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SERVICES

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Public Health Service
Centers for Disease Control

Memorandum

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Subject Foreign Trip Report (AID/RSSA): Bangkok, Thailand, June 16-July 1, 1983--
Computerized Logistics Management System

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

SUMMARY

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ATTACHMENT 1: FORM-6

ATTACHMENT 2: Reports for the Kamphaengphet Province

SUMMARY

This was the second trip to Bangkok by Anthony Hudgins, Public Health Analyst, and Jeanne Gilliland, Programmer Analyst, to complete the installation of the logistics management system and the training of Ministry of Public Health (MOPH) personnel. The system was implemented according to design specifications developed 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. These specifications were finalized by Ms. Gilliland and Mr. Hudgins during the March 28, 1983, trip to Bangkok and the June 2, 1983, visit by Tony Bennett, Population Advisor, MOPH, to CDC. While working with the Family Health Division (FHD) of the Ministry of Public Health (MOPH), the following tasks were accomplished:

1. The Pascal Operating System was installed on the CORVUS hard disk with the software interface to the Apple II+, and files were formatted to accommodate programs and data.
2. Logistics monitoring system programs were put on-line and successfully tested on data actually collected from the field for 91 reporting entities.
3. Documentation was prepared and left with the MOPH, including system overview, program listings, and program discussion and annotation.

4. MOPH personnel were given overview system explanations and detailed training in operation of the system.
5. An on-site visit was made to a District Hospital, three Tambon Health Centers, and the Provincial Office in the Surat Thani Province to evaluate records of contraceptive commodities stocks and usage.

I. PLACES, DATES, AND PURPOSE OF TRAVEL

Bangkok, Thailand, June 16-July 1, 1983, to install the computerized Logistics Management System for Contraceptive Commodities Monitoring and to train Ministry of Public Health personnel on the overall and in-depth system operation. This consultation was provided by Anthony A. Hudgins, Public Health Analyst, and 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 the AID/Washington Office of Population (POP). It was in accordance with the Resource Support Services Agreement between CDC/CHPE/DRH and AID/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 Panyadilok, Chief, Research, Evaluation, and Logistics
- B. Surat-Thani Province, MOPH
 1. Dr. Somkit, Deputy Provincial Chief Medical Officer
 2. Ms. Chirapan, Assistant Chief, Health Promotion Section
- C. USAID/Bangkok
 1. David Oot, Population Officer
 2. Khun Karoon Rugvanchje, Assistant Project Officer
- D. Columbia University
 1. Tony Bennett, Population Advisor

III. SYSTEM INSTALLATION

The logistics monitoring system includes three main data bases: (1) the reporting entity NAME-ID file, (2) the current month's data file, and (3) the master balance file, which includes 6 months of use data, cumulative data for all supplied data, and cumulative data for another 6 months of prior use data. The FORM-6 is the basic reporting form and serves as both a Request and Issue Voucher (see the Thailand trip report by Mr. Hudgins and Ms. Gilliland dated June 2, 1983.) A copy of the Form-6 is included with this report as Attachment 1.

Data received from 91 reporting entities was successfully transferred to the Corvus hard disk. The data was then edited to check that ENDING BALANCE = BEGINNING BALANCE - USED + SUPPLIED and that each reporting entity ID number corresponds to an ID number in the master balance file. Once the system has been in operation, the BEGINNING BALANCE can also be compared to last month's

ENDING BALANCE to check that the two figures are equal. During this visit, another edit was proposed and added such that the system now prints a warning if any reporting entity has had more than one FORM-6 entry for the current month. After the data for the 91 entities was edited and corrected, it was then entered by the system into the monthly data file. The monthly data file is initialized each month with the appropriate entity ID numbers and product numbers. Sixteen product records comprise one form. Used, supplied, and on-hand data is filled in when the FORM-6 data is transferred after editing.

