor modifications.

There is really no way of judging the quality and effectiveness of this early system, nor how and to what extent it was:

- o designed to meet specific policy/program objectives
- o managed to produce and track major health "indicators"
- o used to make substantive policy and program decisions
- o adaptable and adapted to support changing health priorities
- o periodically evaluated and modified to maintain data utility, timeliness, accuracy, and efficiency.

While these characteristics may or may not have been taken into account as the system evolved, they have become increasingly important in the last 10 to 12 years and, in fact, constitute the minimal criteria for a useful information system.

Since 1975, public health services and special projects have proliferated in Guatemala and many of these have required expansion of the Ministry's health information system. The 10 forms constituting the health data system in 1975 grew to 48 national-level data-collection documents by 1986.

The most recent examples of this proliferation come from the Child Survival Initiative. In two years, Child Survival programs contributed 10 data collection documents. In 1984, the channelling and the Expanded Immunization Program (PAI) introduced 4 forms into the system and Oral Rehydration Therapy (TRO) required 4 additional forms in that same year. The Acute Respiratory Infection (ARI) program implemented in 1985 introduced 2 new data collection sheets.

#### B. Administrative and Technological Features

The proliferation in forms (and resulting volumes of data) fostered a predictable increase in the visibility of health information and the need for data-processing technology. Guatemala's HIS attained formal recognition in 1982, with the creation of the Information Unit under the Director General of Health Services. In that same year, an Ohio Scientific minicomputer was acquired, replacing the semi-mechanical counting and sorting equipment hitherto used in processing raw data.

The Ohio Scientific mini-system had 3 workstations and a 30 Mb hard disk. Original programs were written in BASIC; a WordStar word-processing package was also utilized. The system was used to process data files recording births, deaths, diagnostic consultations, hospital admissions, and hospital costs. At times, sample data were entered into the computer and projections made of the nation's vital health statistics and indicators. However, the mini-system was still insufficient to handle the growing data bases and demands for health information at the national level. In 1984, when the system suffered a hard disk failure and repair estimates exceeded the costs of new microcomputer systems, the system was donated to INCAP.

Beginning in late 1984, the Pan American Health Organization donated, installed, and provided technical assistance for 6 microcomputers. These were distributed across various sections of the MOH, including: the Information Unit; the Personnel and Drug Price Control units; the San Juan de Dios General Hospital; and the MOH in the National Palace. The hardware and software components of these 6 computers represent the most current technology supporting Guatemala's health and management information systems.

## II. PROJECT ACTIVITIES TO DATE

### A. Objectives

USAID/Guatemala Child Survival projects have had only limited involvement with MOH information systems. However, through the Immunization and Oral Rehydration Therapy Project, AID committed itself to "promote, consolidate, coordinate and implement concepts and technology" related to Child Survival. This commitment included "establishment of a reliable and up-to-date health information system through project-supported computerization of health records and ... manual record-keeping systems." In addition, to support essential program monitoring activities, the project budgeted approximately US\$42,000, plus \$4,600 in MOH funding, to purchase computer equipment and strengthen the national information system. The project also called for the short-term services of a microcomputer specialist to:

- o develop a program to monitor project activities
- o train the grant-funded administrative assistant and secretarial staff to run the purchased microcomputer equipment
- o train Area-level staff to supply adequate information.

### B. The Short-term Contract Computer Specialist

In November 1986, Arturo Palomo, a Guatemalan, was hired as the short-term contractor. His post-secondary education was completed at the Evangelico College La Patria, the Engineering School of the Mariano Galvez University, and the Engineering School of the University of San Carlos (see Appendix A for resume), graduating with a degree as "Maestro de Educacion Primaria Urbana." He has worked professionally in the computer field since 1977 and his most recent work experiences have included:

- o computer consultant to the Ministry of Public Finance and the International Development Bank (1985)
- o Director of the Department of Electronic Data Processing of the Ministry of Public Finance (1984-1985)
- o computer consultant to the Ministry of Public Finance (1984)
- o technical consultant for installation of a VM/SP operating system in an IBM-370 at Francisco Marroquin University (1983)
- o Programmer, system analyst, and System Administrator at the Electrical Enterprise of Guatemala (1980-1984)
- o instructor in COBOL, RPG II, data processing, file organization, and access methods at the Educational Center and the Central American Institute of Computation and Finance (1980).

Arturo's formal training and work experiences emphasize mini/main-frame computer equipment and operating systems. His computer programming focuses primarily on RPG and COBOL. He has training and experience in both systems design and computer networks. With the relatively recent arrival of large numbers of microcomputers in Guatemala, Arturo has shifted his professional attention to micros and software packages such as LOTUS 123, dBase II, and dBase III.

### C. Computer System Purchases

On 7 January 1987, AID wrote a purchase order for 4 microcomputers, 3 printers, and assorted software and supplies. A complete summary of the order is included in Appendix B and Table A.2.1 profiles the requested microcomputers, printers and associated software.

AID asked the study team to review this purchase order and the author met with AID several times during the week of 18 March and recommended modifications to the purchase order. None of the changes implied expensive adjustments and were well received both by AID and the MOH.

The specific recommendations were that:

- o AID upgrade the PC computer specifications to a PC/XT computer. The PC grade standard computer is rapidly being replaced with PC/XT units. The processing speed and hard disk advantages of the PC/XT easily offset the relatively minor differences in costs between the two computers.
- o AID attempt to standardize the sizes and formats of the floppy disk drives that it purchases and that are used in the Ministry of Health information system, toward the goal of enhanced compatibility and convenient sharing of software programs and data disks.

As a general rule, AID should promote internal backup and redundancy by standardizing system configurations. In a country with a fully developed computer service industry, this would be unnecessary and even wasteful. This is not the case in Guatemala.

- o AID should specify minimum power supply watt requirements. Current industry standards begin around a minimum of 135-watt power supplies for IBM PC/XT and compatible computers, and a minimum of approximately 192-watt power supplies for IBM AT and compatible computers.
- o AID should purchase uninterruptible power supply/surge protectors for the 4 micro units.

TABLE A.2.1

PROFILE, AID PROPOSED HARDWARE/SOFTWARE PURCHASE, APRIL 1987

LOCATION (Proposed)	Computer Center Directorate General Health Services	Computer Center Directorate General Health Services	Computer Center Directorate General Health Services	Maintenance Center
<b>HARDWARE</b>				
Computer	IBM-PC/AT	IBM-PC/AT	IBM-PC/XT	IBM-PC
Microprocessor	80286	80286	80286	8088
Clock Speed	6 - 8 MHz	6 - 8 MHz	6 - 8 MHz	4.77 MHz
Math Co-Processor	-	-	-	-
Power Supply	-	-	-	-
Random Access Memory	1 Mb	1 Mb	640 Kb	256 Kb
Add-on Card(s)	-	-	Hercules Graphics	-
Ports	Parallel/Serial	Parallel/Serial	Parallel/Serial	Parallel/Serial
Floppy Drive(s)	1 - 1.2 Mb	1 - 1.2 Mb	RGB Color 1 - 360 Kb	2 - 360 Kb
Hard Disk (Internal Min - Max) (External)	30 - 40 Mb	30 - 40 Mb	20 Mb	-
Tape Back-up	-	-	-	-
Keyboard	5160	5160	5150	5150
Monitor	Monochrome 12", 80x25	Monochrome 12", 80x25	Color (640 x 400) 12", 80x25	Monochrome 12", 80x25
Modem	-	-	-	-
Printer (Equivalent to)	Epson - LD 1500	Epson - RX 80	Tandy CGP - 220	-
Type	Dot Matrix - 24 pin	-	Ink Jet	Dot Matrix - 9 pin
Print Speed(s) (Min - Max)	"100 - 200"	-	"25 - 37"	"90 - 100"
Carriage Width (Min - Max)	80 - 132 cols.	-	40 - 80 cols.	80 - 132 cols
Paper Feed	Friction & Tractor	-	Friction	Friction & Tractor
Network Size (Total)	IBM PC Network 6	IBM PC Network 6	IBM PC Network 6	- -
Electrical Power Surge Protection Back-up	- -	- -	- -	- -
<b>SOFTWARE</b>				
Operating System	MS-DOS 3.2	MS-DOS 3.2	-	-
Data Base	-	-	-	-
Integrated	-	-	-	-
Statistical	-	-	SPSS-PC+	-
Graphics	-	-	-	-
Word Processing	-	-	-	-
Programming	-	-	-	-
Other	Harvard Proj. Mngr.	-	-	-

67

- o AID should specify Enhanced keyboards (5151/5152) for the PC/XT and PC/AT computers. The separate numeric keypads are time-saving features in systems that will be heavily used for data entry, spreadsheet analyses, and reporting.
- o AID should specify a minimum of 640 Kb RAM for all 4 computers. Random access memory upgrades are inexpensive. Also, the Ministry uses large data files, data base programs, and spreadsheets that quickly consume RAM.
- o AID should purchase at least one fast-access external hard disk with high speed, cartridge tape backup. A 30-40 Mb external hard disk and 60 Mb cartridge tapes should handle the largest MOH data files with adequate reserve capacity.

This external hard disk system should be used for intermediate-level storage of data, especially large data files. The cartridge tape backup should be used for data security and creating long-term file archives.

- o AID should not specify maximum printer speeds of 37, 100, and 200 characters per second. Standard printers on the market today routinely exceed the stated upper limits of the purchase order. Many medium priced-printers are rated at 250 cps or higher. Also, the "example" printers specified are not easily obtained. The Epson printers have been replaced with the now-standard EX-800, EX-1000, LQ-800, LQ-1000, and LQ-2500.
- o AID should specify a minimum of 132 column-width carriages for the dot matrix printers. This is especially important, given MOH emphasis on data processing and the wide tables routinely produced in the Information Unit.
- o AID should purchase a separate MS-DOS operating system for each computer. All necessary software and documentation should also be purchased. The common tendency to copy and share operating system disks and program software should not be followed.
- o AID should confirm that the SPSS/PC+ software package meets the minimum file-size requirements (300,000+ cases) found in the MOH birth records.
- o AID should include 80287 math co-processors for computers that will be used heavily for data analysis. This will be especially critical for units using SPSS-PC+ and similar software packages.
- o AID should purchase network versions of software that will be shared in the Information Unit's computer network.
- o Where possible, AID should purchase Spanish-language versions of the software and supporting documentation.

These modified hardware and software components will facilitate essential Child Survival program monitoring activities, at the same time it strengthens the Ministry's overall Health Information System.

### III. CURRENT SITUATION AND KEY ISSUES

#### A. The HIS Network

As would be expected, the MOH's health/management information system links medical, technical support, and administrative units throughout the nation. The information system network involves 666 health posts, 211 health centers, 35 hospitals, 25 area offices, plus the 6 regional offices, and the Director General's and Ministry offices in Guatemala. (Note: An additional 89 health posts and 3 health centers would normally be included in the network, but are currently closed.)

At the national level, the HIS is concentrated primarily in the Information Unit of the Directorate General of Health Services. The Information Unit is responsible for coordinating the collection, processing, reporting, distribution, and archiving of vital statistics and health indicators. This involves a wide range of data, including:

- o birth and death records
- o vaccination reports
- o hospital admissions, discharges, and costs
- o general/emergency diagnostic health service delivery records
- o key diseases and injuries requiring notification, and
- o special program activity summaries (e.g., public education, family planning, immunization, respiratory infections, oral rehydration therapy).

#### B. Data Collection, Analysis, and Reporting

In general, HIS data are collected at public health posts, health centers, and hospitals throughout the nation. Diagnostic reports, however, are available from only 89 health posts; the remaining 577 posts are not staffed with EPS (medical student) personnel. Little of the information collected is routinely analyzed, interpreted, and/or utilized at the various service delivery levels. Health personnel, especially at the lower levels, are typically unsure or ignorant about why the data are being collected and how the information will be used.

Vital diagnostic and health data, once collected, typically flow through one of two channels. One channel flows first from the Health Posts to the Health Centers; Health Centers and Hospitals then send the information to the Area Health Offices and, ultimately, it is forwarded to the Information Unit in Guatemala. The second channel funnels the data directly to the IU from Health Posts, Health Centers, and Hospitals.

When the first channel is used, Health Centers frequently consolidate information received from the Health Posts. Area Health Offices organize the health data forms they receive from Health Centers and Hospitals before sending them to the Information Unit. A limited and often unprogrammed and inconsistent amount of internal analysis and reporting occurs at the lower levels.

The overwhelming majority of HIS data analysis and reporting is centralized in the Information Unit. Consolidated reports issued by the IU routinely indicate frequencies of vital statistics and diagnoses at regional and national levels. Such data are also broken down and reported in cross-classification tables indicating vital statistics by location, age, medical attention received, and related factors. Once again, these reports emphasize frequencies, minimally supplemented with limited summary statistics (e.g., percentages).

IU summary analyses, comparative reports, and statistical profiles are distributed to top MOH officials, surveillance, and epidemiological officials, and international health and development organizations. This information is used to monitor major diseases and injuries, assess health services and special program activities, allocate resources, and guide administrative and health policy decisions. Summary analyses, comparative reports, and statistical profiles are rarely returned to the lower-level units that collected the data originally.

### C. Information Unit Organization, Staffing, and Facilities

A total of 7 professional and 28 support staff and technicians comprise the Information Unit. These personnel are functionally divided into 3 sections: Administration, the Information Department, and the Computer Center. A current organizational chart is not available. The Unit is being reorganized; the proposed organizational plan is included in Appendix C.

The Director of the Information Unit and his secretary have offices at the Ministry of Health. The Information Department is physically located in the offices of the Directorate General of Health Services. Its administrative, receiving, manual coding, analysis, reporting, and distribution functions are centered in an annex behind the DGHS building. This annex contains approximately 2,200 square feet and is divided into 1 administrative office and 3 work areas. It houses the IU Chief, the Assistant Chief, and 3 professional and 20 technical and staff employees.

The Computer Center is located on the second floor of the DGHS building. The entire department has about 450 square feet in one undivided area. It is the work site for the Computer Center Chief, 1 auxiliary engineer, 2 programmers, and 2 operators. This center also houses 3 computers, 1 external hard disk with tape backup, 1 printer station, and a storage area for manuals, supplies, computer diskettes, and tapes. These facilities are acceptable for the current equipment. However, a substantially larger space will be required when the AID computers are installed. A laboratory facility, also on the second floor of the DGHS, is being considered as a future computer facility.

A small room attached to the Information Department serves as the warehouse for all data forms that have been processed. It has about 1,000 cubic feet of storage area. Guatemalan regulations require that all official forms and documents be archived for a minimum of 10 years. The MOH HIS fills the available warehouse space about every 3 years. When the space is filled, the oldest forms are discarded, irrespective of content. There is no record retention schedule. No priority is given to birth, death, or diagnostic records, though the Information Department administrators feel that this is the most important information they collect.

#### D. HIS Data and Collection Forms

Looking across the various levels, the MOH's health information system can be characterized as complex, detailed, and redundant. The system emphasizes (but is not limited to) data concerning:

- o births, including conditions of births, size
- o deaths, age at death, causes of death, location, and who certified the death
- o weekly reports and telegrams reporting major diseases and injuries by patients less than 1 year, and 1-4, 5-14, 15-44, 45-64 years, and 65 or older
- o daily and monthly summaries of general and emergency consultations, including sex and age of patients, diagnoses, and hospitalization
- o daily number, monthly totals, and consolidated monthly summaries of general, maternal, and pediatric consultations by physicians, nurses, and auxiliary staff
- o consolidated monthly summaries of general consultations by physicians, nurses, and auxiliary staff
- o consolidated monthly summaries of maternal consultations by physicians, nurses, and auxiliary staff
- o consolidated monthly summaries of pediatric consultations by physicians, nurses, and auxiliary staff
- o individual, monthly, and consolidated monthly reports of family planning consultations, indicating reasons for consultation, types and numbers of contraceptives dispensed, and types and numbers remaining to be dispensed
- o daily and monthly total numbers of laboratory reports requested, by type of examination
- o monthly total number of laboratory reports requested, by type of examination, by type of consultation, and hospitalization status

- o a census of households, indicating family names; number of persons under age 1, ages 1-4, "others;" number of women pregnant; number of persons to be vaccinated, by age group; number of pregnant women to be vaccinated; number of pregnant women already vaccinated, by age group; number of pregnant women not vaccinated, by age group
- o individual, daily, and monthly vaccination reports on children under age 1, ages 1-4, and "others," by type of vaccination
- o monthly vaccination reports on patients under age 1, ages 1-4, 5-9, 10-14, 15 and older, by type of vaccination
- o consolidated monthly report of acute respiratory infections in children under 2 months, 2 months to 11 months, 1 to 4 years
- o daily and monthly summary reports of ORT activities
- o daily number and monthly total numbers of sanitation activities by sanitation intervention
- o monthly and consolidated monthly reports indicating home visits, short courses/demonstrations, courses, community sanitation activities, condemnations, and water supply activities
- o monthly hospital reports of admissions and discharges by date, number of females vs. males, patients' ages, residences, 3 major diagnoses, condition at time of discharge, services delivered
- o monthly hospitalization and health home chronicles indicating discharge status, total length of stay, and bed utilization
- o monthly hospitalization chronicles indicating maternal and pediatric discharge status, total length of stay, and bed utilization
- o quarterly hospital reports indicating admissions, occupied beds, number of occupied bed-days; consultation types; usage of radiology, laboratory, pharmaceutical, meal, and laundry services; and surgical operations by service group
- o quarterly distribution of hospital expenditures by service across major cost-accounting categories.

There is a total of 48 information forms at the national level; 40 of these are attached as Appendix D. Copies of tuberculosis and various hospital reporting forms were not available.

A summary analysis of the available forms reveals the following:

- o The official documents represent a full range of printing (reproduction) quality, sizes, layouts, and styles.
  - o The forms vary greatly in size, which adds complexity and costs to printing, binding, forms handling, filing, and storage. The variation is as follows:
    - 4-1/4" by 4-3/4"
    - 8-1/2" by 6-1/2"
    - 8-1/2" by 11"
    - 8-1/2" by 13"
    - 8-1/2" by 25-3/4"
  - o With few exceptions, titles are consistently placed at the top of the forms.
  - o There is no standard format used for titling the various blank documents. Some titles are not descriptive of the information required; others are appropriately detailed and fully descriptive.
  - o Identification information commonly requested on most forms is not uniform, nor is it located and labeled consistently.
  - o Some of the forms use acronyms and numbers for identification; others do not.
  - o There are no authorization or revision dates on the forms.
  - o Some allow adequate (recommended 1/4" vertically) space for handwritten entry and processing. A few provide 1/6" vertical spaces and at least one allows only 1/8".
- Few of the forms have been designed to facilitate manual and/or typewritten entry (1/3").
- o Abbreviations, acronyms, and relational symbols (e.g., <) are used on various forms. This places a high priority on training, follow-up verification, and system documentation to be sure that there is common understanding of these rubrics.
  - o At various points, the current data forms request information in aggregate form. This is especially notable where ages are reported. Specifically, the current forms aggregate ages in a variety of categories:
    - < 1 yr., 1-4, and others
    - < 1 yr., 1-4, 5-9, 10-14, and 15+
    - < 1 yr., 1-4, 5-14, 15-44, 45-64, and 65+.

This sort of aggregation of raw data is appropriate at the data analysis stage, but not at the point of data entry. Such premature aggregation effectively "loses" data which might, sooner or later, prove extremely useful. It creates inflexibility in terms of adapting future reports to be responsive to new medical discoveries or problems; it does not allow close scrutiny of specific ages which have specific problems, e.g., malnourished children under 1 or between ages 1 and 2 where the weight of mortality and morbidity reside; and it diminishes the likelihood of detecting currently unknown age-related health patterns that may be significant.

- o Most individuals who collect HIS data have little or no subsequent, significant involvement with those data, since they are not required to convert them into information to be acted on. As constituted, the forms do not force data-collectors to generate critical indicators, comparative indices, or comparisons against norms. Further, neither the training in data-collection and forms preparation, nor the process of forwarding completed forms, foster problem-oriented discussion at local levels.
- o Few of the forms require that the person completing the document sign their name or enter an identifying code.

MOH field personnel often report that they lack copies of national collection forms. No field site visited had a complete set of the forms they were expected to complete. Some offices have single copies of forms which are used as models to enter the required information on a blank sheet of paper; this involves a tremendous amount of time-consuming copying. The lack of forms, and limited discretionary local budgets to produce copies, may be the largest single contributor to the irregular reporting said to be pandemic in the system.

Beyond national data-collection documents, Health Posts, Health Centers, and Area Health Offices typically have their own forms for recording information of particular interest. One site visited had at least 16 summary health forms, produced locally at its own expense.

There are no known estimates of what the primary health information system costs to manage, operate and maintain at the national level. Total data collection, processing, analysis, reporting, and storage costs appear to surpass what the MOH is able or willing to fund. Similarly, there are no known estimates of the costs of unofficial, secondary information systems at the local levels. The fact that these local-level systems are designed, implemented, maintained, and used strongly suggests that the information has perceived value that exceeds expenditures, especially from severely constrained budgets.

#### E. Data Collection, Information Flow, and Reporting

Data are collected for the national forms by local physicians, nurses, auxiliary staff, secretaries, and volunteers, and organized and

presented in daily, weekly, monthly, or quarterly formats using the various national HIS forms. Depending on data type, the forms then flow either to the appropriate Health Centers or Area Health Offices and then to the IU in Guatemala City, or sent directly to the IU.

Figures A.2.1-4 are documented system flowcharts portraying the sequencing and passage of selected forms relevant to Child Survival concerns and indicative of distinct information processing activities. These forms trace the flow of health data from points of collection, through processing, analysis, reporting, and final storage. (NOTE: No attempt has been made here to show the detailed processing activities at different levels, nor the numbers of copies of forms that are completed. These charts emphasize the origin of the health data, collection and recording activities, the flow of the completed documents, and the formalized points of data analysis and reporting.)

Figure A.2.1 specifically traces monthly reporting of vaccination activities using Form FC-4. Vaccination services are provided at 912 public Health Posts, Health Centers, and Hospitals. These activities are initially recorded using forms FC-1, FC-2, and FC-3. FC-4 is a summary form. FC-4 data from Health Posts are consolidated into the FC-4 forms at the Health Center levels. Health Centers and Hospitals forward this information to the Area Health Offices where the data on the movement of vaccines by dosage are analyzed and reported. The FC-4 forms are then organized and sent to the IU. The data are analyzed by hand and a consolidated report is produced and distributed annually. Approximately 11,000 FC-4 vaccination records are processed each year at the Health Post, Health Center, and Hospital levels; about 3,000 records are analyzed annually at the national level.

Monthly reports of general and emergency consultations are charted in Figure A.2.2. This flowchart indicates that 122 Health Posts, 211 Health Centers, and 35 Hospitals are scheduled to prepare this form. The monthly reports of uncoded data are initially sent to Area Health Offices to be aggregated. (Some Area offices reported analyzing these data, but this is not a planned part of the process.) The aggregated data are sent to the IU for coding. While being coded, the data are hand-tallied and reported in a consolidated, annual report on the most common diagnoses. There are approximately 1,600,000 consultation records processed annually. (This form is scheduled to be computer-processed in cooperation with INCAP, beginning this year.)

There are 80 diseases and injuries that are must be reported by telegram weekly to the IU. (NOTE: During field visits, we found no site with a list of all reportable 80 rubrics, although staff interviewed claimed to know all 80 by heart.) Figure A.2.3 charts this process, beginning with the 122 public Health Posts, 211 Health Centers, and 35 hospitals authorized to send this telegram. Several things are distinctive about this process. Specifically, the data are reported directly to the IU and then coded and sent immediately to the Computer Center for data entry, electronic processing, and analysis. There is a quality control check at the IU, based on a sample of the original telegrams; the summary report is compared against a sample of the original telegrams. This process typically handles slightly over

19,100 telegrams each year and requires 14-21 days from time of initial data collection to issuance of a weekly summary report.

