DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Centers for Disease Control

Memorandum

Date June 2, 1983

From Anthony A. Hudgins, M.A.S., Public Health Analyst, Program Evaluation Branch (PEB), and Jeanne Gilliland, M.B.I.S, Programmer Analyst, Research & Statistics Branch (RSB), Division of Reproductive Health (DRH), Center for Health Promotion and Education, (CHPE)

Subject Foreign Trip Report (AID/RSSA): Bangkok, Thailand, March 28-April 7, 1983, Computerized Logistics Management System

To William H. Foege, M.D.
Director, Centers for Disease Control
Through: Dennis D. Tolsma
Acting Director, CHPE

SUMMARY

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This was the first trip to Bangkok by Jeanne Gilliland, Programmer Analyst, and Anthony Hudgins, Public Health Analyst, to follow up recommendations by Jack L. Graves, Public Health Advisor, CDC/DRH/PEB (see Thailand Trip Report by Graves dated July 2, 1982), and William Felling, Consultant, John Snow, Inc., to establish computerized monitoring of the family planning logistics system using an Apple II computer already owned by Thailand's National Family Planning Program (NFPP). While working with staff of the Family Health Division (FHD) of the Ministry of Public Health (MOPH), the following tasks were accomplished:

1. Overall system design for the computerized contraceptive commodity reporting system was completed. Design of the input data form was finalized, a numbering system for uniquely identifying each reporting entity in the logistics and service systems was developed, and periodic report formats recommended by Graves and Felling were reviewed and modified.

2. The status of the hardware at NFPP was checked for preparedness and compatibility with the system at CDC that was being used for developing programs.

3. Basic data entry programs were installed and MOPH personnel were trained in its use. Using these data entry programs, the MOPH can enter actual data before our return visit so that we can test all edit, data management, and report generating programs on our return visit.

A return visit is scheduled for the last 2 weeks of June to complete installation of the system and training of MOPH personnel.

I. PLACES, DATES, AND PURPOSE OF TRAVEL

Bangkok, Thailand, March 28-April 7, 1983, to provide assistance in developing a computerized contraceptive commodities reporting system (previous related trip: Graves, April 18-May 9, 1982; see Thailand RSSA report dated July 2, 1982). This assistance was provided by Anthony A. Hudgins, Public Health Analyst, and by Jeanne C. Gilliland, Programmer Analyst, CDC/CHPE/DRH. This travel was done at the request of the USAID/Bangkok Office of Health Population and Nutrition, and USAID/Washington Office of Population (POP). It was in accordance with the Resource Support Services Agreement between CDC/CHPE/DRH and USAID/POP/FPSD.

II. PRINCIPAL CONTACTS

A. Family Health Division (FHD), Ministry of Public Health (MOPH), Royal Thai Government
   1. Dr. Morakot Kornkasem, Director
   2. Dr. Suvanee Satayapan, In-Charge, Voluntary Surgical Contraception Program
   3. Khun Suthon Panyadilk, Chief, Research, Evaluation, and Logistics

B. USAID/Bangkok
   1. David Oot, Population Officer
   2. Khun Karoon Rugvanchje, Assistant Project Officer

C. Columbia University
   1. Tony Bennett, Population Advisor

III. SYSTEM DESIGN

A. Background

The NFPP Logistics System distributes a variety of contraceptives, including several different types of oral contraceptives, condoms, several brands of injectables, and IUD's, through a network of approximately 7,000 outlets. Difficulties in management of this system, and its voluminous data requirements led to a recommendation that a computerized logistics data system be developed using an Apple II microcomputer. During April-May 1982, Jack L. Graves of CDC/CHPE/DRH, and William Felling of John Snow, Inc., visited Thailand and made recommendations concerning hardware and software requirements for such a system. Hardware was purchased, and the task of writing the software was assigned to CDC/CHPE/DRH. This visit is the first of two related to the design, writing, and installation of the software, and to train NFPP personnel in its use.

B. Modification of Logistics Reporting Form (Form 6)

This reporting form (which will also serve as a Request and Issue Voucher) has been changed substantially from that originally proposed by Graves and Felling. A copy is included with this report as Attachment 1. The major changes are as follow:

1. The last two digits of the Reporting Entity will be precoded on the form, and the type of reporting entity that should use the particular form will be noted on the form. Although this will cause more work in handling the forms at the National level, MOPH personnel felt that it would alleviate the problem of miscoding, and would therefore be worth the effort.

2. "Beginning Balance" and "Received" columns have been added to allow reporting of all activity during the month, and to allow for a simple, but effective, data-entry editing procedure.

3. Contraceptives will be listed in order of their use at the various levels of reporting entities. For example, pills and condoms are used at all levels so they will be listed first; next injectables will be listed, and finally IUD's.

C. Development of a Numbering System for Reporting Entities

A numbering system was developed to give a unique six-digit code to each reporting entity:

1. The first two digits represent the province (01-73). Regional level agencies will be numbered 91 through 97.

2. The third and fourth digits will represent the district. A "00" indicates provincial level activity, such as the provincial hospital, warehouse, or clinic.

3. The fifth and sixth digits represent the type of reporting entity, according to the following codes:

    00: Warehouse, storehouse, any unit that issues supplies to another unit
    10: MCH hospital
    11: Provincial hospital
    12: PCMO clinic
    13: District hospital
    21-29: Other governmental entities
    33: Aggregated district clinic activities
    41-49: Private agencies

It should be noted that all entities with a "00" in spaces 5 and 6 will be reporting supplies issued to other agencies. All others will represent commodities dispensed to clients.

