Prepared for
International Cooperation Administration

TUDOR ENGINEERING COMPANY, Washington, D. C.

PREPARED FOR

INTERNATIONAL COOPERATION ADMINISTRATION

SUMMARY REPORT ON TELECOMMUNICATIONS SYSTEMS FOR THAILAND, VIETNAM, LAOS INCLUDING POSSIBILITIES IN CAMBODIA

TUDOR ENGINEERING COMPANY, Washington, D. C.

APRIL 1958

RALPH A. TUDOR
L. A HELGESSON
CARL A. TRUXEL

TUDOR ENGINEERING COMPANY

595 MISSION STREET, SAN FRANCISCO 5 · YUKON 2-9010

Address reply to 1413 K St., N.W., Washington 5, D. C. • STerling 3-5313

International Cooperation Administration
815 Connecticut Avenue, N. W.
Washington 25, D. C.

April 11, 1958
Reference: TEC-132

SUBJECT: SUMMARY REPORT ON TELECOMMUNICATIONS SYSTEMS FOR THAILAND, VIETNAM AND LAOS AND POSSIBILITIES IN CAMBODIA

Attention: Mr. Norman E. Thompson

Gentlemen:

Transmitted herewith is a Summary Report on the telecommunications systems for Thailand, Vietnam and Laos, and also including possibilities in Cambodia.

These plans should be adequate to form the basis for country agreements with ICA, after which the work of detailed engineering, rehabilitation and improvement of the respective telecommunications systems can be undertaken.

Messrs. Raymond Foulkrod, Consultant, and John M. Hogg, Regional Telecommunications Coordinator with ICA, prepared this Summary.

This report should be made available to the Missions and country officials at an early date.

Very truly yours,

TUDOR ENGINEERING COMPANY

John G. Marr

John G. Marr
Project Manager

JGM:bb
Encls.

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INTRODUCTION

There is no question that the telecommunications systems in Thailand, Vietnam and Laos need to be rehabilitated and improved. ICA has been directing its efforts to accomplish such improvements at an early date.

Fundamental Plans have been prepared for each country by Southeast Asia Communications and are available. As the ultimate objectives, they could be accomplished over a long period of years.

The immediate need is to get the rehabilitation and construction work underway as soon as possible. In order to accomplish such an objective, this summary report on telecommunications systems for the three countries is submitted. The systems are indicated in outline form and an estimate of cost accompanies each plan. It is recommended that these plans be used as a basis for agreements between ICA and the countries, and that an engineering firm be instructed to proceed with the plans and specifications for rehabilitation and construction.

In undertaking this assignment, it was at the suggestion of ICA that the possibilities in Cambodia were investigated. This report also contains suggestions for a telecommunications system in Cambodia, with an accompanying estimate of cost.

The details of these recommendations should be developed in the field as work proceeds. It is important that work begin at as early a date as possible.