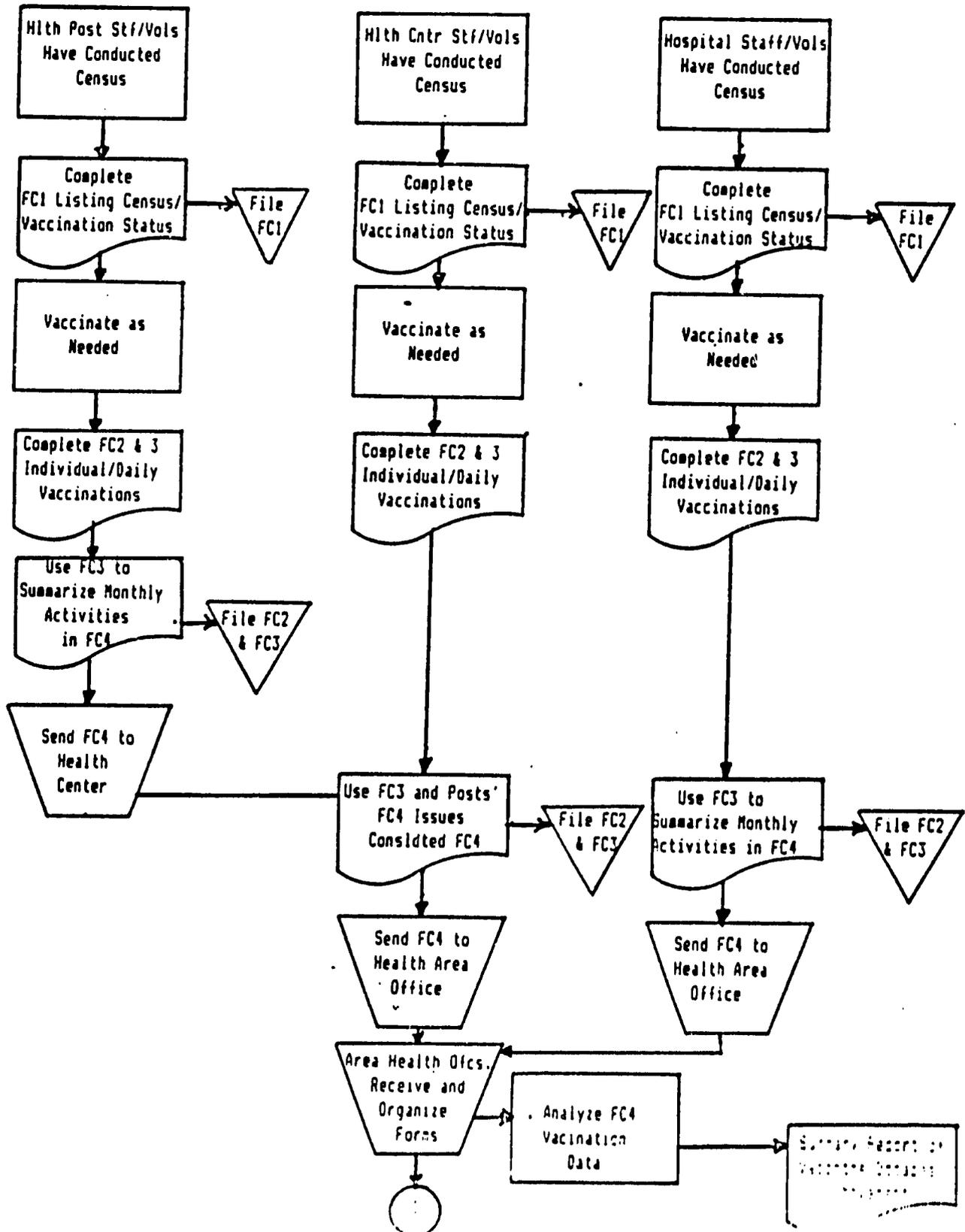
Figure A.2.4 traces the process of reporting officially-recorded deaths. The documented flow chart demonstrates that the data are initially reported to municipal government offices. MOH secretaries copy the data from the official records onto the appropriate forms and send the forms to the Area Health Offices. The data are then organized and sent to the IU which codes the data and forwards the forms to the Computer Center for data keypunching, electronic processing, analysis, and summary reporting. This process involves about 70,000 death records annually. There are no sequential control numbers on the records; as a result, some data-entry error is possible; for instance, in 1986, approximately 10,000 death records were computer-processed twice. The error was detected and corrected, but there are costs to this and the risk is always present.

The number of death records is so large that the files cannot be analyzed in their entirety by the available software. The data files are therefore divided into files containing approximately 25,000 records each. Frequency counts and cross-classifications are run and the intermediate outputs aggregated into a summary death report, issued twice a year. Thus, deaths occurring during the second half of 1986 will be reported during March-April 1987. It should be noted that the summary reporting of deaths is also carried out by the Guatemalan Institute of Statistics.

Overall, these flowcharts clearly demonstrate the predominance of manual data-processing, analysis, and reporting activities in the MOH's health information system. The manual component is particularly striking, given the sheer number of hand calculations required and the hundreds of thousands of records processed each year. It is also significant that those who characteristically collect and record these data are non-medical personnel who, furthermore, are not normally required to use the information they collect. The flowcharts also clearly indicate the relative infrequency with which data analysis, reporting, and utilization occur at lower levels. What does not appear in the flowcharts but obviously crucial is the typically long delay in sending data summaries and reports back to the lower levels that gathered the data in the first place.

FIGURE A.2.1

SYSTEM FLOW CHART OF  
MONTHLY REPORT OF VACCINATIONS - FORM FC4



91

FIGURE A.2.1 (cont.)

SYSTEM FLOW CHART OF  
MONTHLY REPORT OF VACCINATIONS - FORM FC4  
(Continued)

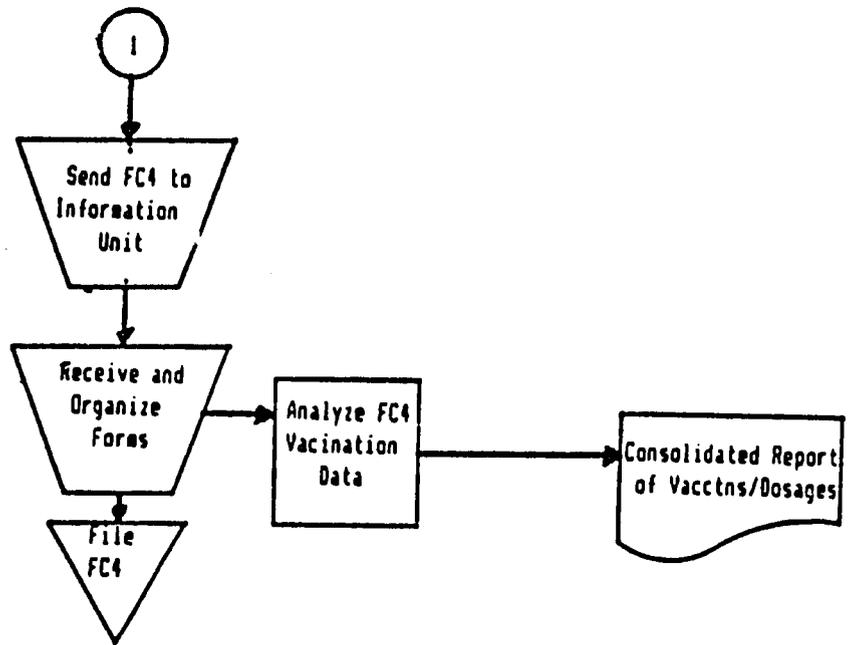
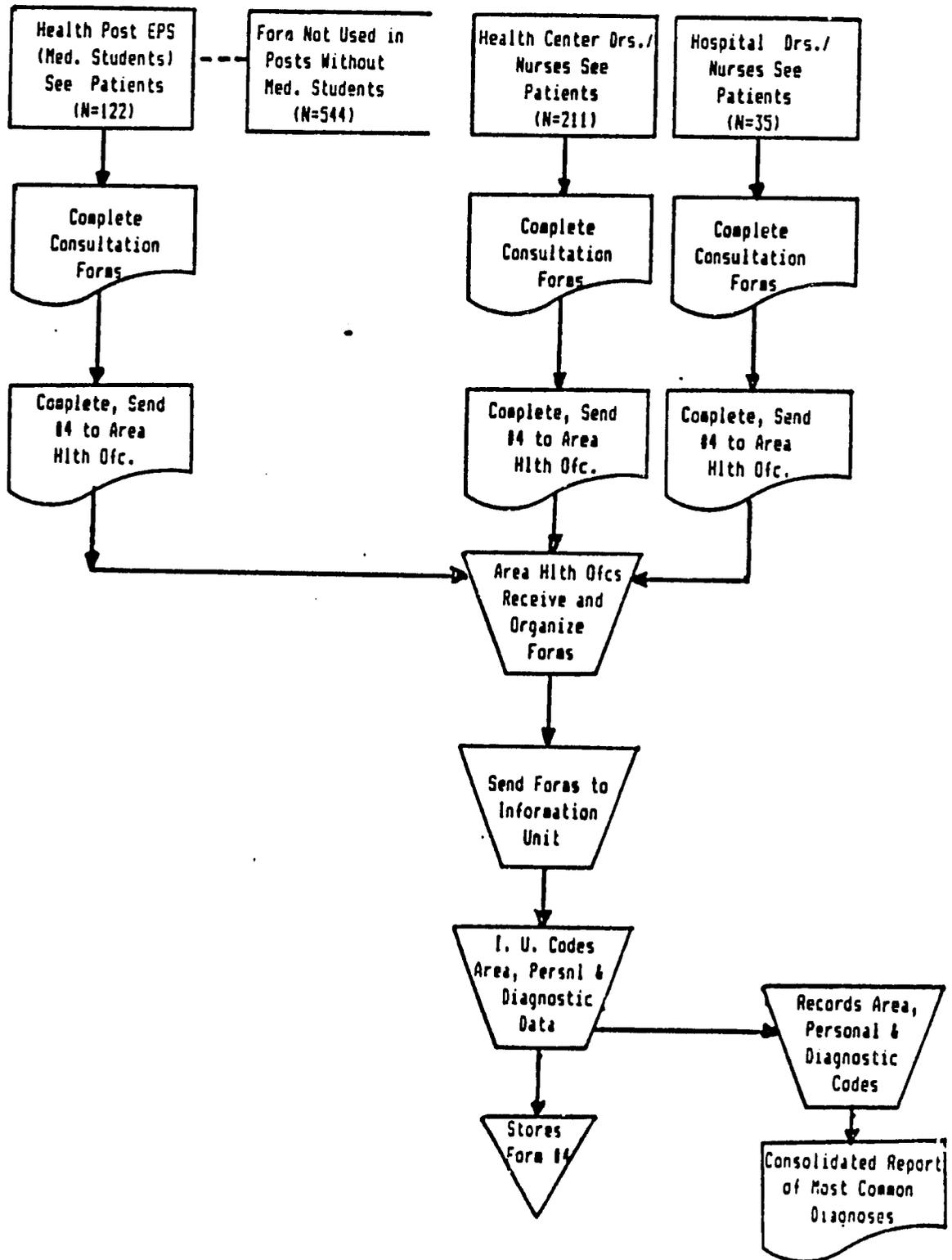


FIGURE A.2.2

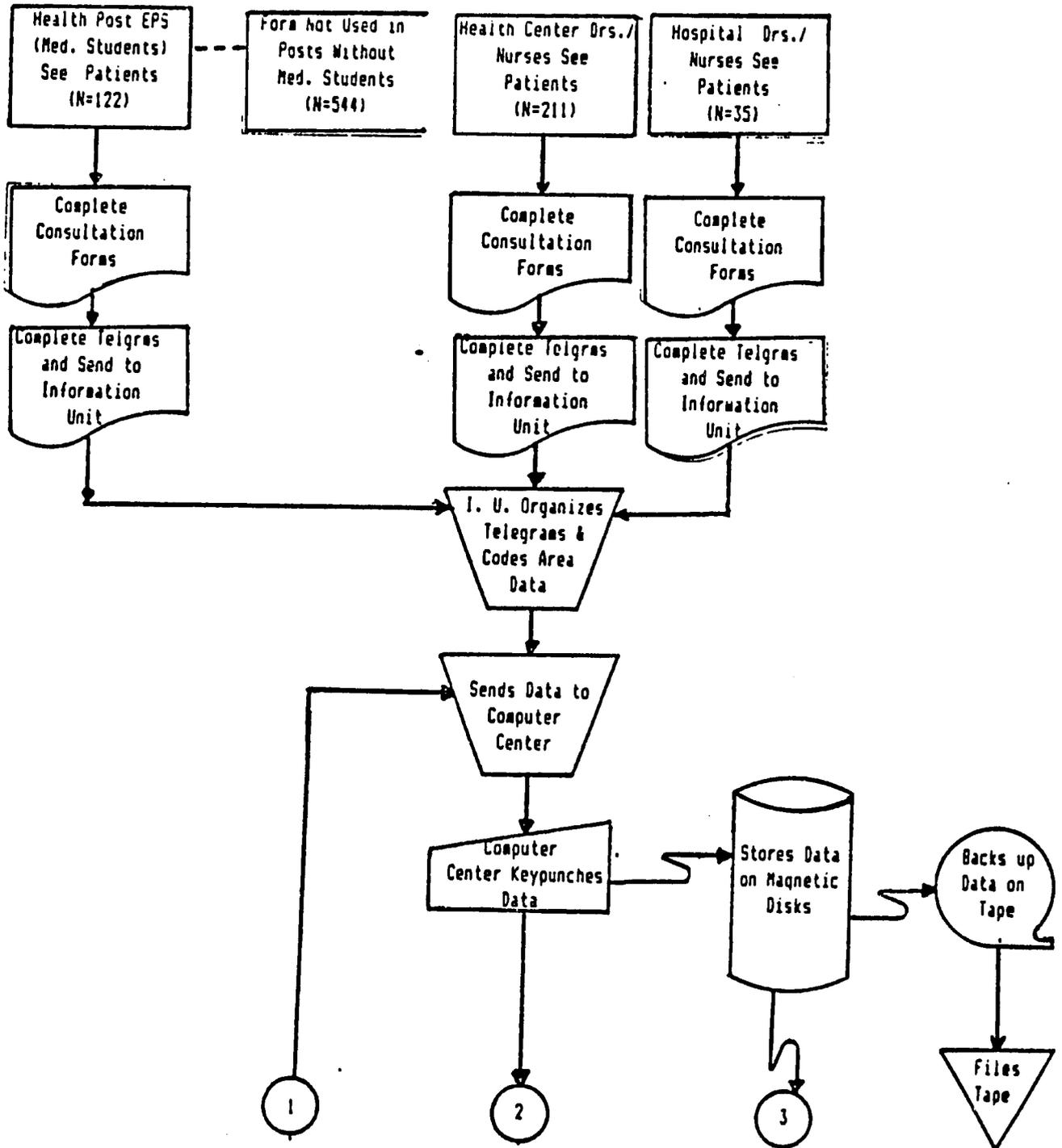
SYSTEM FLOW CHART OF  
MONTHLY REPORT OF GENERAL AND EMERGENCY CONSULTATIONS - FORM #4



99

FIGURE A.2.3

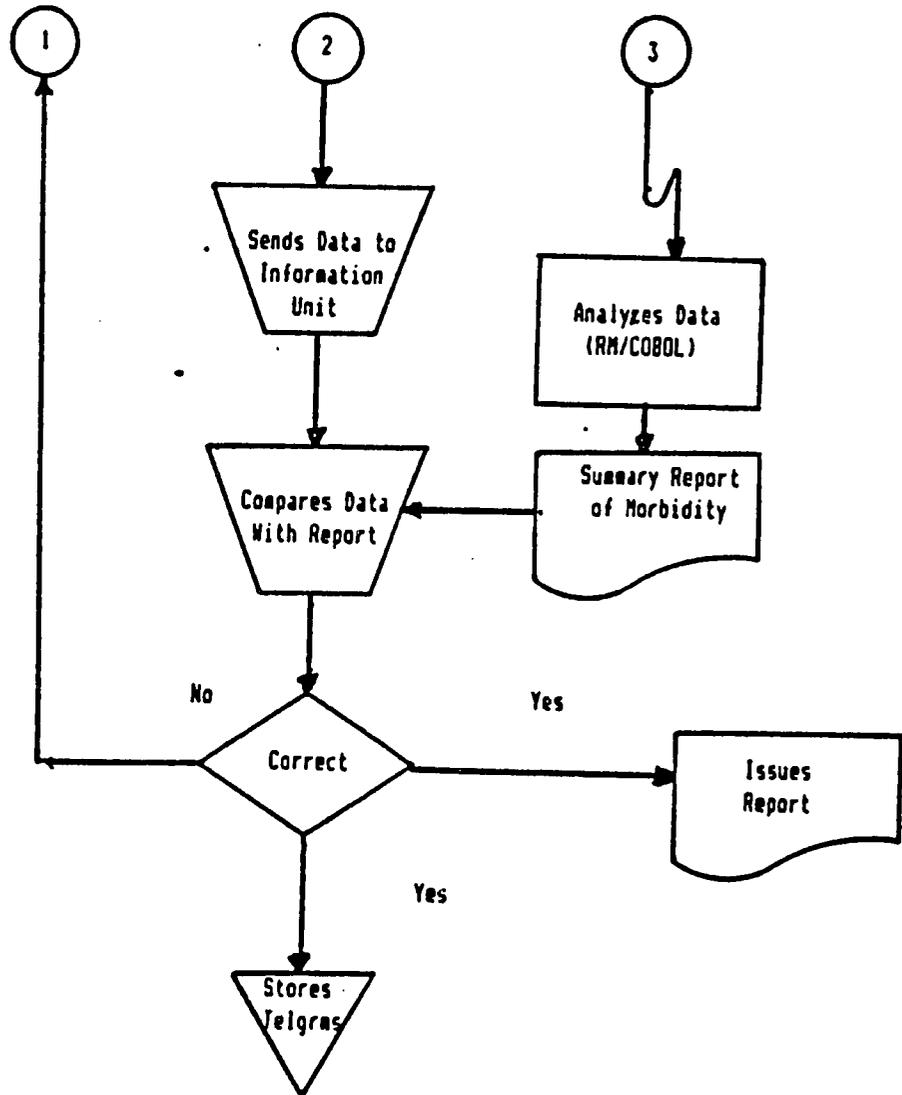
SYSTEM FLOW CHART OF  
WEEKLY TELEGRAM INDICATING MORBIDITY



100

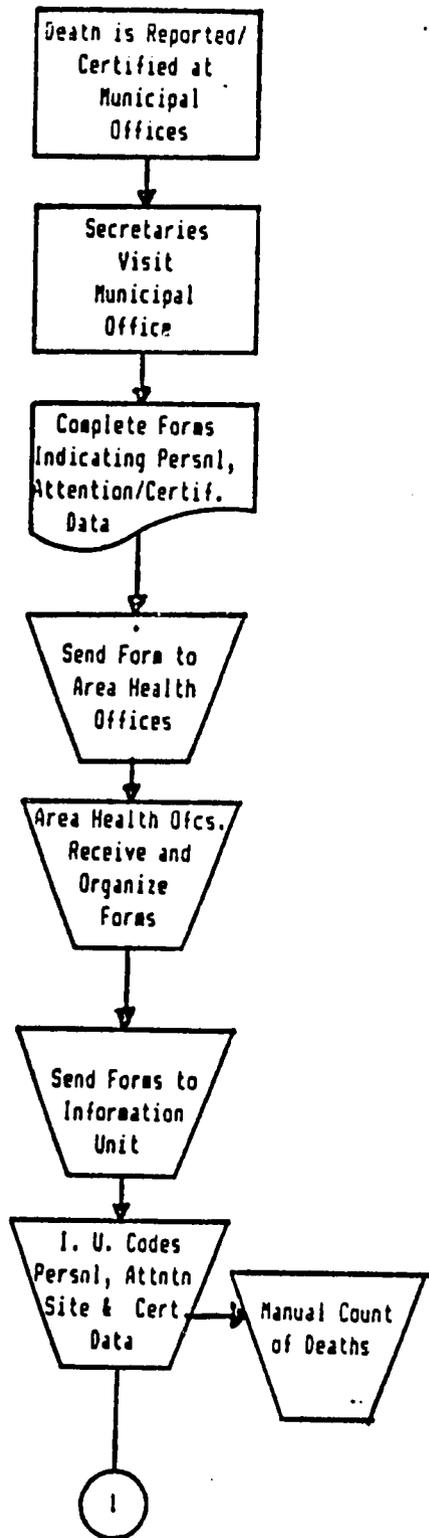
FIGURE A.2.3 (cont.)

SYSTEM FLOW CHART OF  
WEEKLY TELEGRAM INDICATING MORBIDITY  
(Continued)



101

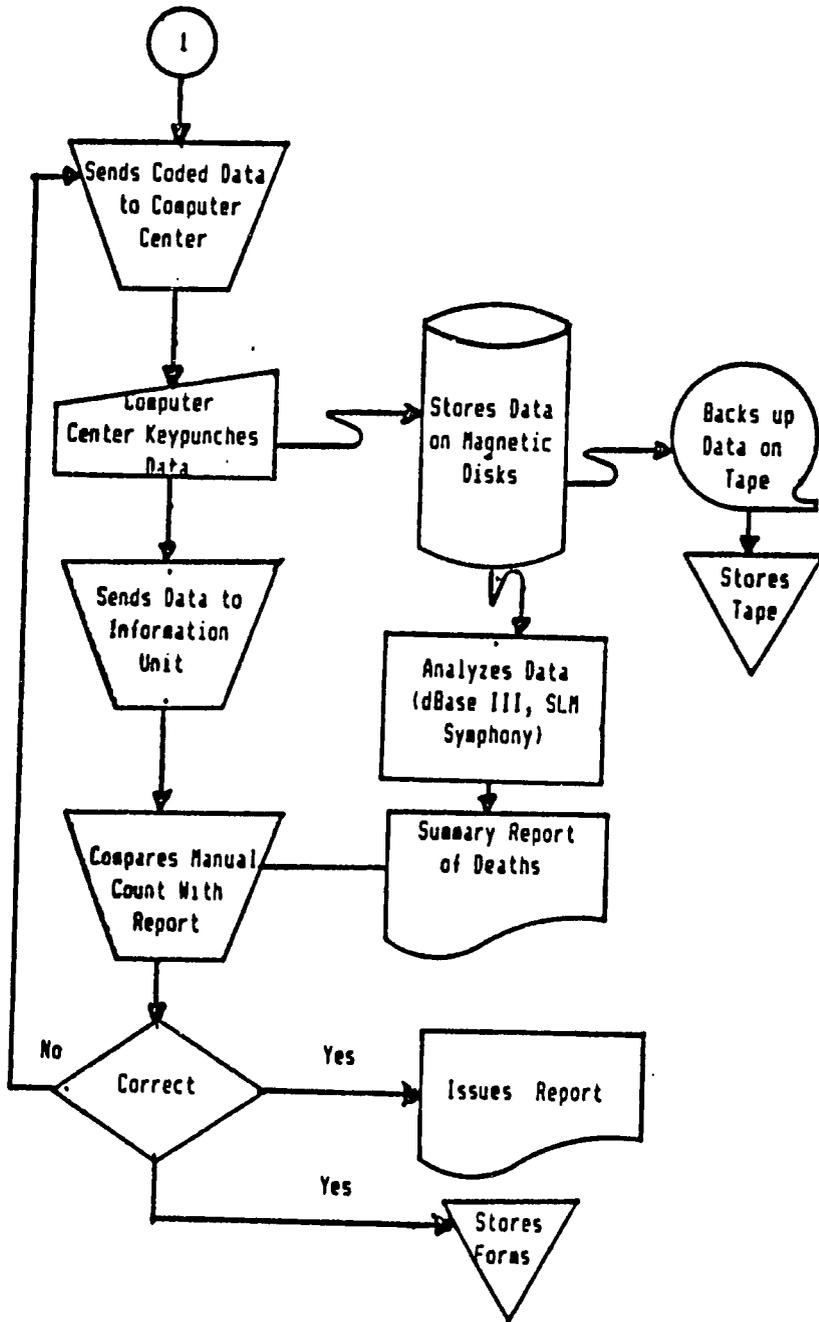
FIGURE A.2.4  
SYSTEM FLOW CHART OF  
MONTHLY REPORT OF DEATHS



102

FIGURE A.2.4 (cont.)

SYSTEM FLOW CHART OF  
MONTHLY REPORT OF DEATHS  
(Continued)



103

The fact that information collected locally is not used locally also raises grave concerns about data quality. Systematic quality control checks are infrequent. At the local level, quality control responsibilities are assigned to supervisors, often only lightly trained in the information system, its uses, and key quality control issues. Formal quality control occurs only at higher-level data-processing points, through sample, manual comparisons. The effectiveness of these procedures is not routinely audited or evaluated.

The Information Unit currently processes 3 data sets using its central computer system. Table A.2.2 lists those data sets and their approximate sizes.

TABLE A.2.2

DATA SETS AND ESTIMATED NUMBER OF RECORDS PROCESSED IN 1986 BY  
THE GUATEMALAN MINISTRY OF HEALTH COMPUTER CENTER

<u>Data Sets Processed</u>	<u>Estimated Number of Records Processed</u>
Officially Recorded Births	300,000
Officially Reported Deaths	70,000
Diseases and Injuries Requiring Notification	19,000

A rough estimate is that these 3 files represent about 14 Mb of file storage space. The proposal to add the 1,600,000 general and emergency consultation records will likely add another 40-50 Mb of file storage. Whether these data and the associated analyses will remain, as they currently are, a cooperative activity with INCAP following IU reorganization, or will return to the IU, is uncertain.

The current data files are analyzed using cumulative frequency counts and cross-classification procedures. Summary statistics are used infrequently and such higher-level statistical procedures as projections and comparative indices are not utilized.

#### F. The Computer Center

The IU now has 3 personal computers dedicated to health information and an additional 3 units, donated by PAHO, used for administrative purposes. These are profiled in Table A.2.3. One of the 3 units in the Center has been upgraded to 640 Kb to provide greater random access memory (RAM); the other 2 have 256 Kb of RAM. The combined 20 Mb internal and 35 Mb external hard disks allow ample storage and reserve space for all data records currently processed. However, utility programs are not available in the Center to optimize disk space and disk access speeds.