Names and identification numbers were entered by MOPH personnel on floppy diskette for the 104 reporting entities included in the initial program. During this visit, the file was installed on the Corvus hard disk, and an indexing structure was implemented such that data for any ID number can be accessed directly by entering only the 6-digit ID number. (See the June 2, 1983, Thailand trip report for a discussion and analysis of the ID numbering system.) The indexing structure also provides for sequential processing of records by ID number, regardless of the actual order of the records in the files. In addition to the NAME-ID file, the master balance file was also initialized and updated with data from the first monthly data file. The file always reflects the most recently received monthly data as well as individual fields for up to 5 more months of use data. Each time the master balance file is updated, the previous use data is also "rolled over" such that the most recent 6 months of use data are always represented.

In addition to the data base management and editing modules, there are six report generating programs. The reports produced include: (1) Status Report by Issuing Entity, (2) Status Report by Dispensing Entity, (3) Aggregate Status Report, (4) Out-of-Compliance Products Report, (5) Out-of-Compliance Outlets Report, and (6) Suggested Shipments to Regional Warehouse Report. (See Attachment 2 for an example of each report for the Kampaengphet Province.) The out-of-compliance reports have been reformatted to include a listing of the maxima and minima parameters specified by level of reporting entity. At the beginning of program execution for these reports, the operator can interactively specify a minimum and a maximum number of months on-hand for each of nine reporting levels: (1) PCMO Warehouse, (2) MCH, (3) PROV Hospital, (4) PCMO Clinic, (5) District Warehouse, (6) District Hospital, (7) District Combined, (8) Other, and (9) Regional Warehouse. By varying the maxima and minima parameters, different degrees of out-of-compliance can be identified and represented in the reports. Other modifications made to report generating programs include reformatting to take advantage of the extended (150 character) printing capacity of the MOPH printer and minor heading changes to make the reports more meaningful to management.

All of the data base management and report generating programs, as well as the PASCAL system and utility programs, were tested on the data received from the 91 reporting entities.

IV. DOCUMENTATION

Documentation of the system was prepared and provided to MOPH, including a system overview section, detailed descriptions of all programs, and annotated program listings. The system overview section describes each data file giving

the names, data types, lengths, and positions for all variables in each record type. The coding structure for the ID numbers is also explained in detail. After describing the data file structures, the overview section discusses the use of a tree index file to provide random data access using the 6-digit ID number or range of numbers. Then a checklist of step-by-step system operations is included.

V. TRAINING

Tony Bennett and Khun Suthon of the MOPH, and Khun Karoon of USAID were given an overview explanation of the operation of the system. Mr. Bennett and Khun Suthon (to a lesser extent) have been given detailed training in operation of the system. Extensive notes were recorded during demonstration of the programs.

A meeting was held with Mr. Robert Hanenberg to describe the system. Mr. Hanenberg is familiar with the PASCAL programming language and operating system. Although affiliated with another Government agency, he will be able to provide some ad hoc assistance in maintaining the system.

At a final meeting attended by Dr. Morakot, Khun Karoon, David Oot, Tony Bennett, Khun Suthon, Jeanne Gilliland, and Anthony Hudgins, finalized reports were presented. Potential management use and analysis was discussed. In particular, the difference between use and on-hand data for issuing versus dispensing entities was explained, and the possibilities for varying minimum and maximum parameters for out-of-compliance reports were demonstrated. The future addition of subtotals for injectables, like the subtotals provided for pills and loops, was proposed. Also, ongoing dialogue between CDC and MOPH was recommended using the AID information transferring services. This could include documentation updates, system inquiries, and actual program updates provided on floppy diskettes.

A meeting was also held with Wanchai Wijitkhuan and Anumongkol Sirivedhin of the National Institutes of Development Administration (NIDA) of the Thai Government. During this meeting, the logistics system reports were presented and explained, and the possibility of an interface between the logistics system and NIDA projects was discussed.

VI. ON-SITE EVALUATION--SURAT THANI PROVINCE

In order to evaluate the ease-of-use and acceptance of the FORM-6 for reporting and submitting requisitions, a trip was made by Anthony Hudgins and Khun Karoon to the Surat Thani Province. A district hospital, three Tambon Health Centers, and the Provincial Office were visited.