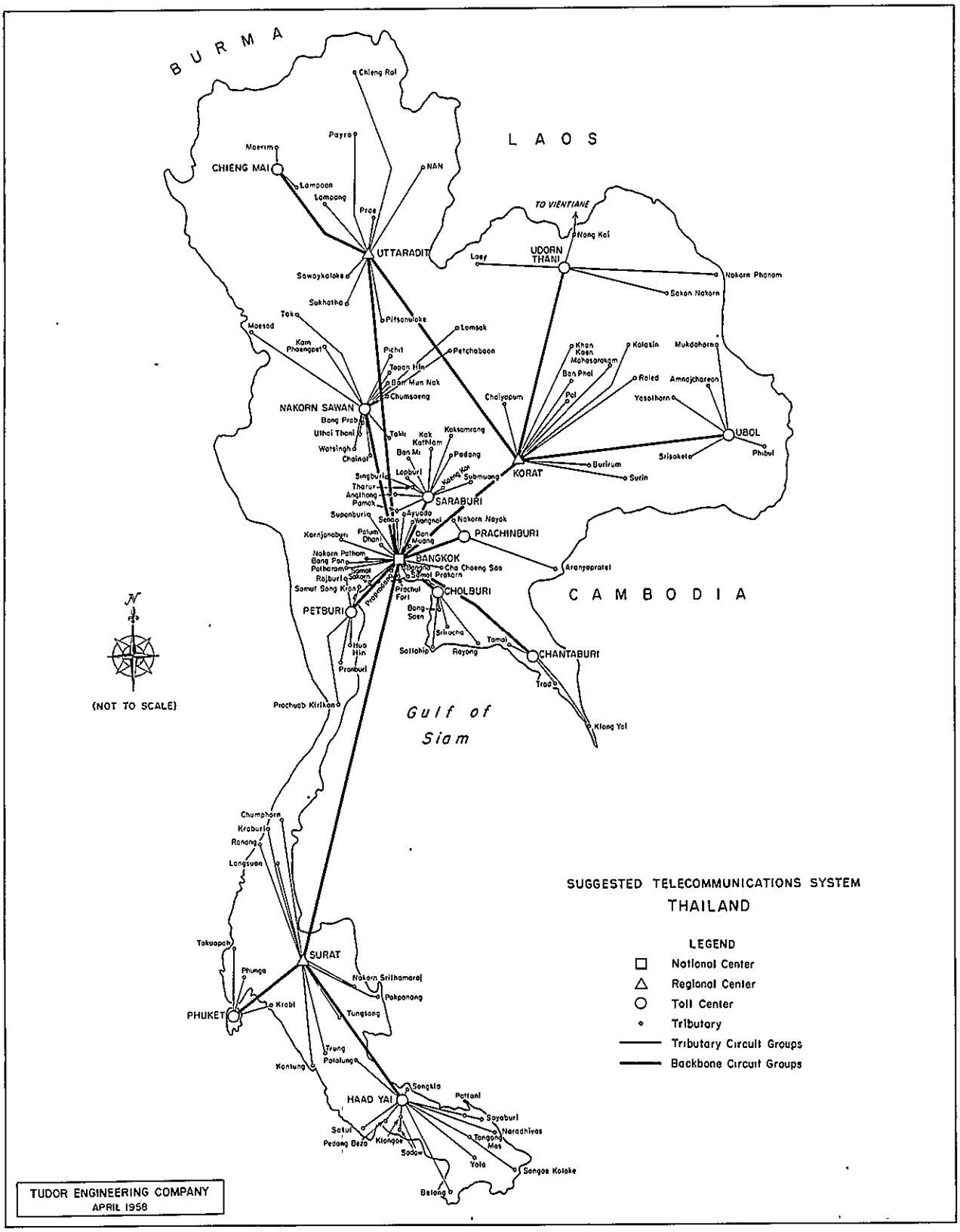
BURMA
LAOS
CAMBODIA
Gulf of Siam
CHIENG MAI
UTTARADIT
UDORN THANI
NAKORN SAWAN
KORAT
UBOL
SARABURI
PRACHINBURI
BANGKOK
CHOLBURI
PETBURI
CHANTABURI
SURAT
PHUKET
HAAD YAI
TO VIENTIANE
(NOT TO SCALE)
SUGGESTED TELECOMMUNICATIONS SYSTEM
THAILAND
LEGEND
National Center
Regional Center
Toll Center
Tributary
Tributary Circuit Groups
Backbone Circuit Groups
TUDOR ENGINEERING COMPANY
APRIL 1958

PLATE I

RECOMMENDED TELECOMMUNICATIONS SYSTEM FOR THAILAND

The telecommunications system recommended in this section for Thailand will provide initially a modern system that should be adequate to satisfy all immediate requirements, both for commercial use and special services. It is so designed that it can be expanded economically and in a relatively short time as demands for service increase. The estimated cost of the recommended system is slightly under $17,000,000.

The proposed telecommunications system is shown in outline form on Plate 1. Further details and estimated costs are given below. It should be noted that in those cases where broad band radio relay systems are proposed for toll plant, such systems have an ultimate capacity of 600 voice channels per band. They would be equipped initially to meet the total circuit requirements on each route with approximately 10 per cent spare circuits for emergency and patching use.

The VHF radio relay systems should have an ultimate capacity of 60 voice channels and should be equipped initially to meet total circuit requirements with approximately 10 per cent spare.