A listing of names and codes was prepared for the 104 reporting entities included in the four provinces where the system will be pilot tested, and a program to enter and update the reporting entities was installed.

D. Data Entry and Edit Procedures

Data entry programs were written, installed, and tested on the system. A MOPH staff member was trained in the use of this program, and data entry can begin as soon as forms begin to arrive from the field.

The majority of forms will tend to be batched in groups by province. This batching is not necessary, but will make data entry slightly faster. Data entry will be made onto soft (floppy) disks, and a separate program will be used to transfer the data onto the CORVUS hard disk. This will allow the use of a second Apple computer for data entry, so that the main Apple II, with its larger storage capacity, can be freed up for other tasks.

The keypuncher will enter the ID number of the reporting entity, then the date of the report, followed by (a) beginning balance, (b) dispensed or issued, (c) received during the month, and (d) ending balance on hand, for each product carried by the reporting entity. The program presents a copy of the Form 6 on the screen to simplify the data entry process.

The computer will check each line upon entry for internal consistency (beginning balance + received - used = ending balance). If there is an error a tone will sound, and an error message will appear on the line of data. The keypuncher can then check the data entries, and if an entry error has been made, it can be corrected. If the error is on the form, the keypuncher will continue, leaving the nonbalancing entry intact for further investigation and correction by other logistics system personnel.

In addition to the edit procedures carried out during the data entry process, the following edits will be carried out once all the data for a month has been entered:

1. A printout will be prepared of all data that has internal inconsistencies (when beginning balance + received - used does not equal ending balance).

2. The beginning balance on the current Form 6 will be checked against the ending balance on the previous Form 6.

E. Reports to be Generated

One of the tasks of the computerized logistics mangement system will be to compute a 6-month moving average to fill in missing reports, and to calculate months of supply on hand. The use of a weighted average, with recent months receiving a greater weight, was discussed. However, it was decided that the maturity of the family planning program precluded rapid increases in demand, so that a simple, non-weighted average would suffice.

The series of reports recommended by William Felling and Jack Graves, with some changes to improve their utility, were retained. The changes are discussed below.

1. Status Report by Depot: This report has been split into two reports with the same basic format. One will report the status of issuing entities; the other will reflect the status of all entities that dispense commodities directly to users. Both of these reports will also have "total" columns.

2. Aggregate Status Report: This report will be retained as recommended. It is important, though, to emphasize that "on-hand" figures will reflect both outlets and warehouses, while "dispensed" figures will reflect only commodities dispensed directly to users.

3. Out of Compliance Products: This report will be retained as recommended, except that compliance maxima and mimima can be specified by entity level, and changed at will. Using these variable parameters, products that are seriously out of compliance, as well as those that are only mildly out of compliance can be identified.

4. Out of Compliance Outlets: This report will also allow changing of maxima and minima by level of reporting entity.

5. Suggested Shipment to Regional Warehouses: This form has been retained as recommended. It should be noted that these reports will only become useful at the time that all areas of the system begin reporting.

F. Hardware Requirements

A piece of hardware that expands the display capability of the Apple II Computer from 40 to 80 columns was brought from the United States and successfully installed in the NFPP computer.

An additional Apple II computer without a hard disk will be needed for data entry when the system is fully operational. This hardware is described in a memo to Dr. Morakot Kornkasem (Attachment 2).

IV. FUTURE ACTIVITIES

A return visit to install the complete system and complete training of MOPH personnel has been tentatively scheduled for the last 2 weeks of June for both Hudgins and Gilliland. After the system has been in operation for some time, an additional visit may be desirable to modify and expand capabilities of the system.

Anthony A. Hudgins, M.A.S.

Jeanne Gilliland

Jeanne Gilliland, M.B.I.S.

(This form is to be filled out only by &&&&&&&&&&&&)
Monthly Report

Contraceptive Commodities

Month..... Year.....

Reporting Unit..... District..... Province.....

No.	Item	Unit	Balance at Start of Month	Shipments Received	Dispensed or Issued	Balance at end of Month	New Stock Requested	New Stock Approved
01.	Noriday	Cycle						
02.	Norinyl	Cycle						
03.	Ovostat	Cycle						
04.	Ovral	Cycle						
05.	Eugynon	Cycle						
11.	Condom	Piece						
21.	Depo-provera	Dose						
22.	Pheno-M	Dose						
23.	Depo-gestin	Dose						
24.	Controlan	Dose						
31.	Multi-load	Set						
32.	Loop B	Piece						
33.	Loop C	Piece						
34.	Loop D	Piece						
39.	Inserter	Set						
6.								
7.								
8.								
9.								
10.								

Requisition by..... Approved by.....

Position..... Position.....

Date..... Date.....

Remarks: .....

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Attachment 2

-1-

MEMORANDUM

To: Dr. Morakot Kornkasem, Director of the Family Health Division

From: Anthony Hudgins, AID Logistics Consultant AAH

Subject: Additional Computer Hardware Requirements

During the past week that Jeanne Gilliland and I have worked here, it has become increasingly apparent that the Apple computer with the Corvus hard disk will have other uses for the Family Health Division.

The on-going time requirements for data entry of the completed logistics system are such that the machine would seldom be available for other uses. We therefore recommend obtaining another Apple computer with only soft disk storage for data entry. The following hardware would be required:

(1) Apple II-E computer
(1) Apple black and white monitor
(1) Apple numerical keypad II
(2) Disk drives with controller
(1) 80 column board with soft switch
(1) 16 K RAM card

This hardware would cost approximately $3,000 in the United Staes.

cc: David Oot, USAID