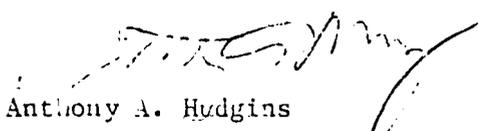
Initial investigations showed that records on contraceptive commodities appeared to be in good order. Although records of oral contraceptive stocks and usage were not maintained by brand name, family planning personnel said it would not be difficult to begin doing this. Otherwise, no problems were observed which might hinder the reporting of data as requested on the FORM-6, which is the basic data source for the monitoring system.

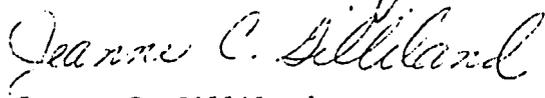
Other general observations included:

- a. The clinic and hospital personnel saw no need to maintain stocks of contraceptives beyond immediate needs. Two of the clinics picked up an estimated month's needs each month. The third clinic said they would bring stocks up to a 2-month supply. This lack of buffer stocks helps cause fairly frequent stockouts. One clinic was without condoms during 2 months of the preceding year. Another clinic had a current stockout of Ovostat, while the PCMO warehouse had a year-and-a-half supply. A major struggle in operating the logistics system will be in convincing clinics to carry a multimonth supply.
- b. Some supplies are handled with a scarcity mentality. For example, Noriday is issued to all clinics because the chief of the Health Promotion Section perceives its supply to be dependable. However, Ovostat and Eugynon are sent only to clinics which request them; so clinics may have two brands of orals, but the second brand may be Ovostat in some cases and Eugynon in others. Because of the lower usage of Ovostat and Eugynon, the PCMO warehouse has over 1 year's supply of each. Injectable contraceptives are also considered to be in short supply.

VII. FUTURE ACTIVITIES

Ongoing communication between CDC personnel and Tony Bennett of MOPH in Thailand will be set up through AID Washington. Within the next year, the system will also be expanded from the original 104 reporting entities to include approximately 1,500 reporting entities. At that time, further assistance from CDC personnel might be required.


Anthony A. Hudgins


Jeanne C. Gilliland

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(This form is to be filled out only by ~~xxxxxxxxxxxx~~
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.	Phazo-M	Dose						
23.	Depo-gestin	Dose						
24.	Controlan	Dose						
31.	Multi-load	Set						
12.	Loop B	Piece						
13.	Loop C	Piece						
14.	Loop D	Piece						
19.	Inserter	Set						
6.								
7.								
8.								
9.								
10.								

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

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

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

Remarks:

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STATUS REPORT BY ISSUING ENTITY

CURRENT MONTH

PAGE 1

PROVINCE - 45 KAMPHAENGPHEH

CONTRACEPTIVE	PROVINCIAL WAREHOUSE		DISTRICT WAREHOUSE		TOTAL
	ISSUED	ONHAND	ISSUED	ONHAND	ONHAND
NORIDAY	5093	6406	4773	6263	12669
NORINYL	2307	19386	799	2527	21913
OYOSTAT	6618	8364	2282	8833	17197
OYRAL	0	10500	0	0	10500
EUGYNON	2777	8246	3619	6683	14929
TOTAL PILLS	17795	52902	11473	24306	77208
CONDOM	3900	60300	3304	7336	67636
DEPO-PROVERA	608	2872	0	120	2992
PHENO-M	181	0	0	0	0
DEPO-GESTIN	3900	60300	0	0	60300
CONTROLAN	0	0	0	0	0
MULTI-LOAD	20	140	0	10	150
LOOP B	0	317	0	0	317
LOOP C	0	1200	0	0	1200
LOOP D	0	0	0	0	0
TOTAL LOOPS	0	1517	0	0	1517
INSERTER	10	5	0	0	5
	0	0	0	0	0
# REPORTING UNITS	1		6		7
# TOTAL UNITS	1		7		8
% UNITS REPORTING	100.0 %		95.7 %		87.5 %