TABLE A.2.3

LOCATION AND INVENTORY OF MINISTRY OF HEALTH FUNCTIONAL HARDWARE/SOFTWARE

LOCATION	Computer Center Directorate General Health Services	Computer Center Directorate General Health Services	Computer Center Directorate General Health Services
<b>HARDWARE</b>			
Computer	IBM-PC/AT	IBM-PC	IBM-PC
Microprocessor	80286	8088	8088
Clock Speed	6 MHz	4.77 Mhz	4.77 Mhz
Math Co-Processor	-	-	8087
Power Supply	Unknown	Unknown	
Random Access Memory	512 Kb	256 Kb	256 Kb
Add-on Card(s)	AST Six Pack Plus with 128 Kb RAM	AST/Research	AST/Research, Hercules Graphics
Ports	Parallel/Serial	Parallel/Serial	Parallel/Serial
Floppy Drive(s)	1 - 1.2 Mb	2 - 360 Kb	1 - 360 Kb
Hard Disk (Internal)	20 Mb	-	-
(External)	35 Mb Tallgrass	-	-
Tape Back-up	60 Mb cartridge	-	-
Keyboard	5160	5150	5150
Monitor	Monochrome 12", 80x25	Monochrome 12", 80x25	Monochrome 12", 80x25
Modem	-	-	-
Printer	Okidata - 93	-	-
Type	Dot Matrix - 9 pin	-	-
Print Speed(s)	160 cps	-	-
Carriage Width	132 cols.	-	-
Paper Feed	Friction & Tractor	-	-
Network	IBM PC Network	IBM PC Network	IBM PC Network
Size	3	3	3
Electrical Power			
Surge Protection	-	-	-
Back-up	-	-	-
<b>SOFTWARE</b>			
Operating System	DOS 2.1	DOS 2.1	DOS 2.1
Data Base	dBase III	dBase III	dBase III
Integrated	Lotus 123/ Symphony	Lotus 123/ Symphony	Lotus 123/ Symphony
Statistical	SL Micro	SL Micro	SL Micro
Graphics	-	-	-
Word Processing	Word Star 1.0	Word Star 1.0	Word Star 1.0
Programming	BASIC, COBOL/RM	BASIC, COBOL/RM	BASIC, COBOL/RM

105

TABLE A.2.3. (cont.)

LOCATION AND INVENTORY OF MINISTRY OF HEALTH FUNCTIONAL HARDWARE/SOFTWARE  
(Continued)

LOCATION	Ministry Office National Palace	Personnel Office Directorate General Health Services	Drug Price Control Directorate General Health Services	Computer Section San Juan de Dios General Hospital
<b>HARDWARE</b>				
Computer	IBM-PC	IBM-PC	IBM-PC/AT	Epson QX-10
Microprocessor	8088	8088	80286	Epson
Clock Speed	4.77 MHz	4.77 MHz	6 MHz	Unknown
Math Co-Processor	-	-	-	-
Power Supply	Unknown	Unknown	Unknown	Unknown
Random Access Memory	256 Kb	256 Kb	512 Kb	256 Kb
Add-on Card(s)	AST Six Pack Plus with 384 Kb RAM	AST Six Pack Plus	-	-
Ports	Parallel/Serial	Parallel/Serial	Parallel	-
Floppy Drive(s)	1 - 360 Kb	1 - 360 Kb	1 - 1.2 Mb	2 - 360 Kb
Hard Disk (Internal)	-	1 - 30 Mb	30 Mb	-
(External)	-	-	-	-
Tape Back-up	-	-	-	-
Keyboard	5150	5150	5160	Epson Standard
Monitor	Monochrome 12", 80x25	Monochrome 12", 80x25	Monochrome 12", 80x25	Monochrome 12", 80x25
Modem	-	-	-	-
Printer	(printer not functional)	Epson LQ-1500	Epson FX-105	Epson RX-100
Type		Dot Matrix - 24 pin	Dot Matrix - 9 pin	Dot Matrix - 9 pin
Print Speed(s)			160 cps	
Carriage Width	132 cols.	132 cols.	132 cols.	132 cols.
Paper Feed	Friction	Friction & Tractor	Friction & Tractor	Friction & Tractor
Network	-	-	-	-
Size	-	-	-	-
Electrical Power				
Surge Protection	-	Datashield IT-300	-	-
Back-up	-	Datashield IT-300	-	-
<b>SOFTWARE</b>				
Operating System	DOS 3.1	DOS 2.1	DOS 2.1	CPM/80 (82.20)
Date Base	dBase III	dBase III	dBase III	dBase II
Integrated	Lotus 123 / Symphony	-	Lotus 123/Syphony	Multiplan 1.06
Statistical	-	-	SL Micro	-
Graphics	-	-	-	-
Word Processing	-	Word Star 1.0	Word Star 1.0	Word Star 1.0/
Programming	BASIC, COBOL/RM	-	BASIC, COBOL/RM	Valdocs 1.18 BASIC, COBOL/RM

106

The Computer Center systems use IBM PC Network to allow file interchanges between the 3 work stations. However, network versions of the software programs are not available and the system does not lock data files when they are in use. This occasionally results in files being written over and destroyed.

One PC computer does have an 80287 math co-processing chip to enhance data calculation speeds. The faster AT computer, however, does not have a math co-processing chip; this absence is mitigated since the software programs purchased for the Center typically do not take advantage of math co-processors.

As previously mentioned, the available statistical software package restricts the number of cases that can be analyzed. This, combined with the failure to address the 8087 chip, causes analysis of such large files as birth records, to require 4-6 hours of processing time, alone. If errors are found in the analysis, that total processing time is increased appreciably, extending easily into a second day.

The computer room receives intense direct sunlight which has caused some floppy disk damage. A window air-conditioning unit helps minimize overheating. Humidity does not appear to be a problem. Electrical power is generally good, though there is no verification that the outlets are appropriately grounded. The Computer Center lacks a functioning uninterruptible power supply (UPS); a Sola voltage regulator offers some protection against power surges.

Although the Center does have a limited maintenance contract on its equipment, it does not appear to have an adequate maintenance budget to repair its computer equipment.

As for backup, once a week the Center's computer files are backed up using the Tallgrass external hard disk and cartridge tape unit. The Center does not have a utility program to assist in this process. This weekly backup requires approximately 4 hours and the backup tapes are stored in a cabinet within the computer room. Only one version of each file is maintained as a system backup and, each week, the earlier versions are written over with the current files. The Center also lacks a utility program that will allow it to recover files that are mistakenly erased. In addition, important master data sets -- births, deaths, and notifiable diseases and injuries recorded during 1985-86 -- are archived in the Center with no special security or backup.

Another factor which inhibits the optimal functioning of the Computer Center derives from the absence of program manuals in Spanish. The English-language manuals they do have are typically photocopies, some of which are incomplete and many of which have unreadable pages.

That the MOH Computer center can operate with reasonable effectiveness is remarkable. The personnel are ingenious in overcoming obstacles and not easily swayed by repeated hardware and software problems. It would be easy for this technical group to claim that certain procedures and analysis are impossible with current equipment, but they do not do so. Instead, they resourcefully "make do" with what they have. The fact that the Center has not had a major loss of data

and/or equipment is fortuitous. The variable electrical power, potential wiring problems, and the absence of a UPS makes one pause.

In sum, its five-year history suggests that the Center has had a certain amount of good luck and that, while its data security procedures are functionally sound and adequate, a backup utility program and a three-level file maintenance/security system are much to be desired. The Center's backup files and long-term archives need to be more secure, and copies should be maintained at different locations.

#### G. Internal Assessment and Revisions

There is near-unanimous internal agreement that the IU's previous performance and current situations are unacceptable. The current health and management information systems have been characterized as:

- o not being unified
- o burdened with an excessive number of poor-quality instruments
- o unable to provide trustworthy data at operative levels
- o excessively centralized in terms of data processing and analysis
- o forcing programs and projects to collect excessive information
- o lacking appropriate indicators and parameters to support MOH evaluation and supervision needs
- o insufficient to support necessary MOH planning and programming
- o inadequate in providing useful management information, due to inopportune data processing and a near absence of analysis
- o continuing to collect data without analyzing information from previous years
- o unduly reflective of demands by international agencies that continually require collection of more data, resulting in duplication and lack of understanding of how the data will be used
- o being largely a mechanized process that is neglected and inexact, resulting in many health units not collecting and sending necessary information.

#### 1. The MOH/IU Restructuring Project

The accumulating awareness of these conditions and their implications for provision of quality health services on a limited budget have resulted in a new Project for the Restructuring of the MSPAS Information Unit (see Appendix C). At a project meeting in November 1986, MOH officials, together with representatives from PAHO and AID, proposed far-reaching administrative, procedural, and technical changes in the IU. Among the recommended changes are:

- o The creation of an new organizational structure with a managing director's office and 2 departments: a Health Information Department and a Computer Department. The Proposal further specifies the proposed responsibilities of each unit.
- o A proposed subsystem model with modular components
- o Immediate, short- (1987), and medium- (1987-1990) term proposals to design and implement a responsive, unified health and management information system.

The immediate and short-term proposals include identification and revision of health indicators, system design, computer programming, training, and implementation of a unified information system.

One of the most significant factors in the reorganization of the IU centers on its political visibility and the relative newness of its administrators at all levels. The Director has worked in the Unit since January 1986, the Computer Center Chief arrived the following October, the Information Department Chief arrived in November 1986, and the Sub Chief arrived in February 1987.

Customarily, information systems tend to function best under strong, stable, evolutionary management environments. Conditions to the contrary tend to threaten data continuity and system integrity. However, in the present Guatemalan case, such a threat may well be to the system's benefit. The political placement of the information director, together with the newness of the administrative staff and their interests in change, signify a opportune time for reorganization of the IU into a focused, streamlined, unified system.

## 2. The Revised Information System

In information reorganization, there are several, initial key questions:

toward what goals; against what criteria; and, practically, how do you bring about system effectiveness and efficiency?

PAHO has recommended that the revised system should take advantage of a reduced, integrated set of forms and health indicators that the organization's technical experts helped develop, principally in the Department of Zacapa, most intensively during 1985-86. Its objectives were to minimize record-keeping activities required of health personnel, while maximizing the quality and utility of data collected.

Various individuals within the IU have been considering the revised, integrated system as a point of departure for restructuring the IU's data collection and processing activities. This team met with PAHO representatives and discussed their proposal for the implementation of the integrated system. A copy of their system design documents, forms, procedures, and implementation strategy was requested so that the team could be fully responsive to the Scope of Work which included review of the PAHO work as a basis for recommendations; a central theme for team strategy was not to reinvent any wheels and build on

work in which time and energy had already been invested. The team traveled to the Zacapa Health Area, met with Regional Supervisory, Health Center, Hospital, and Health Area personnel working with this new integrated system, and was graciously provided with a partial set of the new system forms. However, the team was never able to obtain a full set of the forms and their related instructional accompaniments, and had to do a rather deductive review of the PAHO proposal.

Nevertheless, based on interviews with a large number of individuals up and down the health services delivery pyramid, as well as with individuals in normative positions, together with review of the forms and instructions obtained, a number of useful statements can be made:

- o The revised, integrated system substantially reduces the numbers of documents to be filled out by health personnel, with 14 sheets and 3 cards instead of the original 48.
- o Much of the fundamental data in the current national system seems to be captured in the revised forms, with reduced redundancy. Some information not requested in the current system is collected in the revised forms (e.g., specific sanitation issues, housing conditions, observations).
- o Certain forms are noticeably absent from the revised, integrated system, i.e., forms indicating births and deaths do not appear. Certainly these data-collection activities will continue, requiring some standard documentation, possibly the old forms. This expands the total number of forms required, still considerably less than the old 48.
- o It is not clear that this set of forms will contribute meaningfully to reduced reporting of in-patient services and facilities at hospitals. The forms do not subsume monthly public hospital reports on overall admissions/discharges; total lengths of stay; bed utilization; usage of radiology, laboratory, pharmaceutical, meal, and laundry services; surgical interventions; or distribution of hospital expenditures across major cost-accounting categories.
- o The revised, integrated documents are of much higher printing quality. However, they vary in size, layout, and style, as did the old system. Sizes include:
  - 8" by 5" (cards)
  - 8-1/2" by 11" (sheets)
  - 8-1/2" by 13" (sheets)
  - 8-1/2" by 22" (sheets)
  - 11" by 19-1/2" (sheets)

The 8"x5" cards are standard size. However, the irregular sheet sizes will entail additional costs for printing, binding, forms handling, filing, and storage.

Printing costs will go up due to the high quality and thickness of some forms. Thickness also implies higher storage costs, although the forms should hold up longer.

- o Some of the complexity of the larger forms is minimized by directing the summation activities toward the smaller (vertical) dimension. Nevertheless, reading accurately from left to right can be clumsy; extreme width generates errors reading and recording errors, presents storage problems and makes production and binding of uniform reports difficult.
- o Titles are consistently placed at the top of the forms and a reasonably standard format is used for titling. The titles are detailed and, with few exceptions, descriptive.
- o Identification information commonly requested on most forms is reasonably uniform. Minor improvements are needed to fully standardize this feature.
- o The forms use acronyms/numbers (e.g., F1, F2, F3, etc.) for identification, though these are not uniformly placed on the sheets. Still, this is a substantial improvement over the current system.
- o The revised forms carry no authorization or revision dates.
- o While the revised forms allow more adequate space for handwritten entry and processing, it is still impossible to use a typewriter for entry and, at some data points, some free space for calculation (e.g., percentages, age cohort disaggregation) is essential.
- o Abbreviations, acronyms, and relations symbols (e.g., <) are used repeatedly, but their meaning was not invariably clear to field personnel interviewed. Some definitions (e.g., age cohort cutoffs in months) might well be included right on the form itself, rather than resting in a copy of a manual or instruction sheet which typically cannot be found.
- o Once again, the revised, integrated system forms request data in aggregate form, as in the old system. The categories used are fewer but they still "hide" data prematurely, at the aggregation rather than the analysis stage:
  - < 1 yr., 1-4, and others
  - < 1 yr., 1-4, 5-14, 15-44, 45-64, 65+
- o The revised integrated system does encourage involvement. Some forms are linked so that raw data have to be used in ways that force their integration. The forms also force data collectors to generate information, especially at the Area level.
- o Health indicators are to be produced via form F-14, which, however, is not yet in use or understood even in Zacapa.

There are important questions about indicator number and frequency: how many indicators are truly essential (fewer is better) and is quarterly reporting frequent enough at the Area level (more often is better). The revised, integrated

system produces 39 indicators, a tremendous amount of information for policy, program, for routine decisions. Furthermore, at this point it is not obvious that the system is predicated on a hierarchy of indicators based on public health priorities, feasibility for action, potential impact or effectiveness, or cost criteria.

Care should be given to the issue of how many indicators are essential vs. important vs. interesting. A similar level of attention should be given to reporting frequency. It would seem that numerous opportunities for significant health interventions at the Area level are lost when information is analyzed only once every 90 days and reported even later. Quarterly frequency of routine reporting is more appropriate at the national level.

- o Finally, even in the revised, integrated system, there is little opportunity for auditing recorded information. There is no clear procedure for tracing services back to individual providers or linking information that is recorded back to the individual data sources. This suggests that the system's implementation and operational strategy does not place heavy emphasis on data quality.

#### IV. RECOMMENDATIONS AND IMPLICATIONS FOR ACTION/PROGRAMMING

There is a great deal that is positive about the proposed "Zacapa system." The integrated system of forms is a clear improvement in a variety of information areas. Unquestionably, a great deal of careful thought and detailed attention has been given to the information needs of public health care providers. It is a significant point of departure for a new information system in the MOH.

Certain features and circumstances, nonetheless, must be recognized as areas for improvement and reasons for concern. During our field visits, health workers repeatedly emphasized the fact that the revised, integrated system has been tested only in 3 health districts. Furthermore, even in Zacapa, field personnel have so far utilized only the first 8 of 14 forms. In working with these 8 forms, Zacapa staff have already made revisions that in their view and in light of their perceived needs, have improved the system. This sort of empirical testing is highly desirable and needs to occur with all the forms in a number of sites. This field-testing and revision process lies at the heart of the strategy we suggest for carrying on with the work that has been started in MOH information system development, discussed below in Section B.

##### A. General Prescriptions

Changes in the MOH information system must be planned, focussed, and staged. Planning should utilize the same criteria employed in this analysis, which describe the basic characteristics of any effective, efficient, viable, and useful information system.

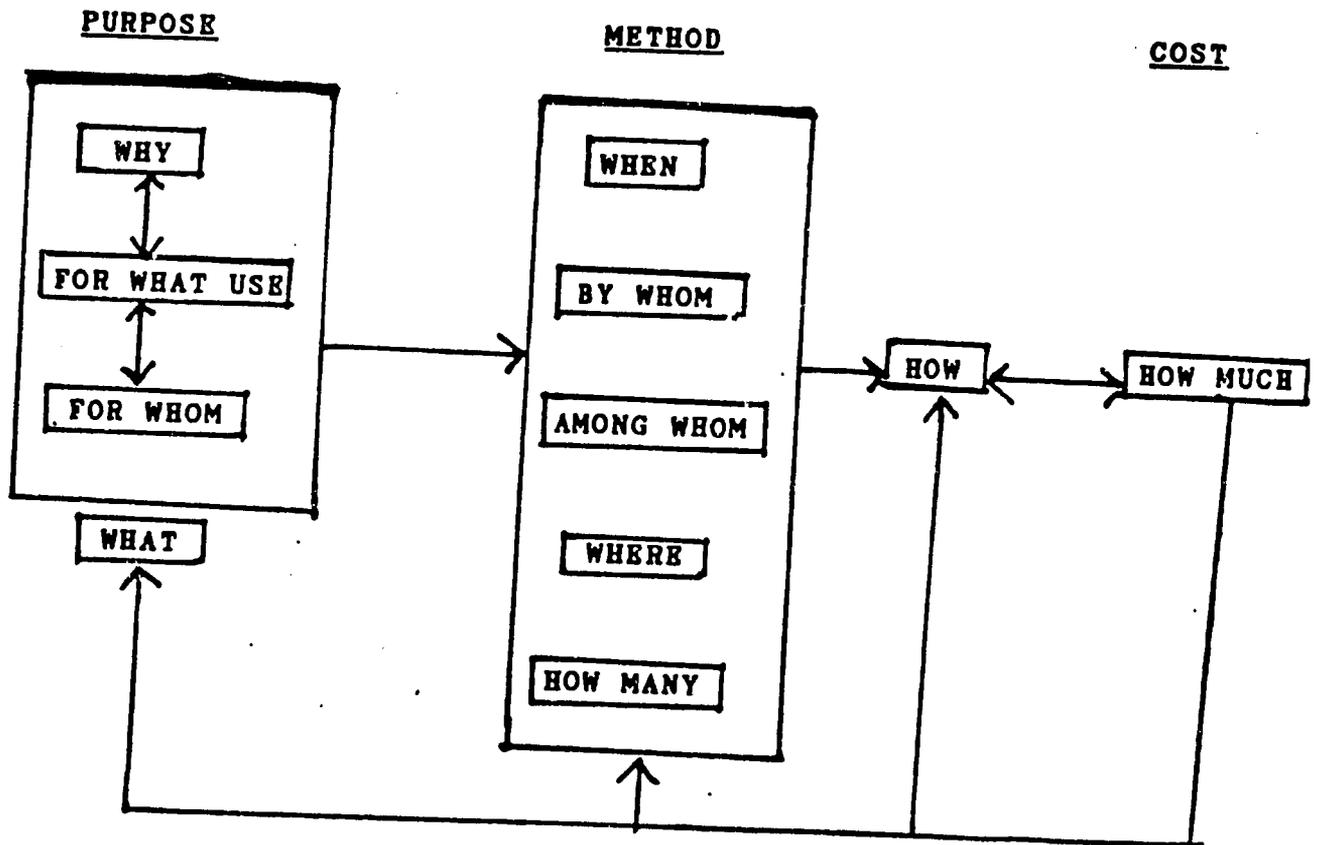
A very useful and simple tool for applying these criteria is presented in Figure A.2.5, "The Decision-Making Process for Data-Collection," for which a useful subtitle might be: "What Questions Do Program Planners and Managers Need To Keep in Mind When They Are Deciding What Data Need To Be Collected and How?" Application of these criteria will bring the appropriate focus to the revision and integration of the Ministry of Health's Health and Management Information System.

These criteria require that the new system:

- o be unified within the MOH and consistent, where possible, with information systems in other Ministries
- o involve a reduced number of high-quality instruments
- o decentralize data processing and analysis
- o insist that programs and projects collect only essential information that is linked to program objectives and key health indicators

FIGURE A.2.5

THE DECISION-MAKING PROCESS FOR DATA\*COLLECTION



\*NOTE: It is useful to define our terms. 'Data', whether collected or recorded or not, comprise the raw material of analysis. 'Information' is the data selected for use in the search for a solution to a particular problem; that is, information is data in use. 'Knowledge' is the stock of collected data retained as valuable for future use.

114

- o utilize a minimum number of appropriate indicators and parameters that will really help Ministry decision-makers at all normative and operative levels, and flag high-risk situations and populations for opportune intervention
- o support Ministry planning and programming activities
- o provide useful management information that is carefully and opportunely analyzed and reported
- o collect and analyze data using previous years' data as a comparative base
- o be flexible enough to allow short- to medium-term system "add-ons" for the collection of limited amounts of new data to help monitor specific health projects and initiatives.

These add-ons should not, however, be permitted to become a durable part of the ongoing national information system unless they provide data which meet the preceding criteria.

- o use "appropriate" H/MIS technology -- hardware, software, and fundamental concepts that encourage data collection, processing, and utilization
- o enhance the security of the national health information data base
- o provide an audit trail so that problems can be traced to their origins and corrected
- o establish routine system reviews and evaluations to assure long-term system integrity and quality.

## B. Strategy for System Development

### 1. Overall Strategy and Theory

Ideally, a criterion-based, focused approach, together with thorough systems analysis, preceeds and guides development of subsystems of forms, procedures, information flows, analysis and its management. Whether or not this occurred as part of the development of "the Zacapa system," it should occur now, so as to:

- a) bring together the learning from that experience and
- b) mesh it with recently developed, somewhat discrete or parallel data-collection subsystems (e.g., the Sistema de Vigilancia Nutricional and the Sistema Unico de Supervision).

Thus, a strategy needs to be developed that will:

- o build on the good work that has been done
- o integrate it methodologically and pragmatically with other subsystems in the context of a systems analysis
- o make any necessary modifications to existing instruments so that they reflect this integration
- o test the revised instruments in the iterative fashion described in section b) below
- o launch the revised, integrated system with reasonable speed.

An important part of this strategy will be to strike a balance between a total reworking of the HIS development work that has been done so far, and simultaneously assuring that all the systems pieces are conceptually and practically meshed. While the team recognizes that the system developed to date has both supporters and opponents in the MOH, we also feel that to completely throw out "the Zacapa system" would be disheartening and unsettling to those who have worked so hard to develop, test, and use it -- including those who have found that it works better for them than what previously existed. Objectively, it would waste time and effort, and serve as an unattractive example of "donor frivolity," as well as unwillingness to mutually learn from one another's experience and to subordinate toward the shared objective of healthy children and mothers. Substantively, to start from scratch would be to ignore what has evolved and proven functional.

#### a. Methodological and institutional integration

While the ultimate goal of H/MIS development is a fully integrated system which will eventually subsume all other parallel, unified management components, the immediate MOH priority is to integrate those pieces of the H/MIS which most directly relate to Maternal-Child Health/Child Survival, in conjunction with Disease Surveillance. The H/MIS would involve all three levels of care -- primary, secondary, and tertiary -- from national teaching hospitals to the community, as users and providers of data. The next step would be to achieve linkage with major private-sector providers, e.g., the National Social Security Institute (IGSS). Subsequent steps would gradually incorporate: drug logistics, human resources, financial management, and other material resources (supplies, vehicles, maintenance).

The two major pieces that come to figure here are the Sistema de Vigilancia Nutricional and the Sistema Unico de Supervision. Both offer important experience and perspectives which can enrich the national H/MIS, reorient it toward user and provider concerns at each level of the system, and thereby "correct" the tradition of centralized data collection and utilization.

Nutritional surveillance/growth monitoring as an integrated part of the information system has been tried with apparent success in Progreso, with planned extension and further testing in Santa Rosa and

Chimaltonango in the remainder of the year. Nevertheless, the incorporation of that system into the entire national H/MIS cannot be taken on lightly, nor will it be easy.

Nutritional surveillance and growth monitoring are not the same thing, although they may overlap. Each has somewhat different objectives and implications. At the same time, nutritional surveillance and growth monitoring are not illogical accompaniments to channelling, especially once full vaccination coverage is achieved, assuming adequate human and logistic resources to carry out channelling in the first place.

A careful evaluation of the Progreso experience should be an early element in the process of H/MIS unification, most usefully in conjunction with some solid technical input, both short- and longer-term, from individuals in the subregion and outside it, who have had some real, hands-on field experience with both methodologies. Guatemala has simply not had enough field experience with either to be prepared to make the necessary judgments about the relative merits and practicality of either methodology and how they can be integrated or serve as the base for the national H/MIS. It is important to add here that the question is not yet one of operations research: Progreso needs to be analyzed, that learning digested, and preliminary decisions made on appropriate next steps, utilizing the experience of those who have used both nutritional surveillance and growth monitoring and are healthily objective about their relative strengths and limitations. This does not have to be a long or very costly process, but it should be thoughtful and very much a part of the systems analysis that must precede MOH commitment to an H/MIS system which will be tested nationwide.

The Sistema Unico de Supervision (see Annex A.3) is young and relatively untried. However, it was developed through a rather arduous process of decentralized, incremental consensus-building and offers a promising first cut at data-gathering, target-setting, and achievement assessment at all levels of the system. Its formats are still not fully developed; while this means there is really nothing substantial or long-lived to evaluate for purposes of system and instrument design, it also means that little is carved in stone or deeply embedded in provider habits, so that the system is still comfortably permeable to change. Informal discussions should be held by systems analysts and designers with those at each normative and operative level who have had made some initial attempts at using the new system. These individuals should, in turn, be involved in subsequent systems redesign and testing.