Recommended Construction in Thailand

Project	Estimated Cost
Rehabilitation of existing plant that can be reused	$ 1,000,000
Add 10,000 dial lines in Wat Leb office in Bangkok	1,500,000
Exchange outside plant and station equipment in Bangkok	1,500,000
Korat, exchange outside plant and station equipment	20,000
Saraburi, 500 line dial office with toll board, building, outside plant and station equipment	119,000
Nakorn Sawan, outside plant and station equipment	20,000
Uttaradit, 400 lines of dial with toll board, outside plant, building, and station equipment	97,000
Chieng Mai, add 200 manual lines and outside plant	57,000
Udorn, 300 lines of dial with toll board, outside plant and station equipment	255,000
Petburi, 400 dial lines with toll board, building, outside plant, and station equipment	116,000
Phuket, 600 dial lines with toll board, outside plant and station equipment	130,000
Pracinburi, 300 dial lines with toll board, building, outside plant and station equipment	100,000
Cholburi, 300 dial lines with toll board, building, outside plant and station equipment	90,000
Ubol, keep C.B. manual board in service, add outside plant and station equipment	12,000
Chantaburi, keep C.B. manual board in service, add outside plant and station equipment	15,000
Convert 40 tributary offices to unattended dial operation, offices to be chosen by host country administration and contractor	1,200,000
Toll Plant	
Build broad band radio relay systems from	
Bangkok to Korat, 148 miles	740,000
Saraburi to Uttaradit, 150 miles	750,000
Bangkok to Had Yai, 538 miles	2,690,000
Build 1500 miles of VHF radio relay, locations to be determined by contractor and host country administration	5,250,000
Single side band radio circuits for small circuit groups	200,000
Power	250,000
Training	500,000
International circuits	150,000
Total	$ 16,761,000

Many of the details of the above suggested plan can be worked out only in the field in collaboration with the Thailand Government. It is intended as a broad outline of a complete and adequate telecommunications system. It is recommended for adoption by the Government of Thailand and ICA.

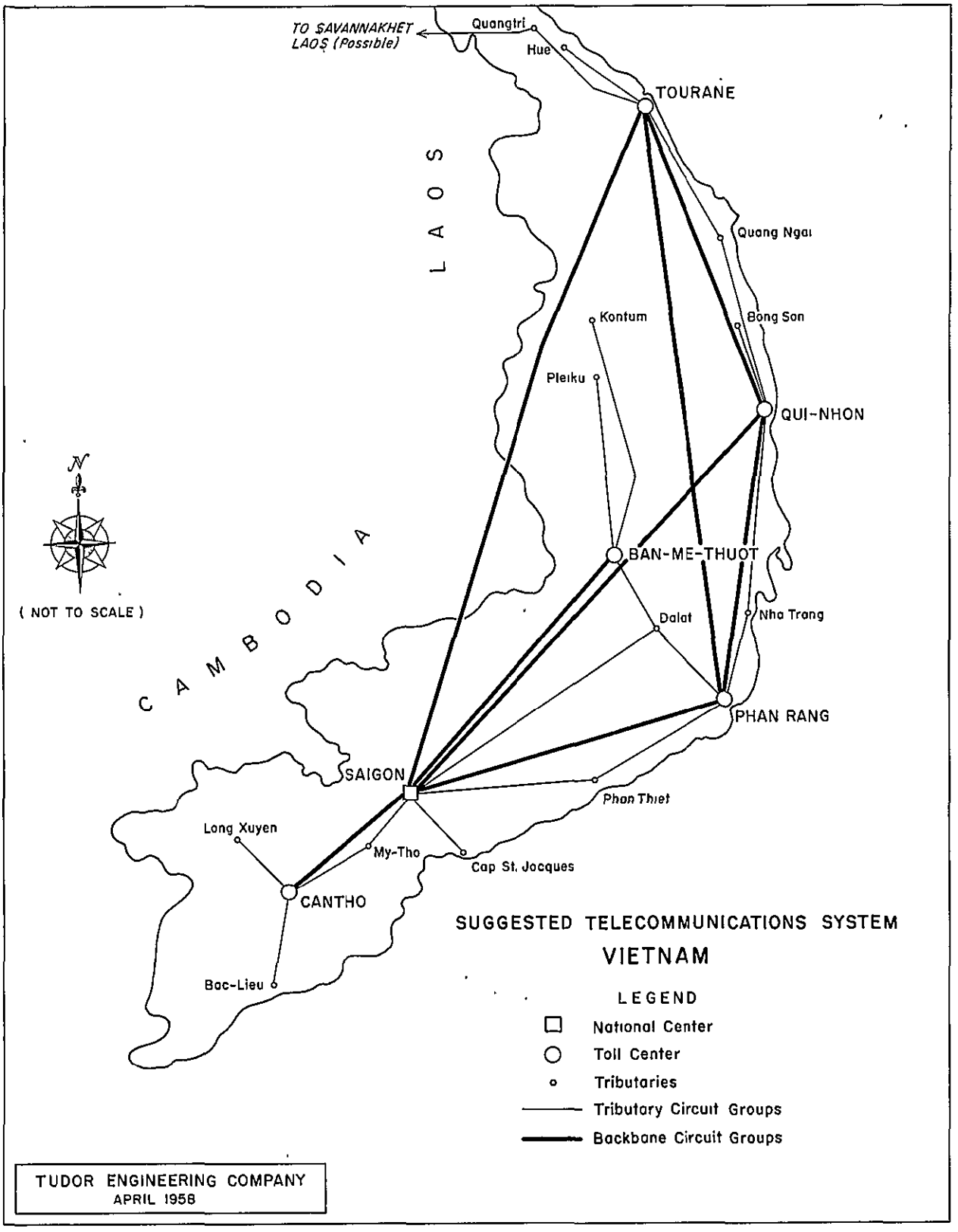
TO SAVANNAKHET
LAOS (Possible)
Quangtri
Hue
TOURANE
LAOS
Quang Ngai
Kontum
Bong Son
Pleiku
QUI-NHON
N
(NOT TO SCALE)
BAN-ME-THUOT
CAMBODIA
Dalat
Nha Trang
PHAN RANG
SAIGON
Phan Thiet
Long Xuyen
My-Tho
Cap St. Jacques
CANTHO
Bac-Lieu
SUGGESTED TELECOMMUNICATIONS SYSTEM
VIETNAM
LEGEND
National Center
Toll Center
Tributaries
Tributary Circuit Groups
Backbone Circuit Groups
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PLATE 2