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PROVINCE - 45 KAMPHAENGPHE

AGGREGATE STATUS REPORT

CURRENT MONTH PAGE 1

CONTRACEPTIVE MORIDAY	TOTAL UNITS		PERCENT OF TYPE	
	DISPENSED	ON HAND	DISPENSED	ON HAND
	5410	20334	55 %	20 %
NORINYL	773	23826	7 %	24 %
OVOSTAT	2062	22593	21 %	22 %
OVRAL	30	10544	0 %	10 %
EUSYNON	1494	21100	15 %	21 %
TOTAL PILLS	9769	98397	100 %	100 %
CONDOM	3366	76311	100 %	100 %
DEPO-PROVERA	110	4916	100 %	100 %
PHENO-M	290	745	100 %	100 %
DEPO-GESTIN	0	60300	100 %	100 %
CONTROLAM	0	0	100 %	100 %
MULTI-LOAD	65	869	100 %	100 %
LOOP B	0	684	0 %	28 %
LOOP C	61	1419	100 %	58 %
LOOP D	0	308	0 %	12 %
TOTAL LOOPS	61	2411	100 %	100 %
INSERTER	0	43	100 %	100 %
	0	0	100 %	100 %

	PCMO WHSE	MCH	PROV HOSP	PCMO CLIN	DIST WHSE	DIST HOSP	DIST COMB	OTHER	REG WHSE
	MIN=4 MAX=6	MIN=3 MAX=6	MIN=3 MAX=6	MIN=2 MAX=5	MIN=3 MAX=6	MIN=3 MAX=6	MIN=2 MAX=5	MIN=3 MAX=6	MIN=4 MAX=6
OUTLETS	PRODUCT	AVG MONTHLY USE		UNITS ON HAND	MONTHS SUPPLY		OVER/UNDER		
KAMPHAENGPHET-PSTO									
	NORIDAY	6093		6406	1.05		---		
	NORINYL	2307		19386	8.40		+++		
	OVOSTAT	6618		8364	1.26		---		
	EUGYNON	2777		8246	2.96		---		
	CONDOM	3900		60300	15.46		+++		
	PHENO-M	181		0	.00		---		
	DEPO-GESTIN	3900		60300	15.46		+++		
	MULTI-LOAD	20		140	7.00		+++		
	INSERTER	10		5	.50		---		
KAMPHAENGPHET-PHOSP									
	NORIDAY	68		32	.47		---		
	OVOSTAT	24		44	1.83		---		
	CONDOM	204		501	2.45		---		
KAMPHAENGPHET-PCLIN									
	CONDOM	364		92	.25		---		
	DEPO-PROVERA	24		500	20.83		+++		
	MULTI-LOAD	24		500	20.83		+++		
MUANG KAMPHAENGPHET-DSTO									
	NORIDAY	1496		210	.14		---		
	NORINYL	747		727	.97		---		
	OVOSTAT	247		3203	12.96		+++		
	EUGYNON	1366		1319	.96		---		
	CONDOM	604		496	.82		---		
MUANG KAMPHAENGPHET-DAGG									
	NORIDAY	1840		1593	.86		---		
	OVOSTAT	140		1703	12.16		+++		
	OVRAL	30		40	1.33		---		
KHANUWORALAKSABURI-DSTO									
	NORIDAY	1600		1400	.87		---		
	OVOSTAT	1050		550	.52		---		
	EUGYNON	1340		1720	1.28		---		
	CONDOM	800		214	.26		---		
KHLONG KHLUNG-DSTO									
	NORINYL	52		848	16.30		+++		
	EUGYNON	480		1110	2.31		---		
	CONDOM	1200		3300	2.75		---		
KHLONG KHLUNG-DHOSP									
	NORIDAY	22		141	6.40		+++		
	CONDOM	180		428	2.37		---		
	PHENO-M	39		66	1.69		---		
	MULTI-LOAD	5		58	11.60		+++		
	LOOP C	61		0	.00		---		
KHLONG KHLUNG-DHOAGG									
	EUGYNON	146		1835	12.56		+++		
	DEPO-PROVERA	86		524	6.09		+++		
PHRAN KRATAI-DSTO									
	NORIDAY	1050		1800	1.79		---		
	CONDOM	300		2580	8.60		+++		
PHRAN KRATAI-DHOAGG									