A final observation needs to be made here: for purposes of H/MIS system analysis, conceptualization, design, testing, and application, it is extremely counterproductive to think of: 1) health and management information as separate, unrelated universes of thought and purpose and: 2) monitoring, supervision, and evaluation as somehow unrelated, theoretically or practically. A fairly simple expression of this is the following: at the most basic level of the system (health promoter and the auxiliary nurse), it is impossible for either to do jobs well if the absence of some basic health information (what is going on in terms of mortality and morbidity in my area of responsibility, has

this changed, and in what way and kind?); management information (what in the delivery system of which I am a part is affecting this change, negatively or positively?); monitoring information (what is going on now and how often does it happen to what extent?); and evaluation information (given the fact that evaluation basically asks about effectiveness and, sometimes, impact, why has what has happened, happened and what can we do about it at my level?). In this context, it is useful to consider the fact that, in a system where incentives to health workers are constrained, information can serve as a very powerful incentive toward commitment and quality work. Even in a situation of limited goods, not everyone works for material rewards: most people, in fact, can be motivated by knowing how well they are doing in their life and work. If they fall short of their targets (assuming those are realistic), they will often try to do better; if they achieve or surpass them, they feel terrific and most often want to sustain productive effort.

b. Testing procedure, timing, and sequencing

Even if the decision were made to bypass the systems analysis and integration activities discussed above, it would be foolhardy to launch "the Zacapa system" nationwide, as is, without further testing. Early in the team review of the H/MIS situation, the team's preliminary conclusion was that "Beta-testing" be carried out in three to four Health Areas, using the procedures described below. This was proposed to the MOH, which rejected those geographical limitations as something that would just produce another pilot project. The MOH preference was to carry out testing nationwide, with ongoing evaluation at each level, according to a tightly-phased sequence. This would probably work for the MCH and Epidemiological Surveillance components, with a less arduous pace for development of information systems for other management components, e.g., logistics.

We would suggest that selection of Health Areas for the very earliest testing follow a few empirical criteria:

- The presence in a Health Area of a Chief and a team which would really be interested in trying this new hybrid system.
- Avoidance of Health Areas where there might be exasperation at having to learn and use yet another set of forms. This argues for "virgin" Areas as places to start, saving areas where there might be resistance to the time when the system is more developed. (At the same time, in no area is the system fully in place. Even in Zacapa, the system is in place in only 3 districts and, even there, only 8 of the 14 forms are in use.)
- Areas where Nutrition Surveillance is going on, e.g., Progreso, followed by Santa Rosa and Chimaltenango, perhaps.
- Areas closer to the Capital, so that more regular attention could be given to how things are going. A very remote site should also be included, to judge the feasibility of the approach when central oversight is constrained.

Application of a Beta-test is rather standard procedure in information system development. In the Guatemalan context, it would work roughly as follows. Health Areas, each of which have distinct needs, operational criteria, and health care opportunities would be asked to implement a given system, in this case, the integrated system revised in the context of the experience and needs of the Sistema de Vigilancia Nutricional and the Sistema Unico de Supervision. This would then be taken to the field in its entirety, introduced to users in a way that would encourage its implementation, and then left totally in their hands for application and evaluation.

The users would be then be encouraged to:

- o experiment with the system for at least one full reporting cycle (3-6 months)
- o evaluate it against their needs and criteria
- o view it as an opportunity to make an information system work for them and for their colleagues in other departments
- o be demanding
- o suggest revisions in format, style, procedures, and
- o recommend deletions or additions.

During this early stage, forms revisions and data gathered should be reviewed at every level of the MOH, separately and in conjunction with other levels and among Areas. It will not be enough to just recount experience or react to the forms. The data resulting from use of the forms should also be fully computer programmed and processed to see, among other things, how well the forms work for data entry; how much time is takes to enter and process a full cycle of forms; how quickly feedback and analysis can occur at the central and operational levels; how many human resources are needed to do all this; how adequate the existing hardware and software are for the task and what is needed in addition (although much of this assessment will have occurred a priori so that procurement can occur); and how much it all costs.

Users would be vigorously encouraged to be ruthlessly selective in deciding what health information has produced indicators they perceive as essential. This is critical, since one of the things that must also be done is ascertain the cost of implementing and maintaining a revised system. System costs are directly linked to the complexity of the system and the volume of data gathered and analyzed; as the essential becomes more and more precisely defined, system costs go down correspondingly.

During this first stage of testing, a first cut will have to be taken, as closely as possible, at what the fixed and recurrent costs of the revised system will be. Real field costs and time estimates will be needed to fully understand the resources required to revise the information system. These estimates should reflect time and costs for personnel orientation and training; implementation, utilization and

maintenance, plus costs (losses) in compatible data that will likely occur during transition activities and upon full implementation. In other words, a fairly good preliminary estimate, to be refined after the testing is completed, needs to be made of: what it will cost to change the system, to use it well, and to maintain it.

Health workers who put the system to this rigorous test must be told at the very outset that everything that they request may not be possible. This is especially important if the ultimate system differs appreciably from what one or more Area Health teams recommends. Well-intentioned health professionals can and will have different observations, criteria, and suggestions. Not everyone is going to see their ideas implemented, and field-test personnel will need to understand how compromise may be needed among differing evaluations.

The first stage will likely take 1-3 months of initial planning, 3-6 months of field-testing, and a similar amount of review and revision time. The results of the tests will then need to be returned to each participating Health Area who would be asked for specific suggestions on how to train field workers in the new information system. They have, after all, spent the previous 3-6 months working with the basic forms and procedures and will have invaluable insights and experience that should be shared as widely as possible. While such a democratic process -- that used, incidentally, in the development of the Sistema Unico de Supervision -- has been described as somewhat chaotic (an "olla de grillos," commented one observer), it appears to be satisfying and reassuring to most individuals in the MOH who participated in that process.

Once the field-testing and revisions have been completed, a critical decision will have to be made. System conversions typically occur as either a "parallel changeover," or a "one-for-one changeover." A parallel changeover involves maintaining the original system and the new system until the latter is fully installed and functional. A "one-for-one changeover" calls for a simultaneous stop of the original system and a start of the new one. Given the Guatemalan experience and context and given the complexity, a parallel changeover will likely be the most desirable. A parallel changeover, while adding short-term costs, also reduces the potential risks and long-term costs of a "one-for-one changeover" which can accrue when the new system temporarily fails, as it sometimes does.

It goes without saying that, in implementing changeover, training and orientation will be critical (see Annex A.3 for analyses of training and supervision issues). Adequate budget should be included for this activity, not just for startup training but for frequent retraining; obviously, there should also be adequate support for the supervision activities which will support and be supported by the H/MIS. An central concept here should be "cross-training;" that is, selected individuals from other divisions or units -- most particularly, from the Supervision and Evaluation staff, from the Nutrition staff involved in the Nutrition Surveillance activity, MCH, and training and health education staff. The basic concept here is that the H/MIS is fed by many activities and many management functions are nurtured in turn by that system. Policy-makers, program planners, administrators,

supervisors, health educators, message-designers, and epidemiologists all depend (or should depend) on the H/MIS to do their jobs; while all of these do not require the same levels of technical competence, all should understand the workings of the H/MIS, its requirements, and its benefits for identification and achievement of their objectives.

Once the system is functioning, a follow-up review should be conducted to evaluate and fine-tune the HIS. This review should determine:

- o where the system has been correctly implemented and where it has not
- o what vestiges, if any, of the old system are being retained, and what, if anything, should be (can be) done to correct the situation
- o what should be done to improve the system to make it more effective and efficient.

When the system is fully in place and operational, a comprehensive system documentation package should be written, so that anyone approaching the system to use it at any level or point will be able to understand with appropriate ease, how it works. This is crucial in the maintenance of a system that may be expected to experience high rates of administrative turnover.

Once the H/MIS conversions are defined and in process, it will be possible for the MOH management and information team to address the development of parallel, unified information subsystems for personnel, finance, logistics and inventory, in the order which seems most appropriate. Flexibility within and between components is essential and should be possible if each information area is designed with the idea that change is inevitable.

### C. Computer Center Strengthening

To provide the backbone for this enterprise, AID will have to engage in institution-strengthening through a combination of support for: technology upgrading, technical cooperation, development of appropriate procurement strategies, training, and a miscellany of other supportive actions. This should include collaboration with other donors and institutions involved in data collection and H/MIS systems development in the subregion. The strengthening would focus, but not be limited to, the development of a fully functional and efficient Computer Center in the Information Unit. This would include but, again, not be limited to the activities listed below.

#### 1. Hardware

- o RAM upgrades should be purchased and installed to allow machines to function efficiently and use advanced software packages requiring extensive memory.

- o Uninterruptible power supply units should be purchased to serve all computer units within the Center. This installation should include verification of the appropriateness and quality of the Center's electrical wiring and outlets.
- o Math co-processors should be purchased and installed in all computers which will be using software packages that take advantage of the co-processors' speed.
- o A true, functional computer network should be created in the Computer Center. This network should include a dedicated file server and appropriate network hardware and software.
- o As soon as the basic system is firm, it should be carefully decentralized by purchasing microcomputers (supportable by battery backup), dot matrix printers, software, disks, and supplies for key public hospitals and Health Areas. A phenomenal amount of data is currently collected and hand-processed in the larger facilities and areas. Since their ability of these levels to respond to local health needs often depends on early awareness of changes in health indicators, it will be crucial to develop capability at the Area level in processing, analysis, and data applications. This should occur in Phase II of H/MIS development.

## 2. Software

- o Fully documented software packages should be provided. If the necessary packages are not available in Spanish, budget should be provided for their translation and reproduction, in durable, accessible format and sufficient numbers of copies. In addition to the software that it now owns, the Center could benefit from fully documented programs that:
  - allow file searches, maintenance, and recovery
  - optimize disk access speed and storage
  - allow data files, graphs, and tables to be printed out sideways.

## 3. Maintenance and Procurement

- o An adequate maintenance budget should be included.
- o A data security system review should be conducted. This review should identify points of exposure, risks, and areas/techniques for critical control.

- o A records retention system should be developed which would include a comprehensive records inventory and systematic storage procedure that:
  - selectively archives raw data
  - allows easy records recovery
  - provides security for vital health forms.
  
- o The system should also include a predefined records retention schedule. This would dispose of old forms and reports according to a carefully developed plan, in accordance with MOH and national health information priorities and needs.
  
- o Local, private-sector vendors should be used to the utmost, to provide computer hardware, software, training, and maintenance. The USAID should do everything possible to procure locally. This should not be difficult since both equipment and software will be US-made.
  
- o Using local vendors to supply and maintain equipment and train MOH personnel, generates several positive byproducts:
  - First, procurement time should be expedited. This puts the USAID in the position of being responsive and also gets the hardware into place and operators trained in time to test the data-processing aspects of the revised, integrated system.
  
  - Second, this will establish a local vendor/user relationship which will make it possible for the Ministry to call on local support when technical problems arise or short-term emergency loans or equipment replacements are needed. This will assure an ongoing, locally-available maintenance and trouble-shooting capability, crucial for effective, sustained functioning of the MOH system.
  
  - Third, this approach responds to the AID mandate to involve the private sector as much as possible in development activities, since it promotes growth of a local computer service industry.
  
- o There are numerous private companies that sell, maintain, and offer training in support of IBM equipment. These include:
  - CDS (Control Data Systems)/Criterion
  - Abimitio
  - Omega
  - Tecnica en Computacion.
  
- Other local vendors also sell, maintain, and offer training for US-made equipment (e.g., Compaq, Tandy). These include:
  - Abba
  - Selcom.
  
- IBM offers also offers local training for microcomputer users.

#### 4. Training

- o Finally, it will be essential to provide training for IU personnel not just in utilization of the new hardware but in alternative ways of using computer hardware in general, in new software packages and applications, and in techniques for analyzing health and management data and presenting results. There is little use now of advanced data analysis procedures and alternative presentation techniques such as comparative indices, graphics, etc., are not used at all. Computer Center personnel have requested short courses in operating systems (MS-DOS, XENIX), and languages (PASCAL, COBOL). This sort of request should be honored, yet thought should be given to a mechanism for retaining such individuals in the MOH system so that training investment is not lost.
- o The ultimate goal is development of an IU team composed of trained information, system, and computer specialists. Few current employees have formal training. Short courses and scholarships of varying durations should be offered to professionalize the IU and add stability to its management. Again, thought should be given to a mechanism for retaining trained staff, especially those given longer-term training.
- o AID should also assure that appropriate contacts and notifications are made with the National Computation Commission in the Ministry of Public Finance. This is a step that some previous donor agencies have avoided. Not registering computer resources that are donated to the MOH, can create problems in securing personnel positions to fully utilize donated computer equipment.

#### E. Technical Assistance

In order that all these activities be expeditiously realized, we feel that both the MOH and the USAID will require technical and managerial assistance and support. The needs of both will no longer be satisfied by short-term technical assistance and personal services contracts, if the MOH and the USAID are serious about developing a solid, responsive, respectable, and technologically appropriate H/MIS which is responsive to MOH and national priorities. To continue with such arrangements would be to perpetuate a piecemeal, erratic, "bandaid" approach to systems development which serves noone's purposes and excessively burdens already overburdened health deliverers. A good H/MIS should be a tool, not a weight.

This assistance should follow the directions suggested in the MOH's Proyecto de Reestructuración. The proposed "organigrama" for the restructured IU indicates two principal departments, Computo ("Computation") and Información del Sector Salud (Health Information). The suggestion has been made to the MOH that technical cooperation be provided to each of these units. The support to Computo would be an individual with formal training in information systems and practical experience in system development, implementation and reviews. S/he

should have particularly well-developed skills in hardware configurations and wide familiarity with the range of suitable software packages.

The support to the Health Information Department would have particular skills in the technical substance of health information systems, especially with regard to Maternal-Child Health/Child Survival and related management information systems. This person should have a solid "bottom-up" perspective; this simply means that s/he should have a good understanding not only of standard, upper-level mortality and morbidity indicators but of the basic, minimal set of health knowledge and behaviors desired at the household and community level. This individual should be knowledgeable about fundamental management issues and related monitoring and supervision needs. A key dimension of this role will be the systemic integration with the Sistema Unico de Supervision and the Sistema de Vigilancia Nutricional.

Both these individuals should have experience in international health and functional Spanish-language capability, and both should be conversant with or have good networks to the array of training options in computer and H/MIS skills available to their MOH counterparts. They should also be prepared themselves to carry out on-site training in their areas of expertise. Finally, both should be sensitive to the culture in which they work and to the political dimensions not only of that culture but of information in general.

CURRICULUM VITAE

DATOS PERSONALES

NOMBRE COMPLETO.....: Felipe Arturo Palomo Maldonado  
 NOMBRE USUAL.....: Arturo Palomo  
 FECHA DE NACIMIENTO.....: 19 de Noviembre de 1957  
 NACIONALIDAD.....: Guatemalteco  
 ESTADO CIVIL.....: Casado  
 CEDULA DE VECINDAD.....: A-1 548,039  
 DIRECCION PARA NOTIFICACIONES: 10a. Avenida 18-21, z. 12, Guatemala  
 TELEFONO PARA NOTIFICACIONES.: 48-11-34

ESTUDIOS REALIZADOS

PRIMARIA.....: Colegio Jardin de las Rosas, Guatemala  
 SECUNDARIA.....: Inst. Leonidas Mencos, Chimaltenango  
 MEDIA.....: Colegio Evang. La Patria, Guatemala  
 SUPERIOR.....: Escuela de Ingenieria, U.M.G.  
 Facultad de Ingenieria, U.S.A.C.  
 TITULO OBTENIDO.....: MAESTRO DE EDUCACION PRIMARIA URBANA

OTROS ESTUDIOS

Mar '82-Abr '82.....: Ingles II Basico, I.G.A.  
 Ago '82-Abr '83.....: Ingles Tecnico I, II, III, I.E.A.

EXPERIENCIA LABORAL

ENTIDAD	FECHAS	PUESTOS
GUATEL	Sep'77-Dic'79	Programador de Aplicaciones Seccion de Analisis y Programacion Centro de Procesamiento de Datos.
INCACYF	Ene'80-Mar'80	Instructor de cursos por Video (VAI = Video Assisted Instruction) "Introduccion al Procesamiento de Datos" "R. P. G. II" "Organizacion de Archivos y Metodos de Acceso" "Tecnicas de Analisis de Sistemas.
C.D.S.	Ene'80-Jul'80	Instructor de Cursos SYSTEM/34 "R. P. G. II" "COBOL" Centro Educacional
E.E.G.S.A.	Abr'80-Abr'81 May'81-Ago'81 Sep'81-Dic'82 Ene'83-Dic'83 Ene'84-Abr'84 Ocasionalmente	Programador de Aplicaciones II Programador de Aplicaciones I Analista de Sistemas Programador de Sistemas (Systemm Programmer) Administrador de Sistemas (System Administrator) Supervisor interino Seccion de Analisis y Programacion Centro de Procesamiento de Datos.
U.F.M.	Jul'83-Dic'83	Asesoria Tecnica en la instalacion del Sistema Operativo "VM/SP" en una IBM-370/135
M.F.P./B.I.D.	May'84-Jul'84	Asesor-Analista Coordinador de Grupo " Proyecto BID-CIAT/RTU-CC "
M.F.P./D.P.E.D.	Ago'84-Jul'85	Director del Departamento de Procesamiento Electronico de Datos
M.F.P./B.I.D.	Ago'85-Dic'85	Asesor-Analista Impuesto Sobre Inmuebles (I.S.I.) Proyecto " BID-CIAT/RTU-CC "

E S T U D I O S T E C N I Ç O S

Nu-E-L-Modalidad.....	-Fecha.-	N o m b r e	d e l	c u r s o.....
01-1-A-I/J. Calvo	-Mar'77-	Introduccion	al	Procesamiento de Datos
02-1-A-I/J. Calvo	-Jul'77-	Programacion	en	Lenguaje R. P. G. I
03-1-A-I/C. Perez	-Ago'77-	Programacion	en	Lenguaje R. P. G. II
04-1-A-I/M. Lopez	-Nov'77-	Programacion	en	Lenguaje C O B O L
05-1-A-I/R. Giron	-Mar'78-	Programacion	en	Lenguaje FORTRAN IV
06-2-B-I/G. Kent	-Nov'77-	Programacion	en	Lenguaje M A R K IV
07-2-C-I/J. Westrick	-Mar'78-	Minicomm - O.L.P.S.	(Online Programming and Library Maintenance)	
08-2-D-I/J. Ordoñez	-Abr'78-	V. S. A. M. / A. M. S.	(Virtual Storage Access Method / Access Method Services)	
09-2-D-Autoestudio	-May'78-	Fundamentos	de	los Ordenadores
10-2-D-Autoestudio	-Jun'78-	Tecnicas	de	Diagramacion
11-2-D-Autoestudio	-Ago'78-	Introduccion	al	Sistema/360
12-2-C-I/R. de Bucaro	-May'78-	Estandares de Documentacion /	Tecnica de	Diagramacion "H. I. P. O." (Hierarchical Input Processing Output)
13-2-C-I/J. Westrick	-Jun'78-	Conceptos Basicos	de	M I N I C O M M
14-2-C-I/L. Lima	-Jul'78-	Introduccion	al	Sistema D O S / V S
15-2-C-I/L. Lima	-Ago'78-	Curso Basico de	SYSTEM PROGRAMMER	D O S / V S
16-2-C-I/L. Valdez	-Sep'78-	Programacion	en	Lenguaje M A R K I V
17-2-B-I/J. Westrick	-Ene'79-	Programacion	en	Lenguaje M A R K I V
18-2-C-I/A. Flores	-May'79-	Programacion	en	Lenguaje ANS FULL COBOL
19-2-C-I/J. Westrick	-Nov'79-	M I N I C O M M / O. L. P. S.	avanzado	
20-2-E-I/H. Santamaria	-Oct'79-	Analisis	de	Sistemas
21-3-F-I/B. Pineda	-Feb'79-	Programacion	en	Lenguaje B A S I C
22-1-G-Autoestudio	-Ene'80-	Organizacion de Archivos y	Metodos de	Acceso / F.O.A.M. (File Organization and Access Method)
23-1-G-Autoestudio	-Mar'80-	Tecnicas	en	Analisis de Sistemas
24-4-H-I/(varios)	-Abr'81-	Diseno	Logico	de Programas
25-4-D-I/F. Juarez	-Jul'82-	Fundamentals of	System Administration	
26-4-D-I/E. Martinez	-Nov'83-	CICS/VS (Customer Information Control System)	Installation and Maintenance	
27-1-D-Autoestudio	-Dic'82-	Programacion	en	Lenguaje C O B O L
28-4-4-I. S. P.	-Ene'83-	Introduccion	a	la I B M - 4300 y los Recursos del D O S / V S E
29-4-4-I. S. P.	-Ene'83-	Command Level Coding	for	CICS (text)
30-4-4-I. S. P.	-Feb'83-	Command Level Coding	for	CICS (C O B O L Exercises)

128

E S T U D I O S T E C N I C O S

Nu-E-L-Modalidad	-Fecha -Nombre del curso
31-4-4-I. S. P.	-Feb'83-Macro Level Coding for CICS (text)
32-4-4-I. S. P.	-Mar'83-Macro Level Coding for CICS. (C O B O L Exercises)
33-4-4-I. S. P.	-Mar'83-C I C S / V S Basic Architecture
34-4-4-I. S. P.	-May'83-I C C F / V S E (Interactive Computing and Control Facility)
35-4-4-I. S. P.	-May'83-VSE/VSAM Using Access Method Services
36-4-4-I. S. P.	-May'83-V. S. A. M. Coding in C O B O L
37-4-4-I. S. P.	-Jun'83-DOS/VS-SORT/MERGE and DOS/VSE POWER
38-4-4-I. S. P.	-Jun'83-Using System I P O / E (D O S / V S E)
39-4-4-I. S. P.	-Jul'83-V.S.E. System Control
40-4-4-I. S. P.	-Ago'83-Communications System Concepts
41-4-4-I. S. P.	-Ago'83-System Network Architecture (S.N.A.) Concepts for Programmers
42-4-4-I. S. P.	-Sep'83-System Network Architecture (S.N.A.) Enviroment-Logical Data Flow
43-4-4-I. S. P.	-Oct'83-VM/370. Concepts of a Virtual Machine
44-4-4-I. S. P.	-Oct'83-VM/370. Operating the Virtual Machine Console
45-4-4-I. S. P.	-Nov'83-VM/370. Operations. CMS (Conversational Monitor System) for Operators
46-4-4-I. S. P.	-Nov'83-VM/370. Operations. CP (Control Program Operations
47-4-4-I. S. P.	-Dic'83-VM/370. Operating DOS/VS Under VM/370
48-4-4-I. S. P.	-Ene'84-Using C.M.S.
49-4-4-I. S. P.	-Feb'84-Advanced C.M.S. Topics
50-5-E-I/M. Coburn	-May'84-Conceptos Operaciones de Procesamiento de Datos
51-4-I-I/C. Simo	-Mar'84-Metodologia para la Planeacion de Sistemas de Informacion / B.S.P. (Bussiness System Planning)
52-5-E-I/V. Youkteng	-Nov'84 Seguridad y Control de Sistemas Computacionales
53-5-E-I/(varios)	-Ago'84-Usó y Aplicaciones del Banco de Datos, los indicadores Economicos de corto plazo y el "Modelo Econometrico" de Guatemala, desarrollado por S I E C A
54-5-J-I/E. Mertins	-Ene'85-M A N T I S (lenguaje de programacion)
55-5-J-I/R. Valladares	-Mar'85-Cross System Product C.S.P. (lenguaje de programacion)
56-5-J-I/J. Garcia	-Abr'85-C.M.S./V.M.
57-5-I-I/(varios)	-May'85-Usó y aplicaciones SYSTEM/36
58-5-J-I/J. Garcia	-Oct'85-VSE/S.D.F. (Screen Definition Facility)
59-5-D-I/(varios)	-Feb'86-Seminario SYSTEM 36/PC IBM

O T R O S   C O N O C I M I E N T O S

SISTEMAS OPERATIVOS...: DOS/VS, DOS/VSE, VM/SP, VM/370, VM/AS, CP/M, MS-DOS, XENIX, SERIX.

BASE DE DATOS (DBMS)...: DL/1, SQL, WADLL, TOTAL, LOTUS-123, DBASEII, DBASEIII.

PRODUCTOS DE SOFTWARE.: VSAM, DMS, MANTIS, CSP, CMS, RSCS, BMS, QBE, APL/DI, FRAMEWORK, WORDSTAR, DESKMATE

EQUIPOS.....: IBM Sistema/3, 370/115, 370/135, 370/138, 4331, 4341, S/34, S/36, S/36/PC, PC-Jr, PC-AT. COMPAQ/plus. RADIO SHACK Tandy/1000, TRS-80, Tandy/1200. HEWLETT-PACKARD 100 WANG 25, 100. APPLE IIe

R E F E R E N C I A S   P E R S O N A L E S

N O M B R E	C A R G O	E M P R E S A	TELEFONO
Ing. Armando Flores	Consultor	Westrick y Asociados	31-94-30
Sr. Mario Azmitia	System Admin.	ROCAP / AID	6-63-52
Sr. Luis Valdez	Director	Depto. Proc. Datos	71-04-02
Sr. Roberto Rios	Gerente	Tribunal Supremo Elect.	
Lic. Jorge Alvarez	Gerente	Westrick y Asociados	31-94-30
Lic. Fabian Pira A.	Sub-Gerente	Depto. Proc. Datos	0310-211
		DURALITA	
		Banco de Guatemala	53-40-53

R E F E R E N C I A S   L A B O R A L E S

N O M B R E	C A R G O	E M P R E S A	TELEFONO
Sr. Manuel Valdez	Gerente Admtvo.	E.E.G.S.A.	53-61-91
Sr. Roberto Mena G.	Jefe D.P.D.	E.E.G.S.A.	51-77-17
Ing. Jorge Garcia Z.	Ingeniero Sist.	I. B. M.	31-58-59
Sr. Carlos Ruiz A.	Gerente	C.D.S.	53-66-64
Ing. Francisco Viau	Jefe Depto.	Ventas y Servicio	
Lic. Antonio Blanco G.	Viceministro	I. B. M.	31-58-59
		Ministerio Economia	80-4-56

ABREVIATURAS DE LA DESCRIPCION DE CURSOS

E (Entidad proporciono)  
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- 1 = Iniciativa propia
- 2 = GUATEL
- 3 = Estudio Universitario
- 4 = EEGSA
- 5 = MFP

Modalidad  
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- I/nombre = Con Instructor/Nombre Instruc.
- I.S.P. = Independent Study Program
- Autoestudio=Estudio Dirigido con Manuales

Lugar (donde fue impartido)  
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- A = IIEC
- B = Hotel Ritz
- C = Unidad de Entrenamiento
- D = Educacional IBM
- E = CAP
- F = UMG
- G = INCACYF
- H = LANEK, Mexico, D. F.
- I = Hotel Camino Real
- J = DPED

A B R E V I A T U R A S U T I L I Z A D A S

- U.M.G. = Universidad Mariano Galvez
- U.S.A.C. = Universidad de San Carlos de Guatemala
- I.G.A. = Instituto Guatemalteco Americano
- I.E.A. = International English Academy
- GUATEL = Empresa Guatemalteca de Telecomunicaciones
- INCACYF = Instituto Centroamericano de Computacion y Finanzas
- C.D.S. = Control Data Systems
- E.E.G.S.A. = Empresa Electrica de Guatemala, S.A.
- U.F.M. = Universidad Francisco Marroquin
- M.F.P. = Ministerio de Finanzas Publicas
- B.I.D. = Banco Interamericano de Desarrollo
- C.I.A.T. = Centro Interamericano de Administradores Tributarios
- D.P.E.D. = Departamento de Procesamiento Electronico de Datos
- SIECA = Secretaria de Integracion Economica Centro Americana
- I.I.E.C. = Instituto Internacional para Estudio de Computadoras
- C.A.P. = Centro de Adiestramiento de Personal/ M.F.P.
- LANEK = Latin American Educational Centre

Guatemala, 09 de Mayo de 1986.