RECOMMENDED TELECOMMUNICATIONS SYSTEM FOR VIETNAM

The proposed telecommunications system for Vietnam is shown in outline form on Plate No. 2 and described in more detail below. This system will be adequate initially to satisfy all demands for service, both commercial and special facilities. It will be a completely modern system, will furnish when completed a high grade of service, both telephone and telegraph, and is capable of economical and relatively rapid expansion when necessary. The estimated cost of the recommended system is $7,855,000.

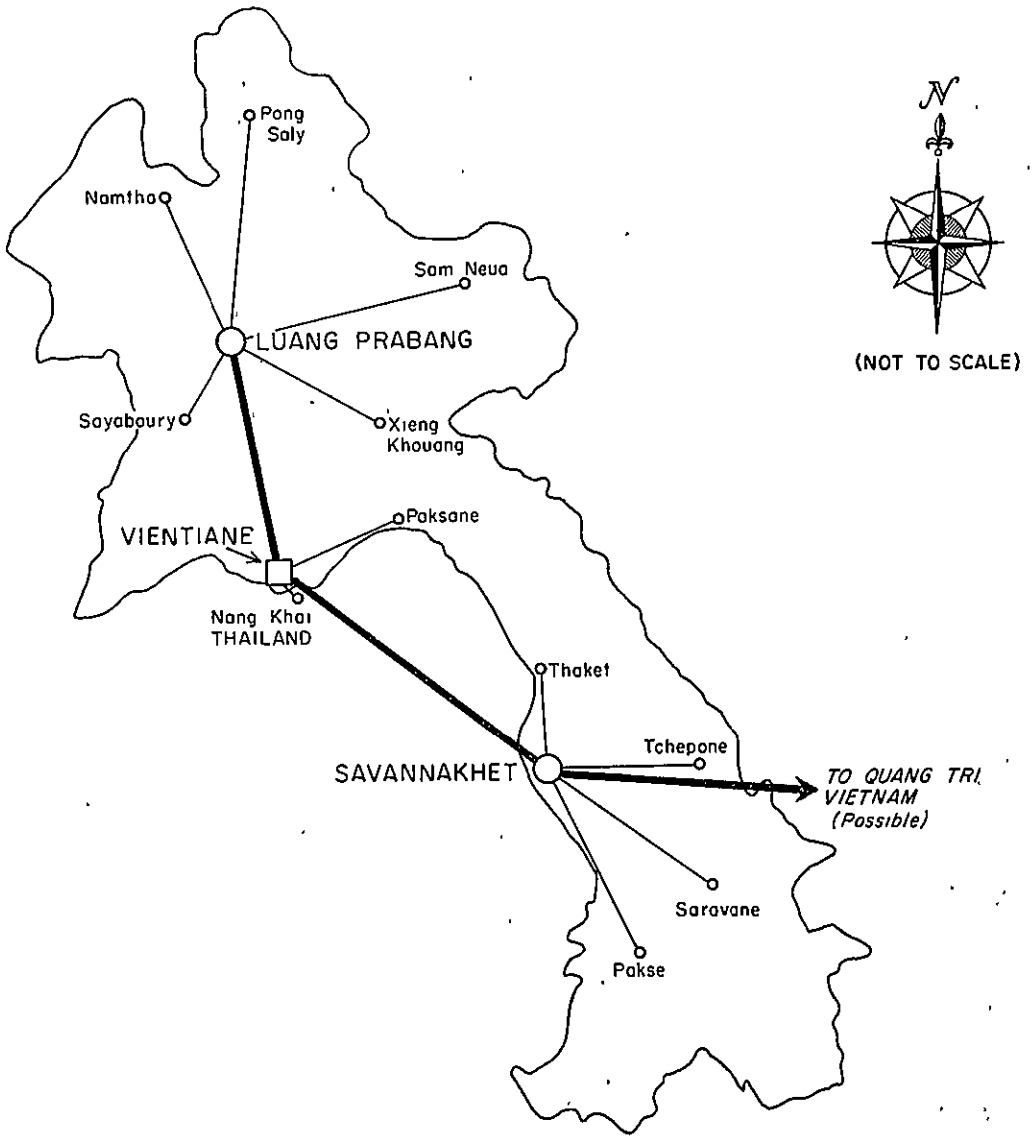
The broad band radio relay systems proposed have an ultimate capacity of 600 voice channels per band. They would be equipped initially with sufficient voice channels to take care of all commercial and special facilities, plus ten per cent for emergencies and some growth. They would also be equipped with one spare band in each direction arranged for automatic switchover in case of trouble.