APPENDIX B IS ON GARY HEALD'S DISK AND IS LIST OF AID  
PROCUREMENT OF WHICH JORGE CHANGE HAS COPY. IT IS IN WORD PERFECT  
OR ASCI AND I CAN'T GET TO PRINT OUT EXCEPT CRAZY. HAVE ASKED GARY TO  
SEND ME CLEAN HARD COPY TO LILIANA IN GUATEMALA.

H/MIS FINAL

132

PROYECTO DE REESTRUCTURACION DE LA UNIDAD DE  
INFORMATICA DEL MINISTERIO DE SALUD PUBLICA Y  
ASISTENCIA SOCIAL

PRESENTACION:

El campo de información en salud ha sido de los más débiles y controversiales durante los últimos años para el Ministerio de Salud, lo cual se ha puesto de manifiesto en las reuniones técnicas de evaluación de los programas y en la elaboración de los diagnósticos de situación, identificándose como una de las áreas más críticas para coadyuvar el proceso de toma de decisiones.

Recientemente, en reunión de trabajo realizada por la Unidad de Supervisión y Evaluación con los diferentes Jefes de los Departamentos Técnico-Normativos y Jefes de Area, se evidenció que no existe un sistema único de información y la recopilación de ésta es inadecuada por exceso y mal calidad de los instrumentos utilizados.

Por otra parte, su naturaleza asistémica los ha hecho insuficientes para los propósitos de Planificación y Programación, considerando que estos procesos se realizan sin contar con una fuente de datos fidedignos que se base en la realidad existente en los niveles operativos.

De igual manera afecta a la Supervisión y Evaluación, debido a que la información recopilada no es útil para la retroalimentación del proceso de gestión y ejecución de actividades, dado su inoportuno procesamiento y ausencia de análisis, permitiendo que las medidas correctivas se hagan extemporáneas, además de no contar con indicadores y parámetros que faciliten la supervisión y evaluación a todo nivel.

A esto se suma que, en su afán de contar con excesiva información los programas o proyectos, o por exigencias de agencias internacionales, se tiende a elaborar cada vez más instrumentos de recolección de información, que hacen que el personal del nivel operativo acumule diversidad de ellos. Esta situación, da como resultado la duplicación de información y la incomprensión de la finalidad que tienen estos instrumentos por parte de quienes informan, convirtiendo esta función en una labor mecánica, descuidada e inexacta. Secundario a este aspecto tenemos ahora el problema que muchas áreas de salud no han enviado la información correspondiente al primero, segundo o tercer trimestre, lo cual obstaculiza el procesamiento oportuno de la información.

Otra situación que se ha hecho latente, es la falta de apoyo de los niveles superiores a la Unidad, para resolver los problemas de desfase o de incordinación interna, teniendo así que de la información ya recibida del año 1985 como de 1986 aún está procesándose, sin contar que una de las acciones importantes del proceso como es el análisis, no se ha efectuado.

Todo lo anterior se ha dejado sentir por las diferentes dependencias del Ministerio, quedando en evidencia que el sistema no cumple con su función, por lo que se hace impostergable fomentar el interés de las actuales autoridades hacia brindarle el apoyo necesario a la reestructuración de la Unidad de Informática y al desarrollo del sistema único de información que permita el cumplimiento del propósito y objetivo del sistema a cabalidad.

Por consiguiente el proyecto que se presenta plantea la solución de la solución de la problemática existente en el área de información en salud; identifica las actividades a realizarse y los recursos necesarios para su desarrollo.

De no implementarse este proyecto en el tiempo propuesto, se acrecentará el problema descrito y su solución será cada vez más compleja, difícil y costosa.

Artículo . . . . .

La Unidad de Informática de la Dirección Superior es la responsable de mantener actualizado y difundir el conocimiento sobre la situación de salud del país, a través del establecimiento de un sistema único de información en salud, que incluya indicadores de gestión y monitoría de programas, que permitan la toma de decisiones en forma objetiva y racional en los diferentes niveles de la estructura orgánica.

Artículo . . . . .

La Unidad de Informática depende directamente \_\_\_\_\_ está conformada por los siguientes departamentos y secciones que son:

1. Jefatura.
2. Departamento de Información del Sector Salud.
  - 2.1 Sección de Recepción, Control y Distribución.
  - 2.2 Sección de Codificación.
  - 2.3 Sección de Análisis.

- 3. Departamento de Cómputo
  - 3.1 Sección de Análisis y Programación
  - 3.2 Sección de Operación.
  - 3.3 Sección de Conversión de Datos.

Artículo . . . . .

La Jefatura de la Unidad de Informática es la responsable de preparar y presentar informes periódicos a las autoridades superiores, sobre la situación de salud del país.

Debe garantizar el funcionamiento del sistema de información vigente y proponer a las autoridades superiores los ajustes o modificaciones necesarios que permitan un adecuado funcionamiento. Asimismo, le corresponde dirigir, coordinar y supervisar las actividades de sus diferentes departamentos y regir la asesoría técnica que éstas presten a todo el sector salud.

Son funciones del Jefe de la Unidad:

- a) Establecer, organizar, dirigir y garantizar el funcionamiento del sistema de información del Ministerio.
- b) Proporcionar información oficial en salud al Ministerio, entidades del Estado y otras del sector salud.
- c) Velar por el cumplimiento de las leyes vigentes del Código y Reglamento de Salud en cuanto a informática se refiere.
- d) Servir de nexo entre el Ministerio de Salud y otras dependencias gubernamentales y no gubernamentales en aspectos de información en salud.
- e) Coordinar las funciones que se desarrollan entre el Departamento de Cómputo y el Departamento de Información del Sector Salud, a fin de garantizar la fluidez del proceso de la información.
- f) Definir y normar, en coordinación con las dependencias del Ministerio y Sector Salud, los instrumentos necesarios para el funcionamiento del sistema único de información del sector.

135

- g) Calificar y/o recomendar la adquisición o ampliación de equipo de cómputo (software y hardware), por compra o donativo, que se requieran dentro de las dependencias del Ministerio.
- h) Elaborar y enviar periódicamente los informes con los indicadores de gestión de los diferentes programas a los niveles que correspondan del Ministerio y del Sector Salud.
- i) Alaborar en conjunto con sus departamentos el plan mensual de actividades de la Unidad.

Artículo . . . . .

**FUNCIONES DEL DEPARTAMENTO DE INFORMACION DEL SECTOR SALUD**

- a) Es la dependencia técnica del Ministerio de Salud Pública y Asistencia Social responsable de recolectar, codificar, procesar, analizar, almacenar y difundir los datos provenientes de los diferentes niveles del Ministerio de Salud, para generar información confiable y oportuna, necesaria para la toma de decisiones en todos los niveles.
- b) Es la responsable de construir los indicadores definidos por las unidades técnico-normativas, requeridos para los procesos de planificación de actividades de salud que desarrolla el Ministerio.
- c) Es la responsable de presentar y distribuir el anuario estadístico a las diferentes dependencias del Ministerio.
- d) Debe participar en el análisis y evaluación de la ejecución de los programas, proporcionando la información requerida para tal efecto.
- e) Es la responsable de fijar los parámetros necesarios para la elaboración de los programas que se desarrollan en el Departamento de Cómputo, en base a las necesidades del Ministerio y sus usuarios.
- f) Debe participar en la creación y revisión de los instrumentos de recolección de información, que se deseen implementar en cualesquiera de los niveles administrativos y de atención, proponiendo a la Jefatura de la Unidad la aprobación de dichos instrumentos.
- g) Es la responsable de revisar y actualizar periódicamente el sistema vigente.

136

I. FUNCIONES DE LA SECCION DE RECEPCION, CONTROL Y DISTRIBUCION

- a) Es la encargada de recibir y registrar la información relacionada con salud proveniente de instituciones gubernamentales y no gubernamentales, controlar que ésta se encuentre completa, adecuadamente elaborada y actualizada.
- b) Es la responsable de devolver para su corrección la información que no llene los requisitos y reclamar la que se encuentre pendiente de recepción.
- c) Debe distribuir internamente la papelería para su codificación y tabulado a las diferentes secciones.
- d) Debe enviar los formularios del sistema de información vigente, a las dependencias y áreas de salud del país.
- e) Es la encargada de distribuir las publicaciones autorizadas a los niveles que corresponda.
- f) Es la responsable de la reproducción de materiales, de acuerdo con las necesidades del Ministerio, manteniendo un adecuado abastecimiento a todos los niveles.

II. FUNCIONES DE LA SECCION DE CODIFICACION

Es encargada de controlar la codificación de la información contenida en los diferentes instrumentos del sistema de información y codificarla cuando sea necesario.

III. FUNCIONES DE LA SECCION DE ANALISIS \*

- a) Es la responsable de analizar que la información de salida esté de acuerdo a los parámetros establecidos.
- b) Es la encargada de elaborar los parámetros necesarios para la construcción de indicadores y programas que se desarrollan en el Departamento de Cómputo.
- c) Es la responsable de efectuar la revisión analítica de los resultados, en conjunto con los responsable de cada programa.
- d) Es la encargada de elaborar el anuario estadístico y todas las publicaciones que salgan de esta Unidad.
- e) Debe participar en la elaboración de la memoria anual de labores del Ministerio de Salud Pública y Asistencia Social, proporcionando la in-

137

formación básica.

- f) Debe elaborar informes periódicos a la Jefatura de la Unidad para ser elevados a los niveles que correspondan del Ministerio y del Sector Salud, relacionados con los indicadores de gestión de los diferentes programas.
- g) Debe apoyar el desarrollo e implantación del sistema único de información a nivel nacional.

\* Esta sección deberá estar conformada por un equipo de profesionales con experiencia en salud pública.

Artículo . . . . .

**FUNCIONES DEL DEPARTAMENTO DE COMPUTO**

- a) Es el encargado de la recepción de la información proveniente de la Jefatura de la Unidad y del Departamento de Información del Sector Salud.
- b) Es el responsable de ejecutar los procedimientos necesarios para el procesamiento de los datos.
- c) Es el responsable de remitir los informes producidos a la Jefatura de la Unidad y al Departamento de Información del Sector Salud, según corresponda.
- d) Es el encargado de elaborar y proporcionar el mantenimiento respectivo a los programas de cómputo (software) para el procesamiento de la información, en base a los parámetros proporcionados por la Jefatura de la Unidad y el Departamento de Información del Sector Salud.
- e) Es el responsable de almacenar y resguardar los consolidados de la información mensual y anual, que permitan a la Jefatura de la Unidad y al Departamento de Información su uso periódico.
- f) Es el responsable de velar porque se proporcione el adecuado mantenimiento a los equipos de cómputo del Departamento (hardware).
- g) Es el responsable de aprobar los sistemas diseñados por la Sección de Análisis y Programación.
- h) Es el encargado de establecer los turnos del personal del Departamento de acuerdo a las necesidades del servicio.

- i) Es el encargado de asesorar a la Jefatura de la Unidad en el proceso de selección de equipo y programas de cómputo.

I FUNCIONES DE LA SECCION DE ANALISIS Y PROGRAMACION

- a) Es la encargada de analizar y diseñar los sistemas de acuerdo a los lineamientos indicados por la Jefatura de la Unidad y por el Departamento de Información del Sector Salud.
- b) Es la encargada de programar y probar los sistemas.
- c) Es la encargada de dar el mantenimiento necesario a los sistemas implementados.
- d) Es la encargada de elaborar los manuales, instructivos y la documentación de soporte.
- e) Es la encargada de asesorar a las demás secciones del Departamento de Cómputo y a los usuarios del sistema.

II FUNCIONES DE LA SECCION DE OPERACION

- a) Es la encargada ejecutar todos los procesos de los sistemas establecidos.
- b) Es la encargada de planificar los procedimientos de emergencia y recuperación de archivo.
- c) Es la encargada de planificar y distribuir el tiempo de computador de acuerdo a los subsistemas establecidos y bitácora de operaciones.

III FUNCIONES DE LA SECCION DE CONVERSION DE DATOS

- a) Es la encargada de ingresar los datos al sistema.
- b) Es la responsable de informar periódicamente al Jefe del Departamento la producción de conversión de datos alcanzados de acuerdo a períodos requeridos.
- c) Es la responsable de mantener el inventario actualizado de la producción.

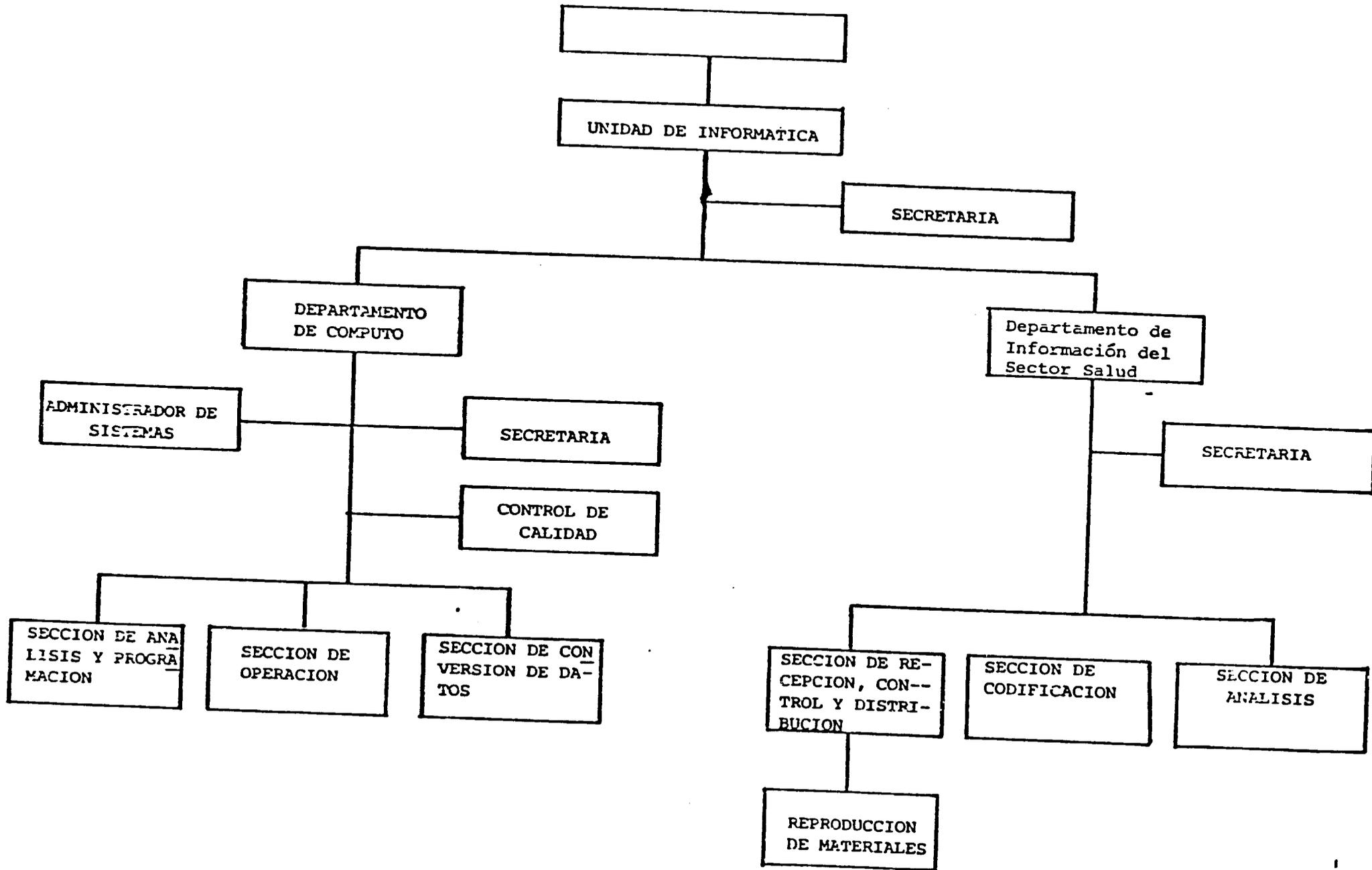
A. OFICINA DE CONTROL DE CALIDAD

Es la encargada de controlar la calidad de la información de entrada y salida del Departamento.

B. OFICINA DE ADMINISTRADOR DEL SISTEMA

- a) Es la encargada de optimizar los recursos y funcionamiento del sistema.
- b) Es la responsable de mantener actualizados los aspectos técnicos de los procesos de sistemas de cómputo.
- c) Es la encargada de asesorar a la Jefatura de la Unidad y del Departamento en el proceso de selección de equipos y programas de cómputos.

ORGANIGRAMA DE LA UNIDAD DE INFORMATICA



147

PRINCIPALES PROBLEMAS QUE AFECTAN EL FUNCIONAMIENTO DEL SISTEMA DE INFORMACION DEL MINISTERIO DE SALUD PUBLICA Y ASISTENCIA SOCIAL.-

Los principales problemas que se han podido identificar en base al conocimiento que se tiene de la situación, son los siguientes:

- 1) Carencia de un sistema único de información, que ha permitido la creación desorganizada de instrumentos de recolección de datos.
- 2) Los sistemas vigentes no responden a las necesidades de información del Ministerio.
- 3) La actual estructura orgánica y funcional de la Unidad de Informática, impide el desarrollo e implementación de un sistema único de información.
- 4) A nivel local no se utiliza adecuadamente la información existente, limitando el proceso de toma de decisiones en forma objetiva.
- 5) La centralización excesiva del procesamiento y análisis de la información del Ministerio, no permite una adecuada fluidez de la información, lo que la hace inoperante.

En virtud de los problemas señalados anteriormente se plantean los siguientes propósitos y objetivos:

PROPOSITO:

Mejorar el conocimiento sobre la situación de salud del país, a través del establecimiento de indicadores de gestión y monitoría de programas en los diferentes niveles de la estructura de servicios, que permitan la toma de decisiones en forma objetiva y racional.

OBJETIVOS GENERALES:

- 1) Diseñar e implementar un sistema único de información del Ministerio que satisfaga las necesidades de información del sector.
- 2) Reestructurar la Unidad de Informática para que responda como entidad rectora del sistema único de información del Ministerio.
- 3) Descentralizar el procesamiento y análisis de la información que permita su uso por niveles.

142

O P E R A C I O N A L E S :

INMEDIATOS ( Marzo 1987 )

- 1) Completar el procesamiento de la información del año 1986, hasta su divulgación técnicamente analizada.
- 2) Reestructurar la Unidad de Informática para implementar y desarrollar el sistema único de información.
- 3) Dotar a la Unidad de Informática de los recursos necesarios para cumplir con su propósito.
- 4) Revisar e identificar los indicadores del Sistema de Información, con la participación de los departamentos técnico-normativos y administrativos y personal del nivel operativo.

A C O R T O P L A Z O ( 1987 )

- 1) Diseño del sistema único de información.
- 2) Capacitación al personal involucrado en la aplicación del sistema.
- 3) Elaboración y distribución de los manuales e instructivos del sistema único de información.
- 4) Implementar el sistema único de información en toda la República.
- 5) Descentralizar el proceso de codificación del sistema único de información a nivel de Jefatura de Area y de hospitales.
- 6) Revisión, análisis y rediseño de los programas de cómputo.
- 7) Capacitación del personal del Departamento de Cómputo.

A M E D I A N O P L A Z O ( 1987 - 1990 )

- 1) Evaluación y ajuste del Sistema Unico de Información implantado a nivel nacional.
- 2) Consolidación del Sistema Unico de Información a nivel del Ministerio de Salud.
- 3) Establecer el Sistema Unico de Información del sector salud.

143

ACTIVIDADES	1986	1987		
	DICIEMBRE	ENERO	FEBRERO	MARZO
1. Elaborar el anuario estadístico de 1986.	*****	*****	*****	*****
2. Obtener la aprobación de las autoridades superiores de la propuesta de reestructuración presentada.	*****	*****		
3. Implementar la reestructuración aprobada.		*****	*****	*****
4. Dotar de los recursos requeridos a la Unidad de Informática para cumplir con los objetivos propuestos.		*****	*****	
5. Diseño de la metodología para la revisión del sistema.	*****			
5.1 Elaboración y distribución de la información básica a los participantes al taller.	*****			
5.2 Análisis de los sistemas existentes por los equipos técnicos de los departamentos y áreas de salud participantes y elaboración de sus propuestas.	*****			
5.3 Organización del taller de revisión.		*****		
5.4 Desarrollo del taller de revisión del sistema.		***		
5.5 Revisión de los resultados del taller.		*****		

144

ACTIVIDADES	1986	1987		
	DICIEMBRE	ENERO	FEBRERO	MARZO
6. Diseño inicial del sistema único de información.			*****	*****
7. Revisión inicial de los programas de cómputo.			*****	*****

145

## R E C U R S O S N E C E S A R I O S

Para el cumplimiento de las propuestas y objetivos señalados anteriormente en el plazo estipulado, la Unidad de Informática, requiere como condición necesaria la obtención de los siguientes recursos:

### H U M A N O S:

- 1 médico 8 horas con experiencia en salud pública para apoyo técnico a la Jefatura del Departamento de Información del Sector Salud.
- 1 médico 8 horas con experiencia en salud pública para la Sección de Análisis del Departamento de Información del Sector Salud.
- 1 Profesional o Técnico con experiencia en salud pública para la Sección de Análisis del Departamento de Información del Sector Salud.
- 1 Oficinista II de Secretaría del Departamento de Cómputo.
- 1 Oficinista I para control de calidad del Departamento de Cómputo.
- 1 Analista de Sistema para la Sección de Análisis y Programación del Departamento de Cómputo.
- 1 Operador de Computador III para la Sección de Operación del Departamento de Cómputo.
- 1 Supervisor de Equipo de diskettes para la Sección de Conversión de Datos del Departamento de Cómputo.
- 5 Operadores de Equipo de diskettes para la Sección de Conversión de Datos del Departamento de Cómputo.

### E Q U I P O:

El proceso de descentralización planteado requiere de la dotación de equipo de cómputo a nivel de áreas de salud que permitan procesar la información generada localmente, a fin de agilizar el flujo, disponibilidad y utilización de la información. Para conseguir el equipo necesario se elaborará un proyecto específico para ser presentado a las autoridades del Ministerio, para que por su medio se solicite el apoyo financiero a las agencias internacionales interesadas.

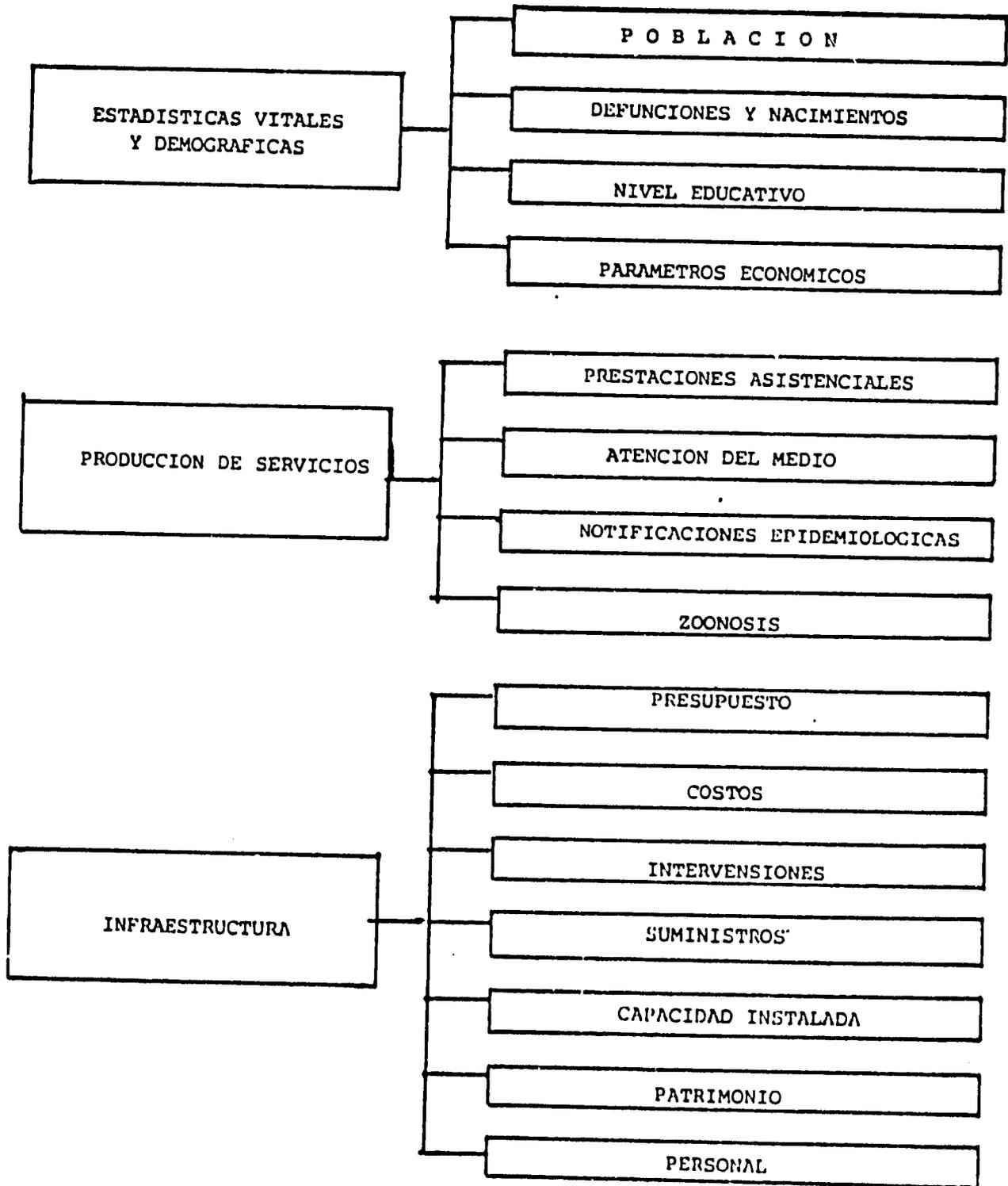
I N S U M O S:

- Cajas de papel forma contínua.
- Cajas de diskettes.
- Cintas impresoras.
- Cintas magnéticas.
- Cajas de stenciles electrónicos.
- Cajas de acetatos.
- Papel mimeógrafo y offset.
- Tinta para mimeógrafo y offset.

Se recomienda que un sistema único de información en salud debe estar conformado como mínimo de los siguientes sub-sistemas de información con sus respectivos módulos, los cuales le dan integralidad y funcionalidad al sistema.

SUBSISTEMAS:

M O D U L O S:



148

CARACTERISTICAS A CONSIDERAR PARA EL BUEN FUNCIONAMIENTO DE LA UNIDAD DE INFORMATICA:

La Unidad de Informática es responsable del funcionamiento de la información de todos los niveles del Ministerio de Salud Pública y Asistencia Social y del resultado de dicha información, por lo que la referida Unidad, debe reunir las siguientes características:

- a) Tener autonomía funcional, es decir no depender de ningun nivel intermedio, si no de un nivel decisivo (entendiéndose este por el Despacho del Vice-Ministerio y D.G.S.S.). Esto evitaría que se manipule la información por el nivel jerárquico inmediato en beneficio de su propio interés.
- b) Mantener una comunicación lo mas directa posible entre la Unidad de Informática y el nivel decisorio para evitar bloques o tergiversaciones por el nivel intermedio.
- c) Dado las funciones que cumple debe contar con el máximo apoyo de los niveles de decisión.
- d) Ser al menos susceptible a los cambios administrativos para garantizar la continuidad del sistema que se establezca.
- e) Situarse lo mas cerca de los usuarios operacionales.

La dependencia de un nivel intermedio puede ocasionar que en un momento dado se utilice la capacidad instalada en procesar prioritariamente información fuera del sistema establecido, en perjuicio del cumplimiento del propósito de la Unidad de Informática.

La Comisión estudio sus alternativas de dependencia que contempla elementos de juicio (ventajas y desventajas) a considerar,

La Comisión estudio sus alternativas de dependencia que, contempla elementos de juicio (ventajas y desventajas) a considerar.

NIVEL DE DEPENDENCIA VICE-MINISTERIO II (Técnico)

Ventajas:

- Se logra una comunicación mas directa con el nivel de decisión
- Se logra autonomía funcional.
- Si existe interes por respaldar el trabajo de la Unidad otro podría contar con el apoyo necesario del nivel de decisión.
- En mayor medida garantiza una respuesta mas facil y oportuna a los requerimientos del Sistema de Información, por la presión que se puede ejercer a través de la autoridad superior.

Desventajas:

- Se dictamina de los usuarios operacionales y de la misma Dirección - General.
- Está más sujeta a cambios administrativos por tener mayor influencia administrativa.
- Por las multiples funciones que cumple un Viceministerio puede dedicarle muy poco tiempo para darle el apoyo necesario en la resolución de los problemas de esta Unidad.
- Aprovechando el nivel que ocupa podría en un momento dado utilizar su capacidad operativa en sus propios intereses, perjudicando el de los usuarios.

NIVEL DE DEPENDENCIA UNIDAD SECTORIAL DE PLANIFICACION EN SALUD.

Ventajas:

- Podría tener un mayor apoyo técnico y financiero.
- Tendrá una mejor coordinación con las dependencias que esten rigiendo el proceso de planificación a corto, mediano y largo plazo.
- Está menos sujeto a los cambios administrativos del Ministerio de Salud Pública.

130

- Tendría una limitada capacidad para tomar decisiones mas allá de los que requiere el Sistema de Información.

Desventajas:

- Limitación en su autonomía funcional y se podría prestar para la manipulación de la información.
- Podría existir bloqueo en la comunicación con el nivel de decisión técnico, normativo y operativo.
- De haber falta de interés de parte de la Unidad Sectorial de Planificación podría perjudicar el desarrollo del Sistema.
- Se podría utilizar la capacidad instalada en procesos prioritariamente é información adicional al Sistema establecido.
- Se aleja del mayor usuario de la información, como lo es la Dirección General de Servicios de Salud, creando problemas de información inoportuna e ineficaz.

NIVEL DE DEPENDENCIA DIRECCION GENERAL DE SERVICIOS DE SALUD.

Ventajas:

- Cercanía con el mayor usuario (en cantidad, continuidad, oportunidad) como lo es la Dirección General de Servicios de Salud.
- Hay autonomía funcional.
- Se logra una comunicación mas directa con el nivel de decisión.
- Tendría el apoyo requerido con el nivel de decisión.
- Tendría una limitada capacidad para tomar decisiones mas allá de lo que refiere el sistema de información por estar sujeta al control de desarrollo de la Dirección General de Servicios de Salud.
- Permitiría en menor grado el manipuleo de la información.
- Permitiría en menor grado la utilización de la capacidad instalada en otras autoridades del Sistema establecido.
- Facilitaría la evaluación permanente del Sistema para dar respuesta a las exigencias de los programas establecidos.

151

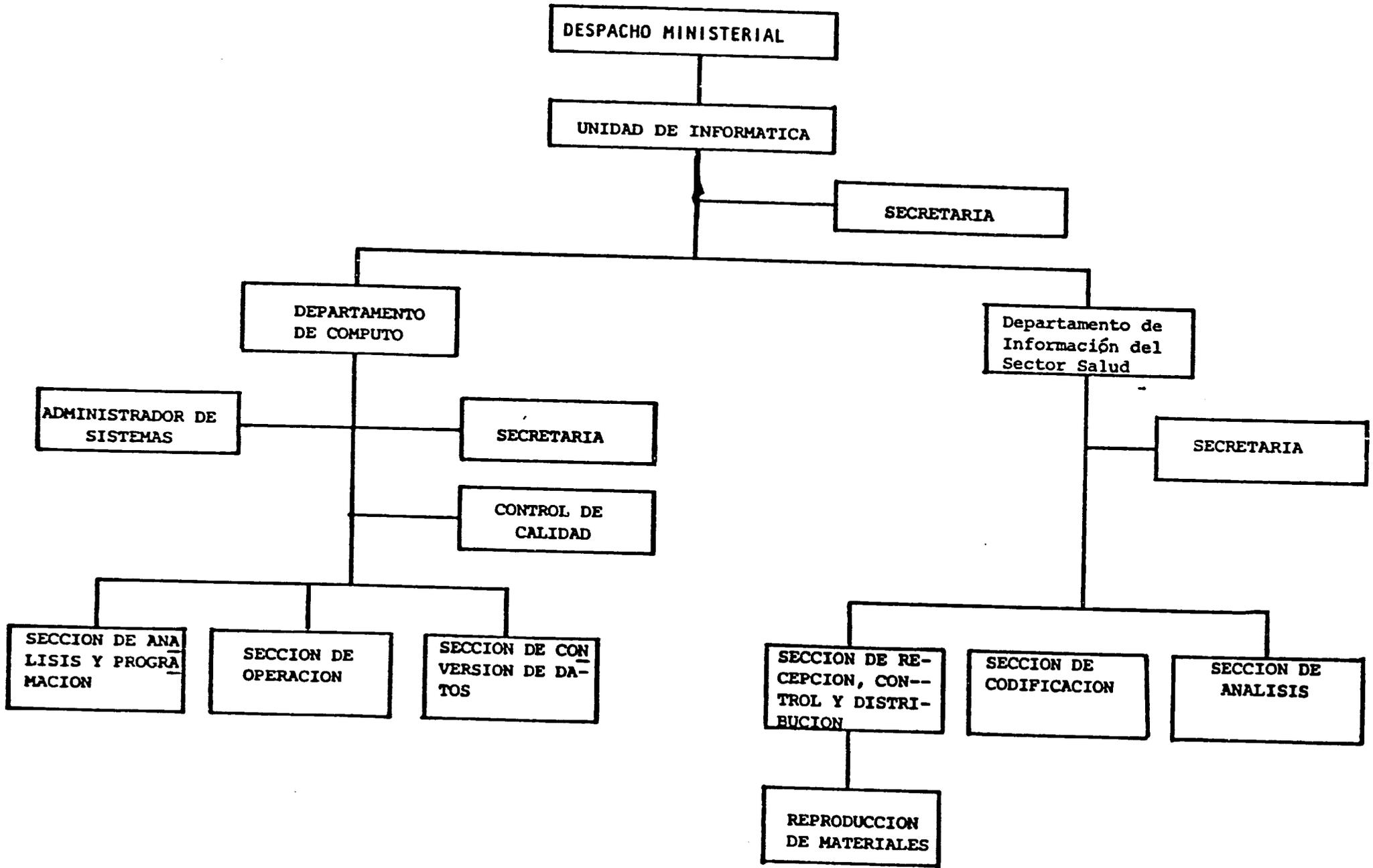
- Está menos expuesta a los cambios administrativos.
- Podría tener mas apoyo técnico.

Desventajas:

- Podría tener un menor apoyo financiero.
- Podría existir bloqueo en la comunicación con otros niveles decisorios y dependencias fuera de la Dirección General de Servicios de Salud.
- Podría existir interes parcial del desarrollo del sistema de información.

152

ORGANIGRAMA DE LA UNIDAD DE INFORMATICA



12/10/77

INTEGRANTES DE LA COMISION QUE ELABORO:

- Ing. Carlos Gustavo Lima Soto  
Coordinador General de Informática y Computación.
- Dra. Hilda Leal de Molina  
Jefe de la Unidad de Informática.
- Dr. Jaime Emilio Carredano  
Jefe de la Unidad de Programación.
- Dr. Gonzalo Sáenz Aguilar  
Jefe de la Región Central, -  
Unidad de Supervisión y Evaluación.
- Ing. Felipe Arturo Palomo  
Consultor de la Agencia Internacional de la Salud / Organización Mundial de la Salud .-  
( OPS/OMS ).
- Srita. Haydeé E. Gudiel Acosta  
Secretaria de Informática y -  
Computación.
- Srita. Mayra Judith Figueroa C.  
Secretaria del Despacho del -  
Director General D.G.S.S.

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154

DRAFT

IMMUNIZATION/ORT/CHILD SURVIVAL PROGRAM, GUATEMALA

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HUMAN RESOURCES DEVELOPMENT ANALYSIS

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Report Prepared by PRITECH Consultant:

David E. McCarthy

During the Period March-April 1987

TECHNOLOGIES FOR PRIMARY HEALTH CARE (PRITECH) PROJECT

Supported by the:

U. S. Agency for International Development

AID/DPE-5927-C-00-3083-00

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ASSGN. NO.: SS-185

135

ANNEX A.3.T

EXECUTIVE SUMMARY

HUMAN RESOURCES ANALYSIS: TRAINING

Two key assumptions shaped the way in which training, and technical assistance related to training, were viewed at the time the Project Paper was written. First, there was the significant, positively viewed PAHO presence in training and channelling. And second, the channelling methodology was perceived as a proven, replicable strategy for carrying out immunization in Guatemala.

Training was envisioned as providing technical and administrative support for continuous, community outreach-based, immunization activity. These activities were viewed in terms of the channelling strategy; this was to be applied in eight departments in each of the first two years, and in five departments in the third and final year of the Project. AID's involvement, in view of PAHO-sponsored channelling activities, was seen as complementing other-donor efforts by providing grant funds to improve the quantity and quality of training materials and courses currently being made available by PAHO and UNFPA. The subsequent PPA limited itself to defining ORT as officially included in this effort, with corresponding funds to support other ORT-related activities such as production and promotion.

The training component in the original PP was to be carried out by five physicians in the Division of Surveillance and Disease Control, with technical assistance provided by resident PAHO advisors. A medium-term Training/Supervision Advisor would be provided. By counterparting the TA to the Division of Surveillance and Disease Control, AID indicated tacit agreement to the establishment of an independent training unit within the normative division. Although this was a logical step administratively speaking, it resulted in the diversion of roles organizationally defined as pertaining to the Division of Human Resources. A relationship of coordination with the Division of Human Resources was implied but not required.

In the PPA, PAHO was seen as continuing its involvement but training activities would be planned and coordinated by the five-physician unit from MCH, with support from Human Resources, particularly the six-member staff of the Health Education Unit. In addition, ORT Training Units would be established in major hospitals.

The key implementing unit for the Project became the Applied Programs Unit. Under this Unit, the Division of Disease Surveillance and Control would be primarily responsible for the planning and implementation of the Immunization component, and the Division of Maternal and Child Health primarily responsible for the planning and implementation of the ORT component. The Human Resources and Health Education Unit would provide support in designing promotional and training materials for both these departments and their respective programs.

The channelling process, which began as a PAHO-encouraged experiment, was not a totally new process for Guatemala since it had been tried in various forms in limited, more or less vertical programs. What was new in this primary health care outreach program was the push for the application of the outreach on a continuous, nationwide basis. To date, results have been mixed. Such a process can be expected to generate increased demand for services. If these are not readily available, channelling is reduced to simply a census-taking exercise. Rather than improving the Ministry's image with the community, this may in reality damage hard-earned credibility. This credibility may also be affected by selection of less than first-rate community volunteers, since the MSPAS is now competing for this category of worker with other Ministries and NGOs who provide a stipend or even salary.

In 1986 PAHO's role in channelling implementation appears to have been greatly reduced. The primary responsibility seems to have been passed to the EPI training groups, in coordination with the Unidad de Supervision y Evaluacion. This seems to have occurred at around the same time as the National Vaccination Days. As a result, the original momentum appears to have been lost. Previous training which was intensive and incremental with central level involvement down to the District level, was replaced by a "cascade" strategy. This method does not lend itself to rapid implementation where supportive infrastructure has not been developed. The desire on the part of the central level to be less intrusive in approaching channelling seems to have resulted in inadequate transmission of information from Area to District, from District to Health Post, and from Health Post to community. During implementation in several Areas, personnel at various levels did not feel confident to address problems, leading to uneven application of the channelling methodology. In a number of Areas channelling activity has ground to a halt. In the Areas where it continues, it has required much more follow-up than the training group first anticipated.

EPI training was seen as an opening wedge to be followed by training in ORT, ARI, other Child Survival-related initiatives, and additional Primary Health Care initiatives growing out of the community health diagnosis. As the scope of this Project has expanded, it has become increasingly apparent that its training implications go far beyond the organizational responsibility of the Division of Surveillance and Disease Control. Counterparting the technical assistance of the Project to the Chief of the Applied Programs Unit acknowledges this issue, however, without fully addressing its implications.

The successful implementation of the channelling strategy will require increased participation by both the Supervision and Evaluation Unit and by the Human Resources Unit. Supervision and Evaluation has primary responsibility for the development of the instruments necessary for monitoring and supporting the channelling process. The Human Resources Unit has primary responsibility for developing training infrastructure at the Area, District, and Health Post levels. It is also responsible for the continuing education of institutional personnel, and the formation and continuing education of community support personnel. Consideration needs to be given to the question of how the necessary strengthening and apportionment of resources for each concerned entity is most effectively achieved.

## RECOMMENDATIONS

1. For the MSPAS to carry out its Regionalization Strategy, the Human Resources Unit must develop a coherent and detailed training plan, identifying the specific training needs for the Evaluation and Supervision Unit, Area Chiefs, and District Chiefs in administration, management, finance, and primary health care techniques.
2. Once a coherent plan has been evolved, AID should support the corresponding training with travel/per diem for site visits, and short-term training, and with broader financial support for longer-term training elsewhere in Central or Latin America, or in some cases outside the Region.
3. To continue with the effective implementation of the channelling/primary health care strategy, skilled resources must be developed with the capacity to monitor coverage and cost, and to judge the quality and effectiveness of training.
4. AID should provide long-term technical assistance to assist the Ministry with the development of:
  - decentralization of funds for training and per diems in channelling-related activities
  - adequate tracking systems to assure coverage and maximize efficient use of funds, and
  - measurements and mechanisms to determine the degree to which training goals are being achieved; both in terms of developing staff skills and in transferring knowledge to mothers.
5. Material and technical assistance should be provided to the Human Resources Unit to support and implement the Sistema Unico and related information systems.
6. AID should support operationalization of some of the work already done with regard to promoter incentives and associated research in a carefully selected set of comparative sites.

## ANNEX A.3.T

### HUMAN RESOURCES ANALYSIS: TRAINING

#### I. BACKGROUND

There were two key assumptions that shaped the way in which training, and technical assistance related to training, and were viewed at the time the Project Paper was written in 1985. One was that PAHO had a significant, positively viewed presence in this area. The second was that the channelling methodology was the proven, easily replicable strategy for carrying out immunizations in Guatemala. In the course of the Project to date, a number of changes have occurred which raise significant questions as to the continuing validity of these assumptions. After assessing the current situation, we will return to this point.

At the time that the Project Paper was written, training was envisioned as providing technical and administrative support for continuous, community outreach-based, immunization activity. These activities were viewed in terms of the channelling strategy which was to be applied in eight departments in each of the first two years, and in five departments in the third and final year of the project.

At that same time, PAHO-sponsored channelling activity, started in Escuintla, had been extended to the departments of Santa Rosa, El Progreso, and Sacatepequez. In addition, UNICEF had made funds available for pilot-testing channelling in selected districts. The strategy appears to have been to begin with EPI and gradually expand the program to include ORT, ARI, and other Child Survival activities as the project "matured."

AID's involvement was seen as complementing other donor efforts by providing grant funds to improve the quality and quantity of training materials and courses currently being made available by PAHO and UNFPA. The subsequent Project Paper Amendment limited itself to defining ORT as officially included in this effort, with corresponding funds to assure its inclusion as well as to support other ORT-related activities, e.g., production and promotion.

#### A. The Training Component in the Original Project Paper

The original Project Paper describes training activity as the following:

Training in six basic content areas:

1. programming and evaluation
2. supervision and continuing education

3. cold chain equipment operation and maintenance
4. promotion of community participation and health education
5. epidemiological surveillance and the MIS for program monitoring
6. technical knowledge and skills related to the delivery and administration of vaccines
7. fortification of skills in these content areas to serve the proposed project and later expansion of primary health care activities.

The training materials to be used were to be either:

those previously designed (e.g., PAHO SINAPS) or those designed or adapted by the Division of Human Resources and/or personnel transferred from USAID Project 520-0251.

Private-sector printers were to be contracted since the MSPAS had no appropriate in-house printing capability.

Implementation of project training was to be carried out by five physicians in the Division of Surveillance and Disease Control with technical assistance provided by resident PAHO advisors.

Grant funds were to finance:

1. Four courses each at the central level for project administrators, Area Chiefs, Area EPI Coordinators, and Area statisticians, phased as follows: 4 areas in the first year, 8 Areas in the second year, and 5 Areas in the third year.
2. Central-level courses for cold chain and vehicle maintenance personnel, with 3 courses the first year, and 1 course the second year.
  - a. AID was to finance US\$23,182 for travel, per diem, and training materials.
  - b. PAHO was to provide two person/days of technical assistance per course to monitor training implementation results.
3. At each Area level, one course would be held to train Area nurses, doctors, and other technicians in the implementation of the Project.
  - a. AID was to provide US\$365,621 for per diem, travel, and training materials for field-level training courses.
  - b. PAHO was to provide 30 person/days of technical assistance to monitor course implementation.

## B. The Second Project Amendment

In the second Project Paper Amendment, the training activity is described in the following terms:

1. Training guides available from PAHO, UNICEF, and UNFPA were to be updated and modified as necessary.
2. New DRT norms were to provide the framework for modular training materials and messages for mass communication
3. Training activities were to consist primarily of short courses at various levels with approximately 1,000 personnel from 8 Areas to receive a two-day seminar in year 1, 1,000 in year 2, and 1,000 in year 3.
4. Training activities were to be planned and coordinated by the five-physician unit from MCH with support from Human Resources, particularly the six-member staff of the Health Education Department.
5. Instructors at the Area level were to be drawn from the Central level; and instructors at the field level from previously-trained Area-level staff.
6. DRT Training Units were to be established in major hospitals to permit active participation in the treatment of patients, learning the theoretical basis of DRT, and gaining experience and confidence in its use.

It is obvious from the above, the degree to which PAHO was relied upon for project support activities. In fact, on page 29, the Project Paper states: "The Project will require less technical assistance than might otherwise be needed because of PAHO's long-term relationship with the MSPAS...."

Another noteworthy fact was the role envisioned for personnel previously employed under AID Project 520-0251. Part of this Project was folded into Project 520-0339 with various individuals being placed in either Surveillance and Disease Control, Maternal and Child Health, or Health Education. It is apparent that the assumption was made that the incorporation of these people would provide technical and administrative support for the implementation of the current Project. The significance of this assumption is that it appears that informal communication and consensus-forming among these individuals substituted for more formal communication and consensus-reaching by the responsible agents within the formal Ministry structure.

## C. The First Project Agreement

The first Project Agreement defines training activity thus:

"Training of administrative and technical personnel to reinforce the capacity of the Ministry of Public Health and Social Welfare to

implement the Expanded Program of Immunization through the channelling strategy as a more effective coverage system."

Furthermore, it states that:

"The Surveillance and Disease Control Division of DGSS would be in charge of planning and developing the training activities, with the technical assistance of a PAHO advisor, and of a specific medium-term Training/Supervision Advisor, financed under the AID Grant, and the support of the Human Resources Division of DGSS.

#### D. The Second Project Agreement

The second Project Agreement emphasizes training and supervision of health system personnel in the delivery of ORT, again within the channelling methodology. Training activities were to be planned and coordinated by the five-professional unit within the Maternal and Child Health Department, with the support of the Human Resources Unit, particularly the six-member staff of the Health Education Department.

In addition, ORT Training Units would be established (according to WHO/Diarrheal Diseases Control Program guidelines) in major hospitals, which would permit health personnel to actively participate in treatment of patients with diarrheal disease, to learn the theoretical basis of ORT, and gain experience and confidence in its use.

The key implementing unit for the Project as a whole was to be the Applied Programs Unit. Under this unit, the Division of Disease Surveillance and Control would be primarily responsible for the planning and implementation of the Immunization Component, and the Division of Maternal and Child Health primarily responsible for the planning and implementation of the ORT Component. The Human Resources and Health Education Unit would provide support in designing promotional and training materials for both these departments and their respective programs.

#### E. Training/Supervision Technical Advisor

The Scope of Work for the EPI Training/Supervision Technical Advisor (T/SA) counterpartted the position to the Chief of the Surveillance and Disease Control Division. "Duties and Responsibilities" were as follows:

1. Carry out an analysis of the current training and supervision system used in the Expanded Program of Immunization using channelling.
2. Refine the training modules, if necessary, and conduct a five-day training course in order to train the EPI Area Coordinators.
3. Participate with the technical health personnel in the implementation of the channelling process training plan.

By counterpartting the technical assistance to the Division of Surveillance and Disease Control, AID indicated tacit agreement to the establishment of

an independent training unit within this normative division. Although this was a logical step administratively speaking, it resulted in the diversion of roles organizationally defined as pertaining to the Division of Human Resources. A relationship of coordination with the Division of Human Resources was implied but not required.

Here, as previously noted, the continuing assumption of a strong PAHO coordinating role is apparent. In her November 1986 report, the T/SA states that: "At the beginning of the AID consultancy, PAHO technical advisors were managing all aspects of training and supervision in EPI, ORT, Primary Health Care, and channelling."

## II. PROJECT ACTIVITIES TO DATE

### A. Background

In her report the T/SA further noted that there was an eight-month delay in implementing the training/supervision component, primarily due to:

1. the change in government,
2. the reorganization of the Ministry, and
3. the National Vaccination Days ("jornadas").

The change of government meant not only a change in Ministry staff, but also the arrival of a civilian government understandably suspicious of contractual agreements entered into by the previous military government. Furthermore, the National Vaccination Days, decreed by presidential order, were more disruptive than anticipated and occupied much of the time of central-level personnel from February to August.

In reviewing the T/SA's report, a rough chronology emerges. At the beginning of the consultancy, most training activity was directed to the National Vaccination Days but with apparently little involvement of the Health Center, Health Post, or community levels. In April, the Chief of the Surveillance and Disease Control Division authorized the formation of a Training Group within the Division whose first duties were to revise the EPI Operational Diagnosis. Prior to the implementation of this instrument, revisions were made in the EPI/ORT training plan. No decision appears to have been made on either training methodologies or evaluations. In May, the Division Chief, with participation from Human Resources, read, corrected, and approved new training materials (EPI for Promoters and Channelling Methodology for Auxiliary Nurses and TSR's).

In June it was learned that the AID-financed, INCAP-supported Child Survival activity, carried out in conjunction with the Maternal and Child Health Division (MCHD), had resulted in the creation of yet another training and material production unit in the MCHD which was generating modules in overlapping areas, out of coordination with either the Division of Surveillance and Disease Control or the Division of Human Resources.

The material generated by the MCHD does not appear to have been presented to the Division of Human Resources until several months later, when it was

noted that there was nothing designed for the community level. Coordination with the Human Resources Division (HRD) seems to have broken down over objections to what HRD perceived as overly technical language for community level and Health Post personnel.

In July and August, the T/SA appears to have worked more closely with the HRD personnel.

In September a workshop was held to revise, update, and write immunization norms. There was broad representation and a number of recommendations were made. According to the T/SA, participants pointed out that EPI did not necessarily imply the exclusive utilization of channelling methodology, and there seems to have been consensus that each Area should adapt operational methodologies best suited to its specific needs. In terms of training, participants recommended that the Division of Surveillance and Disease Control define the technical content but that the Division of Human Resources design the appropriate training methodology.

During the course of the training/supervision technical assistance, two documents were generated which demonstrate a changing perception of the technical assistance needs in the training area. The first is the ORT Project Amendment which, on page 31, defines the need for teaching of training techniques for EPI/ORT activities, design of programs to monitor progress, and training of Ministry personnel in computer use.

The second document is the second Scope of Work generated as part of the extension of technical assistance in response to a Ministry request. In this second Scope of Work the T/SA is asked to perform in close consultation with project counterparts: the Chief of the Unit of Applied Programs, the Division of Epidemiological Surveillance and Disease Control, the Division of Maternal and Child Health, and the Division of Human Resources. One of the duties and responsibilities for that technical assistance was to: develop, in coordination with the MSPAS Supervision and Evaluation Unit, guides and evaluation instrument(s) to be used for the EPI/ORT program supervision.

With these two documents we see the evolution of the concept of Project-provided technical assistance for training from that of short-term start-up EPI training in support of existing PAHO assistance, to addressing cross-Unit training concerns where the PAHO technical assistance presence has been markedly reduced.

#### B. The Present Situation

A key assumption that shaped the way in which training, and technical assistance related to training were viewed at the time the Project Paper was written was a strong PAHO technical assistance presence in training and channelling activity. It seems to have been assumed that PAHO would provide a degree of continuity to a process in motion and that PAHO-assisted evaluation instruments would satisfy, not only the Ministry's information needs, but also meet AID's reporting requirements. This no longer appears to be the case. With the changes that have occurred in the Government, the restructuring of the Ministry, and personnel changes within PAHO, the situation is now markedly different.

The channelling process which began as a PAHO-encouraged experiment in Escuintla has evolved into a more Guatemalan process through the experience of its varying applications in different parts of the country. The primary health care outreach, the basic element of this process, was not new to Guatemala, as it had been practiced by more progressive Ministry staff for some time. What the channelling process provided that was new was a push for the application of outreach on a continuous basis, nationwide. To date, the results have been mixed.

One of the first things that appears to have been learned in Escuintla is that reliance on external inputs leaves the effort vulnerable to reversals if the external stimulus stops. Santa Rosa, El Progreso, and Sacatepequez demonstrated the need for development of training and follow-up capacity at the District and Health Post level. It was also here where some of the increased demand implications of an outreach strategy become apparent. In the evaluation in Santa Rosa in 1985, the Area team stated that the channelling methodology had made evident the need for increased human resources to serve large, dispersed sectors of the population which previously had had no access to the health system. Although the effect in the long run may be a better distribution of the Ministry's human resources, there is bound to be an extended lag period before such a need can be met. Increased demand for services, however, can be an almost immediate effect of channelling, even though the idea is that more prevention will--eventually--reduce the need for curative care.

Obviously, there is a need to calculate, to some degree, the way in which this increased demand will manifest itself, and the ability to respond to it in a time frame acceptable to the community. If the Ministry is unprepared to respond to the increased demand for services, the channelling activity is quickly reduced to simply census-taking which, rather than improve the Ministry's image with the community, may damage hard-earned local credibility.

Another area where synchronization appears to have been lacking is in the opportune disbursing of per diem. The minimal salaries paid by the MSPAS are not great stimuli to action, even in the best of circumstances. The channelling methodology demands an exceptional effort from personnel whose traditional roles have often been passive; it can also cause expenses not calculated into family budgets. The inability to provide timely per diem to these personnel in some cases places an unwarranted economic burden on those least able to support it. This credibility may also be affected by selection of less than first-rate community volunteers, since the MSPAS is now competing for this category of worker with other Ministries and NGOs who provide a stipend or even salary. As indicated earlier, the role played by PAHO in support of channelling implementation appears to have been sharply reduced, most dramatically in 1986. Primary responsibility for channelling appears to have passed to the EPI training groups, in coordination with the Supervision and Evaluation Unit. This seems to have occurred at the same time that these groups were deeply involved in the National Vaccination campaigns. As a result, some of the original momentum and continuity appears to have been lost. Previous training, which was intensive and incremental with central-level involvement to the District level, was replaced by a more purely "cascade" strategy.

The cascade strategy, whereby certain information or skills are transferred from higher to lower hierarchical levels of the organization, is effective to the degree that training skills exist at each level, and that the message transmitted remains coherent and valid. It is not a method which lends itself to rapid implementation where supportive infrastructure has not been previously developed. The desire on the part of central-level staff to be less intrusive in approaching channelling seems to have resulted in inadequate transmission of information from Area to District, from District to Health Post, and from Health Post to community. Since much of the initial training was doctor to doctor, or doctor to professional nurse, questions which the community, promotor or auxiliary nurse might ask did not surface, leaving these same doctors and nurses less prepared to respond appropriately when such questions did eventually arise. During implementation in several Areas, personnel at various levels did not feel confident to address problems; this led to uneven application of the channelling methodology.

In a number of Areas channelling activity has ground to a halt. In the Areas where it continues, it has required much more follow-up than the training group first anticipated.

EPI training was seen as an opening wedge to be followed by training in ORT, ARI, other Child Survival-related initiatives, and additional Primary Health Care initiatives growing out of the community health diagnosis. As the scope of this Project has expanded, it has become increasingly apparent that its training implications go far beyond the organizational responsibility of the Division of Surveillance and Disease Control. Counterparting the technical assistance of the Project to the Chief of the Applied Programs Unit acknowledges this issue, however, without fully addressing its implications.

The durability and successful implementation of the channelling strategy will require increased participation by both the Supervision and Evaluation Unit and the Human Resources Unit. Supervision and Evaluation has primary responsibility for the development of the instruments necessary for monitoring and supporting the channelling process. The Human Resources Unit has primary responsibility for developing training infrastructure at the Area, District, and Health Post levels. They are also responsible for the continuing education of institutional personnel, and the formation and continuing education of community support personnel. Consideration needs to be given to the question of how necessary strengthening and apportionment of resources for each concerned entity is most effectively achieved.

The success of the channelling strategy will hinge on the ability to create a corps of trainers at the Area, District, Center, and Health Post levels in support of an instructional process that begins with the information required by mothers to make intelligent decisions for the care of their children, and moves up through the chain of responsibility for use as necessary and appropriate. This is not a one-time effort but rather a dynamic process, building in phases; gradually, the responsibility for the process will shift from EPI to the Areas. This, in turn, will require strengthening the management skills, both of the Regional Supervisors and the Area Chiefs.

Another area where technical assistance in training will be essential is in the area of Information, at least three distinct levels of training. First, training of senior-level managers as to the capabilities and limitations of the various machines and programs so that they better understand what potential resources they have available to them. Second is hands-on training for those who will have access to machines and programs and who will have the primary responsibility for training other resource people within the Ministry as information needs grow and change. Third, and most important, there will be a need for training of people at the operative levels in their own manual systems and in use of new instruments as these are developed; it will be crucial for each level to understand the reason behind each datum requested and how the Ministry proposes to use the information, to both encourage their active participation in the process and assure the validity of data as they move up the system.

Beyond the above, long-term TA in training could help to bring a greater coherence to the numerous AID-and other donor-sponsored training efforts within the Ministry and facilitate the contracting of short-term Guatemalan training technical assistance in support of Ministry goals.

The EPI training group has done an outstanding job, considering the adverse conditions under which they have had to operate. However, it would not be fair to the training group or to the Areas to burden them with implementation of channelling on a national scale without any additional institutional support. Continued responsibility will understandably lead to demands for increased human resources in this normative department to carry out tasks which are organizationally ascribed to other entities. The institutional implications of increased Project scope should be addressed now rather than later, to avoid possible conflicts and setbacks in what will be an extensive and prolonged effort.

### C. Human Resources Analysis

Among the factors most likely to affect MSPAS ability to carry out its channelling/primary health care strategy is the deployment, educational levels, workloads, language capability, and incentives of its staff.

Staffing represents a significant percentage of total costs in the health sector in general, and Guatemala is no exception. In addition to the financial skewing that can be introduced by high personnel costs, staffing patterns can be skewed in ways not favorable to primary health care, characteristically expressed in urban-rural distortions.

The following figures, prepared by the Human Resources Unit and based on a study of institutional personnel in 1984, indicate that Guatemala confronts a more or less typical pattern of imbalance in the deployment of its medical human resources. Examining figures A.3.1 and A.3.2 one finds a marked concentration of personnel in hospital (58%) and Central- or Area-level administrative and support positions (20%), with only 22% of the Ministry's personnel involved in direct service delivery at Health Centers and Health Posts.

Figures A.3.3 and A.3.4 demonstrate the concentration of Ministry personnel in the capital. The Department of Guatemala, which contains 21%

FIGURE A.3.1

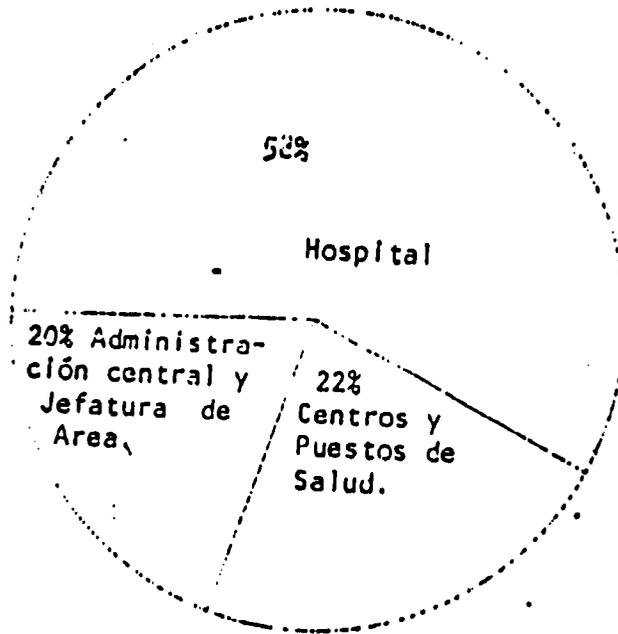
DISTRIBUCIÓN DE LAS PLAZAS\* DEL MINISTERIO DE  
SALUD PÚBLICA Y ASISTENCIA SOCIAL, SEGUN NIVELES ORGANIZATIVOS  
GUATEMALA-1984

NIVELES ORGANIZATIVOS	TOTAL	
	#	%
Administración Central	2880	18
Jefatura de Area	356	2
Hospital	9406	58
Centro de Salud	2793	17
Puesto de Salud	755	5
TOTAL	16203	100

\*FUENTE: Estudio del Personal de Salud del Ministerio de Salud Pública y Asistencia Social.  
Guatemala, 1984.

FIGURE A.3.2

DISTRIBUCION DE LAS PLAZAS \* DEL MINISTERIO SEGUN NIVELES



FUENTE: \* Estudio del Personal del Ministerio de Salud Pública y Asistencia Social. Guatemala 1984.

FIGURE A.3.3

REGIONES DE SALUD DEL PAIS



Regiones:

- 1. Centro
- 2. Norte
- 3. Oriente
- 4. Sur Oriente
- 5. Occidente
- 6. Sur Occidente

170

FIGURE A.3.4

DISTRIBUCION DE LAS PLAZAS DEL MINISTERIO EN LA REPUBLICA DE GUATEMALA  
GUATEMALA-1984

REPUBLICA DE GUATEMALA	TOTAL	
	#	%
Departamento de Guatemala	8520	53
Resto de departamentos	7683	47
TOTAL	16203	100

FUENTE: Estudio del Personal de Salud del Ministerio de Salud Pública y Asistencia Social.  
Guatemala, 1984.

CUADRO 3

DISTRIBUCION DE POBLACION EN LA REPUBLICA DE GUATEMALA  
GUATEMALA-1984

REPUBLICA DE GUATEMALA	TOTAL	
	#	%
Departamento de Guatemala	1.646563	21
Resto de departamentos	6.097825	79
TOTAL	7.744388	100

FUENTE: Cuadro elaborado con base en los datos de "Proyecciones Regionales de Población 1980-2000". SEGEPLAN/INE.

of the total population, has 53% of all positions; the remainder of the country, with 79% of the population, has only 47% of the positions. This urban/rural distribution is in greatest disequilibrium in the Occidente, where 25% of the nation's population is served by only 17% of the positions, and in the Occidente Sur, where 17% of the population has only 8% of the positions (Figure A.3.5). Figure A.3.6 displays this disequilibrium in terms of technical and operative positions at both the Central Administrative and Hospital levels.

Figure A.3.7 indicates that approximately 60% of the operative-level personnel have six grades or less of education; an additional 36% have some secondary education. Office personnel tend to have more education, with 47% having completed secondary school and 24% with some university training. Almost in its entirety, 80% percent of total personnel defined as professional has had some post-graduate education. This figure implies three very distinct groupings within the Ministry and a corresponding need for distinct strategies in targeting continuing education.

Figure A.3.9 examines the degree to which positions are or are not truly reflective of actual workloads. In the 1984 study, 20% of persons with administrative responsibilities and 23% with office functions claim that they were performing significantly more duties than were supposed to have been entailed in the positions for which they were contracted.

Although a significant percentage of rural mothers are indigenous-language speakers, Figure A.3.10 shows that only 10% of Ministry staff speak any indigenous language. In the Norte and Occidente, which have the greatest concentration of indigenous-speakers, lengua-speaking Ministry staff constitute 39% and 21%, respectively. What Figure A.3.10 does not show is the degree to which even these relatively few lengua-speakers are located in sites where they, in fact, speak the language of the population with whom they are working. Thus the percentage of MSPAS personnel actually working in areas where their language skills might be useful is probably much smaller than these percentages. A Cakchiquel-speaker in Mam country may have no more communication advantage that someone monolingual in Spanish and even neighboring Mam communities may be mutually unintelligible. This is a large issue which confronts all development ministries working in indigenous areas and one not easily resolved.

In terms of non-institutional or volunteer personnel, the Human Resources Unit estimates that there are 16,000-18,000 aldeas (hamlets) of less than a thousand inhabitants which are not directly served by Ministry personnel. The Ministry has long relied on community volunteers for its projection beyond the Health Post. The introduction of the Tecnico de Salud Rural (TSR) position in the 1970s was intended to provide the Ministry with trainers and organizers of volunteer personnel. In tribute to that program, despite indubitable attrition of various kinds and for various reasons, the TSR program has left an invaluable pool of human resources in the sector.

An enduring problem in retraining trained volunteer personnel arises from the Ministry's limited ability to support these personnel with adequate supervision, supplies, access to information and easy ways to convey it, or other types of incentive, monetary and non-monetary. Of the approximately 12,000 promoters trained in Human Resources-approved

FIGURE A.3.5

DISTRIBUCION DE LA POBLACION Y DE PLAZAS ASIGNADAS  
POR EL MINISTERIO SEGUN REGIONES DE SALUD DEL PAIS  
GUATEMALA-1984

REGION	POBLACION		PLAZAS	
	#	%	#	%
Centro	2109571	28	6509	49
Norte	801201	10	1072	8
Oriente	707238	10	1284	9
Sur oriente	961645	13	1196	9
Occidente	1404766	25	2218	17
Sur occidente	1099967	14	1036	8
TOTAL	7744368	100	13315	100

FUENTE: Estudio del Personal de Salud del Ministerio de Salud Pública y Asistencia Social. Guatemala, 1984.

173

FIGURE A.3.6

DISTRIBUCION DEL PERSONAL  
 SEGUN NIVELES ORGANIZATIVOS Y CATEGORIAS DE CARGOS  
 GUATEMALA-1984

CATEGORIA DE CARGO	NIVEL ORGANIZATIVO					TOTAL	
	ADMINIS- TRACION CENTRAL	JEFATURA	HOSPITAL	CENTRO DE SALUD	PUESTO DE SALUD	#	%
Profesional	172	27	761	342	---	1302	8.4
Técnico	786	153	1553	813	169	3474	21.4
Administrativo	10	2	30	9	---	67	0.4
Oficina	544	56	731	243	---	1574	9.7
Operativo	1363	118	6315	1391	586	9773	60.3
Ignorado	5	---	8	---	---	13	0.1
TOTAL %	2858 17.82	356 2.20	9406 58.05	2798 17.26	755 4.66	16203	100.0

FUENTE: Estudio del Personal de Salud del Ministerio de Salud Pública y Asistencia Social, Guatemala, 1984.

174

FIGURE A.3.7

DISTRIBUCION DEL PERSONAL SEGUN GRADO DE ESCOLARIDAD Y  
CATEGORIA DE CARGO  
GUATEMALA, 1984

CATEGORIA DE CARGO	Sin Escuela		GRADO DE ESCOLARIDAD											TOTAL	
	Analf.	Alfa.	Primaria		Básico		Diversific.		Universidad				Iga.	#	%
			EST.	COMP.	EST.	COMP.	EST.	COMP.	EST.	INTER.	PGR	PTGk			
...								5	7	3	1181	105	1	1302	...
...			71	384	117	537	102	1480	431	194	55	2	5	3474	21.2
...				1	2	1	4	32	24	2	1			67	0.4
...			6	115	61	138	129	734	333	30	6			1571	9.7
...	154	140	1594	4016	1366	1302	592	523	142	12	2		6	9775	60.3
...			1	4		1	1	2	1				3	13	0.1
TOTAL	154	156	1672	4520	1566	1979	824	2784	938	241	1247	107	15	16203	
%	0.36	0.36	10.32	27.90	9.66	12.21	5.09	17.18	5.79	1.48	7.70	0.66	0.09		100.00

FUENTE: Estudio del Personal de Salud del Ministerio de Salud Pública y Asistencia Social, Guatemala, 1984.

20

175

FIGURE A.3.8

DISTRIBUCION DEL PERSONAL SEGUN PUESTOS Y CARGOS POR CATEGORIAS OCUPACIONALES  
GUATEMALA-1984

CATEGORIAS	PUESTO		CARGO	
	Personal en las categorías donde fue nombrado		Personal en categorías donde realmente trabaja	
	#	%	#	%
Profesional	1274	7.9	1302	8.0
Técnico	3227	20.0	3474	21.4
Administrativo	58	0.4	67	0.4
Oficina	1241	7.6	1574	9.3
Operativo	10309	63.6	9773	60.3
Ignorado	94	0.5	13	0.1
TOTAL	16203	100.0	16203	100.0

FUENTE: Estudio del Personal de Salud del Ministerio de Salud Pública y Asistencia Social, Guatemala, 1984.

FIGURE A.3.9

PRESENTACION EN PORCENTAJES DEL PERSONAL, SEGUN CATEGORIA  
DE CARGOS\* Y LA RELACION DE RESPONSABILIDAD ENTRE ESTE Y SU PUESTO\*\*

GUATEMALA-1984

RELACION ENTRE PUESTO Y CARGO	CATEGORIA DE CARGOS				
	Profesional	Técnico	Administrativo	Oficina	Operativo
Contratado para una ocupación de mayor responsabilidad que la que tiene	---	0.73	4.69	5.10	0.65
Ubicado dentro de la categoría para la que fue contratado	97.71	89.17	75.00	72.13	99.35
Contratado para una ocupación de menor responsabilidad que la que tiene	2.23	10.30	20.31	22.77	----
TOTAL	100.00	100.00	100.00	100.00	100.00

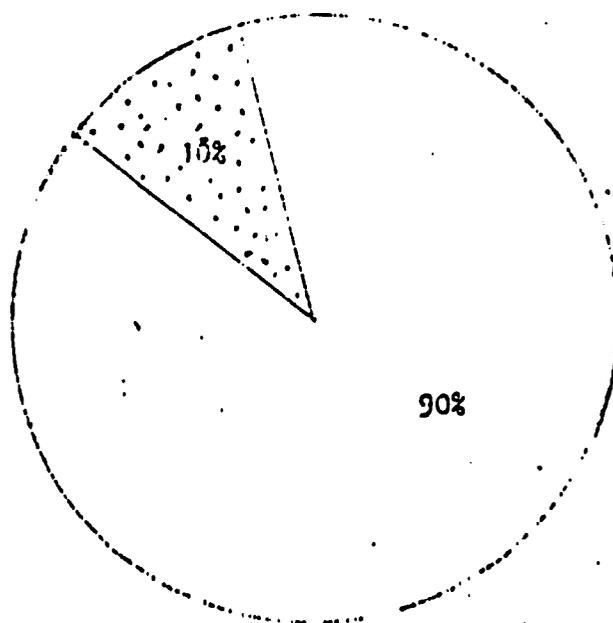
\* Se llama CARGO a las funciones que la persona realiza.

\*\* Se llama PUESTO a las funciones para las cuales la persona ha sido contratado.

FUENTE: Estudio del Personal de Salud del Ministerio de Salud Pública y Asistencia Social, Guatemala, 1984.

FIGURE A.3.10

DISTRIBUCIÓN PORCENTUAL DEL PERSONAL DEL MINISTERIO QUE  
HABLA UNA LENGUA NACIONAL ADemás DEL ESPAÑOL  
GUATEMALA-1984



- Habla alguna lengua nacional además del español.
- De las lenguas nacionales habla únicamente español.

178

FIGURE A.3.11

DISTRIBUCION SEGUN NUMERO DE PERSONAL QUE HABLA  
 LAS PRINCIPALES LENGUAS DEL PAIS Y REGION EN DONDE ESTA UBICADO  
 GUATEMALA-1964

ADMINISTRACION CENTRAL Y REGIONES	PRINCIPALES LENGUAS					T O T A L	
	Cakchiquel	Kakchí	Mam	Quiché	Otros	#	%
Administración Central	47	168	10	49	34	308	19.31
Centro	153	56	9	40	18	276	17.30
Norte	10	354	2	16	32	422	26.46
Oriente	4	9	1	4	7	25	1.57
Sur Oriente	11	10	3	2	4	30	1.89
Occidente	90	10	34	256	85	475	29.78
Sur Occidente	13	5	15	22	4	59	3.70
TOTAL	326	612	74	329	184	1595	
%	20.44	38.37	4.64	25.02	11.53		100.00

FUENTE: Estudio del Personal de Salud del Ministerio de Salud Pública y Asistencia Social.  
 Guatemala, 1964.

programs through 1984, less than half remain active. And recently, the increased practice on the part of both other government and NGOs to pay stipends of up to Q150.00 per month to agriculture and other development promoters, has resulted in demands for equitable treatment for health promoters, many of whom have labored 10 years or more without monetary remuneration. The Ministry is concerned about its continuing ability to retain, at limited or no cost and in the absence of the incentive that is provided by good support services, this volunteer element which has been key to its channelling/primary health care strategy. A Vice-Presidential Commission is currently examining the promotor issue, and some support exists to pay an honorarium of Q75.00 per month to health promoters. This payment could have significant recurrent cost implications for the MSPAS, and is a factor which AID might wish to examine at greater length through support and technical assistance in operations research into alternat promoter incentives.

### III. RECOMMENDATIONS

#### A. Development of a Coherent Training Plan

The Ministry of Health is interested in carrying out its Regionalization Strategy and has identified some specific training needs for the Supervision and Evaluation Unit, Area Chiefs, and District Chiefs in administration, finance, and primary health care techniques. AID should assist the Unit in developing a coherent training plan which will complement existing efforts in these areas through increased application of Guatemalan and pertinent Central American experience.

#### B. Support for Management Training

Once a coherent plan has been evolved, AID should support the corresponding training with travel/per diem for site visits (e.g., local programming in Honduras and Panama) and short-term training, and broader financial support for longer-term training elsewhere in Central and/or Latin America or, in a few cases, outside the LA Region. AID should also consider the development of an on-going, in-country health management training capacity. This would begin with the development of a local model which could be repeated and replicated until a critical mass of MSPAS personnel at each necessary level is appropriately trained in the basic management subsystems skills required.

#### C. Development of Monitoring and Evaluation Systems for Training

The Ministry would like to move forward with effective channelling/primary health care training at the various administrative levels from the center to the community. To implement this, it needs to develop skilled resources at all levels, the capacity to monitor coverage and cost, and the capacity to judge the quality and effectiveness of training. AID should provide longer-term technical assistance than it has to date in this area, with special emphasis on developing mechanisms to allow:

1. decentralization of funds available for training and per diem related to channelling activity,

2. adequate tracking systems to assure coverage and maximize efficient use of funds, and
3. measurement of the degree to which training goals and effectiveness are being achieved, both in terms of developing staff skills and in transferring knowledge to mothers.

D. Material and Technical Assistance

In addition, the Ministry will need support in the implementation of the Sistema Unico de Informacion and the integration of the many fragmented information systems which have evolved. AID's limited ability to assist this effort has been a source of frustration for the Supervision and Evaluation Unit. AID should provide both the material and technical support required for this Unit to carry out the role envisioned for it within the Ministry's current structure. This activity, together with those mentioned above, constitute a major component of the Ministry's response to the national Regionalization initiative and their significance should not be underestimated. Furthermore, there is a natural and extremely productive relationship that can be generated through a good operational blend of supervision, monitoring, evaluation, and epidemiological information-gathering for which there is an eager constituency at every level of service.

E. Operations Research and Promoter Incentives

Some good preliminary work has been done on promoter incentives and some ideas have been offered as to alternative solutions. AID should support the operationalization of the most plausible of these and the associated research, in a carefully selected set of comparative sites. A few site visits to countries where various such incentives have been tried (e.g., Haiti, Peru) might also be useful.

EXECUTIVE SUMMARY

HUMAN RESOURCES ANALYSIS: SUPERVISION

Supervision as viewed by AID and the MSPAS is a concept that has and continues to evolve. In the 1970s supervision was considered a function appropriate for each of the normative divisions in the Direccion General de Servicios de Salud (DGSS). Each division developed its own supervision criteria in isolation. In the 1980s, with an ever-growing span of control for the DGSS, a supervisory unit was established as an appendage of the DG, isolated from the normative divisions and Areas. Its role was one of coordination, reactive rather than proactive, and with no decision-making power. Its investigative role and its inadequate access to per diem and transport limited its effectiveness. As a result the unit was unable to fulfill its coordinating function and there was a resurgence of normative division direction of supervisory activities. In 1986 a Unit of Supervision and Evaluation (USE) was created which reports to the Director General, and was placed in charge of monitoring activities in the Health Areas.

The PP for Project 520-0339 describes supervision as deficient and supervisory reports as primarily descriptive documents not useful for program evaluation. The Project design proposed that the supervision activity be mostly carried out by PAHO, which was already developing a series of checklists, supervisory guides, and diagnostic survey instruments. At the Area level, the supervisory activity would continue to be the responsibility of a central-level team composed of: a representative from the Division of Surveillance and Disease Control, the Project Administrator, and a PAHO advisor. Supervisory visits were to commence upon completion of district-level training and repeated every three months, an impossible task that would have required more days than there are in a calendar year. At the district level, supervision was initially assigned to the Area EPI Coordinator. This model, however, was not adopted and the ORT Amendment assigns the responsibility to each Area Chief. AID's role was largely limited to paying for vehicles, training, travel, and per diem. Overall supervisory activities were to be monitored by the Chief of the Applied Systems Unit within the MSPAS, with the assistance of six regional supervisors in the MSPAS's newly formed Supervision and Evaluation Unit (USE).

After the creation of the USE, a committee was formed to write technical-operational supervisory norms. There is consensus that the existing supervisory system is inadequate and that a new one needs to be developed through a process which allows broad participation from

152

different levels of responsibility within the institution. The Unit published the manual Sistema Unico de Supervision y Evaluacion, which presents a clear definition of a number of institutional impediments to effective service delivery, and an indication of the role that it foresaw for itself in confronting them. Many of the problems identified centered on issues of information for supervision/monitoring and evaluation.

Since at the initiation of the Project, PAHO technical advisors were managing all aspects of training and supervision in Project activities (EPI, DRT, Primary Health Care and Channelling), provision of only limited short-term TA was considered appropriate. An eight-month consultancy (for both training and supervision) was envisioned in the first PP, to assist with the startup of the Project; this was counterparted to the Chief of the Surveillance and Disease Control Division. The consultancy was later extended three more months, and this time the consultant was to work in close collaboration with the Chief of the Applied Programs Unit, and the Departments of Epidemiological Surveillance and Disease Control, Maternal and Child Health, and Human Resources.

## RECOMMENDATIONS

1. Review of Supervision and Evaluation Activities. A healthy exercise for the Supervision and Evaluation Unit would be a thorough examination of how these systems function, and what commonalities and differences exist among them. This could provide the basis upon which to develop a system truly responsive to local needs. The system should also process information upwards in a fashion which allows consensus-building as to problem definition, and encourages participation in proposing alternative means of problem resolution. Although it is important that the process for development of the information system be open and broadly participative, it is also a significant enough task to merit someone specifically assigned a coordinating function related to it, both in the USE and in the IU.
2. Technical Assistance. The assignation of a specific person to work with the USE would facilitate coordination among Regional Supervisors and bring their concerns to collaborative councils with representatives from the IU, and the normative divisions. This person assigned to work with the USE could also serve as the focal point for donor support to such an effort. Technical assistance, under the direction of the designated USE member, would allow additional resources to be applied to various activities, permitting a more accelerated development than might otherwise be possible if solely the USE resources are depended on. Donor resources would also facilitate additional workshops to serve as a forum for examining local programming, national, and agency information needs. Committees formed as a result of such workshops could serve as a continuing resource for the USE during system development, testing, and modification, and utilization.

In addition to such a designated individual within the USE, there is a need for a similarly appointed and supported individual with the Information Unit. A working group formed around the nucleus of these two designees would encourage integration of effort at all stages of development.

Beyond the generally desirable effect of coordination and integration, this organization and role for the USE would reflect the division and fusion of labor presented in the recent UI Propuesta, as well as what appears to be the approach desired by the normative divisions as conveyed to the various members of this consultant team. The Supervision and Evaluation Unit should undertake a thorough analysis of the existing supervision and information systems considering both commonalities and differences that exist among systems. (From the brief analysis conducted by the consultant team, there seem to be 25 different Area information systems which run parallel to the official one).

ANNEX A.3.S

HUMAN RESOURCES ANALYSIS SUPERVISION

SUPERVISION

I. BACKGROUND

The concept of supervision as it is currently understood by both the Ministry of of Public Health and Social Assistance and AID is the result of an evolutionary process within the Ministry which continues to the present. Although we have not traced the process back to the founding of the Ministry, an examination of the experience during the last 10 years should be sufficient to identify the dynamics of this process.

A. The Decade of the 70s

During the decade of the 1970 s, supervision was viewed as a function appropriate for each of the normative divisions in the Direccion General de Servicios de Salud (DGSS). Each such division appears to have developed its own criteria for supervision in isolation and applied them to varying degrees, often sporadically and without obtaining clear results.

With the multiplication of normative divisions at the central level the effect of uncoordinated and discontinuous supervision was disruptive to efficient functioning at the operative level. Perhaps as a response to this effect, an Office of Supervision was established in 1978.

B. The Early 80s

In 1980, with an ever-growing span of control for the DGSS, a designated supervisory unit was established as an appendage of the DG, theoretically to serve a coordinating role. The nature of its functions, which responded to specific requests from the DG, placed it in a purely reactive stance. Its lack of decision-making power, its isolation from the normative divisions and Areas, and the negative nature of its investigative role limited its effectiveness, which was further reduced by inadequate access to either transport or per diem. As a result the the unit was unable to fulfill its coordinating function and there was a resurgence of normative division direction of supervisory activities.

C. The EPI Project

Approximately at this point, AID entered the scene with Project 520-0339. In that Project Paper, supervisory systems are described as deficient, and supervisory reports as inadequate, primarily descriptive, and not useful for program evaluation. The Project Paper described the proposed role of supervision as supporting constant monitoring of channelling/immunization efforts at all levels.

The Project Paper also makes it clear from the outset, and in fact predicated much of the Project design, on the fact that the supervisory activity for the Project was being largely carried out by PAHO, which was already developing a series of checklists and supervisory guides. Supervisory activity at the Area level is presented as the responsibility of central-level teams composed of: a representative from the Division of Surveillance and Disease Control, the Project Administrator, and a PAHO Advisor. Supervisory visits were to commence upon completion of district-level training and repeated every three months. (A multiplication of the 4 visits a year x the 25 Areas x an average of 3 days per visit rapidly brings one to more work days than there are in a year.) The scheme not only does not consider this feasibility issue, but does not explore the appropriateness of the activity for either the Project Administrator or the PAHO Advisor. This was not due to thoughtlessness, but to an honest desire to respect the PAHO and MSPAS role in the development of these activities and not risk duplication of effort).

At the district level, supervisory responsibility is viewed as being carried out by the Area EPI Coordinator in conjunction with the Area Chief. The same EPI Coordinator, in conjunction with the nurse supervisor, was to be the responsible agent for supervision at the Health Post level. The concept of Area EPI Coordinator seems to have arisen from the original channelling experience in Escuintla where, during the first year of its implementation, an inspector was relieved of his Saneamiento Ambiental responsibilities to dedicate 70% of his time to channelling activity. This model was not adopted by other Areas and the position simply never evolved institutionally. In fact the ORT Amendment assigns responsibility for implementation and success of EPI/ORT activities in each Area to each Area Chief, who was permitted to appoint one or more persons in support of the program. This was approved by USAID PIL No. 10.

In both the original Project Paper and the ORT Amendment, supervision is described as utilization of PAHO-developed checklists, supervision manuals, and diagnostic survey instruments, with AID's role largely limited to paying for vehicles, training, travel, and per diem.

In the ProAg to the original PP, supervision is directly addressed in only two places. Article B Section B.1.ii) p.3 simply states: "Establish a promotion and supervisory system that will permit a greater and more efficient coverage against morbidity and mortality caused by immunopreventable diseases." Section B.1.iii) of the same Article (pp.6-7) states: "The supervisory team at the central level will monitor and evaluate such aspects as: cold chain operations, coverage by type of immunization, solutions to epidemic problems, supply of vaccines and supplies for the health areas, vehicle and equipment maintenance and operations, supply and distribution of promotional materials and implementation of radio spots."

The ProAg to the ORT Amendment states that: "Supervision activities will be monitored primarily by the Chief of the Applied Systems Unit within the MSPAS, with the assistance of six regional supervisors in the MSPAS's newly formed Supervision and Evaluation Unit. Within the new MSPAS organizational structure, the latter Unit reports to the Director General of Health Services and is charged with monitoring activities in the Health Areas, thus forming a link between the technical/normative and operational levels."

## II. PROJECT ACTIVITIES TO DATE

### A. Technical Support for Supervisory Activities

In the Project Quarterly Reports and Implementation Letters, supervision per se is not mentioned directly and is referred to only in terms of the Health Area Diagnoses scheduled in four areas, "completed" in eight others, and the results "presented". However, it is unclear to whom these results were presented.

In her final report of November 1985, the AID Training and Supervision Advisor (T/SA), states that there was an "eight-month delay in the implementation of the training and supervision component," primarily due to:

- 1) the change in government,
- 2) the reorganization of the Ministry, and
- 3) the National Vaccination Days.

The change of government meant not only new staff at the MSPAS, but also the arrival of a civilian government understandably suspicious of contractual agreements entered into by the previous military government. The reorganization of the Ministry had particularly dramatic implications for supervision as it involved the formation of the new Supervision and Evaluation Unit, a development not anticipated in the original Project. The National Vaccination Days, were more disruptive than anticipated and occupied much of the time of central level personnel from February to August.

In terms of the supervisory element of her dual consultancy, the T/SA states that, in the beginning, "PAHO technical advisors were managing all aspects of training and supervision in EPI, ORT, Primary Health Care, and channelling." Since at the time of the original PP and PPA, PAHO was providing technical assistance in training and supervision, provision of only limited, short-term TA in those areas was considered appropriate. In the original Project, an eight-month consultancy was envisioned for technical services during startup of the Project, and was counterparted to the Chief of the Surveillance and Disease Control Division. In the Scope of Work for that consultancy, three areas were specifically identified in terms of supervision:

1. Carry out an analysis of the current training and supervision system used in the Expanded Program of Immunizations (EPI) using channelling....
3. Refine the supervision and evaluation instruments utilized in EPI channelling activities at the district level (Health Centers and Health Posts)....
8. Review and improve, if necessary, the existing supervisory guides developed by the PAHO which include guidelines for supervising, monitoring, and continual evaluation of the administration, logistics, information, and project implementation at the different levels of the Project."

A second Scope of Work, generated to extend the consultancy for three more months, has much broader terms of reference, and the technical advisor is seen as performing "in close consultation with project counterparts, the Chief of the Unit of Applied Programs, Department of Epidemiological Surveillance and Disease Control, Department of Maternal and Child Health, and Department of Human Resources." Under duties and responsibilities were contemplated:

1. Review of the supervision system and analysis of additional supervision activities needed,
2. Review and improve, if necessary, the existing supervisory guides and evaluation instruments,
3. Develop, in coordination with the MSPAS Supervision and Evaluation Unit, guides and evaluation instruments to be used for EPI/ORT program supervision.

#### B. Supervisory Instruments

The EPI supervisory instrument in use at the beginning of the Project appears to have been the Guia de Supervision para Los Niveles Operativos del Sistema (Ashby-Beach, 1986: Anexo 6). This document appears to be a supervision checklist which forces the supervisor to ask a number of immunization-related questions but depends entirely on uncorroborated information solicited rather than observed. The results do not lend themselves to analysis.

This tool appears to have been followed by the Diagnostico Operativo: Programa Ampliado de Inmunizaciones, Guia para Uso de los Parametros Basicos de Operacionalidad (Ashby-Beach, 1986: Anexos 7 y 8), an instrument probably designed to provide baseline data prior to initiation of immunization-related activity. The instrument solicits a great deal of data, the use of which is not clear, and represents a one-time effort which neither lends itself to easy analysis nor presents data in a way which, if periodically collected, would aid in measuring progress toward goals.

An instrument entitled Diagnostico Operativo PAI, Parametros Basicos en Canalizacion (Ashby-Beach, 1986: Anexo 9), appears to have been developed in an attempt to distill from the Diagnostico Operativo, the data related to manpower distribution and needs in relation to channelling/immunization activity. There is evidence of use of this instrument by the EPI training group.

The next instrument examined was entitled Guia de Supervision (Ashby-Beach, 1986: Anexo 44) and is accompanied by a sheet entitled Instructivos para Llenar la Guia de Supervision PAI y TRO (Ashby-Beach, 1986: Anexo 45). These seem to have been developed for presentation at a Workshop held in August of 1986 to revise, update, and elaborate

immunization norms. There seems to have been more support by the EPI group for a simpler and more general Formato de Registro de Supervision (Ashby-Beach, 1986: Anexo 21). This instrument consists of a single sheet with columns for problem identification, alternative solutions, and responsible agent. The instrument itself is open-ended and accompanying guides would need to be developed.

### C. Summary

At the initiation of the Project, supervision activities were viewed as normative division functions and the domain of those divisions supported by PAHO TA. And, given realities of 1985 and the initial conceptualization of the Project as focussed on EPI, it was not inappropriate to view this activity as the exclusive prerogative of the Division of Disease Control and Surveillance. With the expansion of the scope of the Project to include Oral Rehydration Therapy and other elements of Child Survival, the concept of supervisory activities in support of the Project was expanded to include other normative divisions. However, this expansion did not take into account a significant parallel development within the Ministry, the creation of the Supervision and Evaluation Unit.

## II. CURRENT SITUATION AND KEY ISSUES

### A. Background

A history of dissatisfaction with traditional normative division supervision resulted in the reorganization of this function by the new Ministry leadership in 1986 and the creation of a new Supervision and Evaluation Unit (USE). In March of 1986 a committee was formed in the Supervision and Evaluation Unit to write technical-operational supervisory norms. This committee sponsored a Workshop with broad participation from the various levels of responsibility. The outcome was a clear delineation of the range of problems confronting the Ministry and a mandate for the Unit to develop a process to systematically address them.

Some of the energy generated by this Workshop, however, was dissipated later in 1986 by the extensive involvement of the Supervision and Evaluation Unit in support of the National Vaccination Days. At present however, the Unit seems to be regaining the initiative with the publication of the manual entitled Sistema Unico de Supervision y Evaluacion.

This manual represents a clear definition of a number of institutional impediments to effective service delivery, and an indication of the role that the Unit foresees for itself in confronting them. The manual also introduces as the primary supervisory tool the Instrumento de Supervision, a three-page instrument which is divided into three parts: I. Identificacion; II. Situacion Encontrada; and III. Seguimiento de la Situacion Encontrada.

What is needed now in terms of supervision is the development of diagnostics, monitoring, and evaluation tools which will provide the data

from which information is generated for decision-making at the various levels. This involves needs analysis, analysis of existing systems, adjustment to meet needs where possible, and/or assistance in creating new systems where modification of existing systems is deemed insufficient.

#### B. Key Issues

At the beginning of the Project, it was assumed that either the supervision system in place was adequate, or that PAHO would provide the technical assistance necessary for making the appropriate modifications in the system to meet defined needs. However, for a variety of accumulated reasons, PAHO is unable to function in a way to meet the Ministry's needs in this area. A new group of physicians, most of whom have extensive field experience as well as having completed advanced studies in Public Health, have been brought into the newly created Supervision and Evaluation Unit. There is a strong feeling that the preexisting supervisory system was inadequate and that a new system needs to be developed through a process which allows the broad participation of different levels of responsibility within the institution.

The USE has recognized that many of the defects in the administrative and service delivery systems have been due, in large measure, to deficiencies in supervision and evaluation, which were carried out asystematically and without unified methodological criteria. There is now a clear feeling that both the supervision and the information systems should be defined by national objectives, but with special emphasis on community needs. This is best served by unified systems that not only permit but encourage the participation of all personnel who, in one way or another, have the responsibility to observe, measure, or compare activities directed toward BOG and Ministry objectives. In the area of information, participants in the previously-mentioned Workshop defined the relevant problems in the area of information in the following terms:

1. That there was no unified information system
2. That there was inadequate recording of information
3. That there were deficiencies in the collection of information
4. That there was an excess of instruments
5. That instruments were of poor quality
6. That instruments were not used for analysis and decision-making, and
7. That the information system did not permit timely processing and analysis.

#### C. The Information System

In the course of the present consultancy, an examination was made of several elements of the current information system. It was possible to define, to a large degree, the major factors impinging on systems development at the Central level. But time constraints did not permit the

profound and detailed examination of the functions of Area-level systems that are essential to testing, refining, and implementing any information system, whether for epidemiological or management purposes (and the two are not mutually exclusive in design or use) which includes an activity information systems analysts call "walking the paper trail." In the visits to Health Areas that were possible, within the time constraint of the consultancy, it was often discovered that Area and District staff had developed their own internal information systems which paralleled the official system. Many of the official reporting mechanisms were viewed as not useful for providing locally-needed information; when they were in fact filled out and sent in, it was more to fulfill reporting requirements than because of any perception of need or utility at the local level.

In two Areas visited, the single Sistema Unico de Supervisión sheet with the diagonal squares permitting assessment of progress against objectives were seen as more useful than the entire panoply of other required forms. This single finding is extremely informative and leads us quite directly to the recommendations for next steps.

#### IV. RECOMMENDATIONS

In effect, there appear to be 25 different Area information systems, which run parallel to an official system bloated by the reporting requirements of various donor agencies.

##### A. Review of Supervision and Evaluation Activities

A healthy exercise for the Supervision and Evaluation Unit would be a thorough examination of how these systems function, and what commonalities and differences exist among them. This could provide the basis upon which to develop a system truly responsive to local needs. The system should also process information upwards in a fashion which allows consensus-building as to problem definition, and encourages participation in proposing alternative means of problem resolution.

Although it is important that the process for development of the information system be open and broadly participative, it is also a significant enough task to merit someone specifically assigned a coordinating function related to it, both in the USE and in the IU. Regional Supervisors will obviously be interested in examining the system of their respective Areas, but because of the heavy demands already placed on their time, it is unlikely that they will consistently have the available time that establishing investigative frameworks and detailed evaluation of comparable instruments would require.

##### B. Technical Assistance

The assignation of a specific person to work with the USE would facilitate coordination among Regional Supervisors and bring their concerns to collaborative councils with representatives from the IU, and the normative divisions. This person assigned to work with the USE could also serve as the focal point for donor support to such an effort.

Technical assistance, under the direction of the designated USE member, would allow additional resources to be applied to various activities, permitting a more accelerated development than might otherwise be possible if solely the USE resources are depended on. Donor resources would also facilitate additional workshops to serve as a forum for examining local programming, national, and agency information needs. Committees formed as a result of such workshops could serve as a continuing resource for the USE during system development, testing, and modification, and utilization.

In addition to such a designated individual within the USE, there is a need for a similarly appointed and supported individual with the Information Unit. A working group formed around the nucleus of these two designees would encourage integration of effort at all stages of development.

Beyond the generally desirable effect of coordination and integration, this organization and role for the USE would reflect the division and fusion of labor presented in the recent UI Propuesta, as well as what appears to be the approach desired by the normative divisions as conveyed to the various members of this consultant team.

ANNEX C

INDIVIDUALS INTERVIEWED

MINISTERIO DE SALUD PUBLICA Y ASISTENCIA SOCIAL

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ANNEX E

ACRONYMS

AED	Academy for Educational Development Academia para el Desarrollo Educativo
APS	Atencion Primaria de Salud Primary Health Care (PHC)
CP	Condition Precedent Condición Prévía
CY	Calendar Year Año Caléndrico
DA	Development Assistance Asistencia para el Desarrollo
DG	Director General
DGSS	Dirección General de Servicios de Salud (MSP) General Directorate of Health Services (MOH)
DPT	Diphtheria, Pertussis, Tetanus Difteria, Pertussis, Tetano (Inaunización "Triple")
DSDC	Division of Surveillance and Disease Control División de Vigilancia y Control de Enfermedades
DVCE	División de Vigilancia y Control de Enfermedades Division of Surveillance and Disease Control
EOP	End of Project Terminación del Proyecto
EPI	Expanded Program for Immunizations Proyecto Ampliado de Inaunización (PAI)
ESF	Economic Support Fund Fondo para Apoyo Económico
SMI	Encuesta Simplificada Materno Infantil Simplified Maternal-Child Health Survey
IS	Fondo de Inversiones Sociales Fund for Social Investment
	Fiscal Year Año Fiscal

203

GM	Growth Monitoring Monitoreo de Desarrollo y Crecimiento
GOG	Government of Guatemala Gobierno de Guatemala
HBCUS	Historically Black Colleges and Universities
HEALTHCOM	Health Communication Project
H/MIS	Health/Management Information Systems Sistemas de Información para Salud y Gestión
HQ	Headquarters
HRD	Human Resources Development Desarrollo de Recursos Humanos
IGSS	Instituto Guatemalteco de Seguro Social Guatemalan Social Security Institute
INCAE	Instituto Centroamericano para Administración de Empresas Central American Institute for Business Administration
INCAP	Instituto de Nutrición para Centro America y Panama Nutrition Institute for Central America and Panama
KAP	Knowledge, Attitudes, and Practices Conocimientos, Actitudes, y Practicas
LH	Lactancia Materna Breastfeeding
LOP	Life of Project Duración del Proyecto
MCH	Maternal Child Health Materno Infantil
MI	Materno Infantil Maternal Child Health
MOE	Ministry of Education Ministerio de Educación
MOH	Ministry of Health Ministerio de Salud
MSPAS	Ministry of Health and Public Assistance Ministerio de Salud y Asistencia Pública

NFE	Non-Formal Education Educación No-Formal
ORT	Oral Rehydration Therapy Terapia de Rehidratación Oral (TRO)
OHRD	Office of Human Resources Development (USAID) Oficina de Desarrollo de Recursos Humanos
ORU	Oral Rehydration Units Unidades de Rehidratación Oral (URO)
PACD	Project Assistance Completion Date Fecha Final de Asistencia al Proyecto (FFAP)
PAHO	Pan American Health Organization Organización Panamericana de Salud (OPS)
PAI	Proyecto Ampliado de Inmunización (PAI) Expanded Program for Immunization (EPI)
PAU	Project Administration Unit Unidad de Administración del Proyecto
PHC	Primary Health Care Atención Primaria de Salud (APS)
PID	Project Identification Document Documento de Identificación de Proyecto
PIL	Project Implementation Letter Carta de Implementación
PIO/C	Project Implementation Order/Commodities Orden para Implementación de Proyectos/ Insumos
PIO/T	Project Implementation Order/Technical Services Orden para Implementación de Proyectos/ para Servicios Técnicos
PP	Project Paper Documento del Proyecto
PPS	Project Paper Supplement Suplemento al Documento del Proyecto
ProAg	Project Agreement Convenio del Proyecto
PS	Personal Services Contract Contrato para Servicios Personales
QR	Quarterly Report Reporte Trimestral

205

RESSCAP	Reunion Sector Salud Centroamerica y Panama Health Sector Meeting for Central America and Panama
ROCAP	Regional Office for Central America and Panama Oficina Regional para Centro América y Panama
SEGEPLAN	Secretaria General de Planificacion General Planning Secretariat
TA	Technical Assistance Asistencia Técnica
TRO	Terapia de Rehidratación Oral Oral Rehydration Therapy (ORT)
TSR	Técnico de Salud Rural Rural Health Technician
UI	Unidad de Informática Information Unit
USAC	Universidad de San Carlos San Carlos University
USE	Unidad de Supervisión y Evaluacion Supervision and Evaluation Unit
URO	Unidad de Rehidratación Oral Oral Rehydration Unit (ORU)
WHO	World Health Organization Organización Mundial de Salud (OMS)