The VHF systems would have an ultimate capacity of sixty voice channels and would be equipped initially in the same fashion as the broad band systems, that is, to take care of all immediate requirements, plus about 10 per cent spare.

Recommended Construction in Vietnam

Project	Estimated Cost
Saigon-Cholon, add 4000 dial lines, 4 pos. toll switchboard and necessary outside plant and station equipment	$ 1,000,000
Complete rebuilding of exchange plant in the five toll centers of Phan Rang, Oui Nhon, Tourane, Ban-Me-Thont, and Cantho, using dial equipment, with toll ~~band~~ board in each case, outside plant, and station equipment	750,000
Complete new plant in the tributary offices of Cap St. Jacques, Phan Thiet, Dalat, Nha Trang, Bong Son, Quang Ngai, Hue, Quang Tri, Plecku, Kontom, My-Tho, Bac Lieu, Long Xayen, using unattended dial offices at each point, plus necessary outside plant and station equipment	450,000
Toll	
Build broad band radio relay stem from Saigon to Tourane via Cap St. Jacques and coastal route - from Saigon to Cantho (total of 655 miles)	3,300,000
Build VHF from Phan Rang to Dalat - Tourane to Hue and for other larger tributary groups (total 300 miles)	1,050,000
Project	
Single side band radio to Manila, Bangkok, Singapore, and Hongkong	100,000
Rehabilitation of existing plant	500,000
Training	200,000
Buildings	200,000
Power	150,000
Improvement of existing international circuits	155,000
Total	$ 7,855,000

It should be understood that many of the details entering into the complete engineering of the suggested system as given above can only be worked out in the field. The above is intended as a broad outline of a complete telecommunications system. It is recommended for adoption by the Government of Vietnam and ICA.



SUGGESTED TELECOMMUNICATIONS SYSTEM

LAOS

LEGEND

- □ Nationol Center
- ○ Toll Center
- ∘ Tributary
- —— Tributary Circuit Groups
- ▬▬ Backbone Circuit Groups

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PLATE 3

RECOMMENDED TELECOMMUNICATIONS SYSTEM FOR LAOS

A suggested telecommunications system for Laos is shown in outline form on Plate No. 3. The proposed system is adequate to satisfy all demands for service, both commercial and special facilities, not only initially, but for many years in the future. It is so designed that it can be readily expanded when expansion is indicated. The cost of the proposed system is estimated at $1,825,000. The major recommendations are given below.

The French reconstruction programs have arranged for the intallation of an 800 line dial office in Vientiane, scheduled to be shipped in May of 1958. That should be ample for some years. This plan designates Vientiane as the national center with toll centers at Luang Prabang and Savannakhet. Following is a program of the construction needed.

Project	Estimated Cost
Vientiane outside plant and station equipment	$ 200,000
Luang Prabang and Savannakhet - each 100 line dial office with toll board, outside plant, and station equipment	200,000
Ten unattended dial tributary offices with outside plant and station equipment	390,000
Eleven single side band HF radio systems	110,000
One tropospheric scatter system - Vientiane to Savannakhet	200,000
International circuits	80,000
Rehabilitation of existing usable plant	100,000
Buildings	220,000
Training	200,000
Power	125,000
Total	$ 1,825,000

This proposal is recommended for adoption by the Government of Laos and ICA.

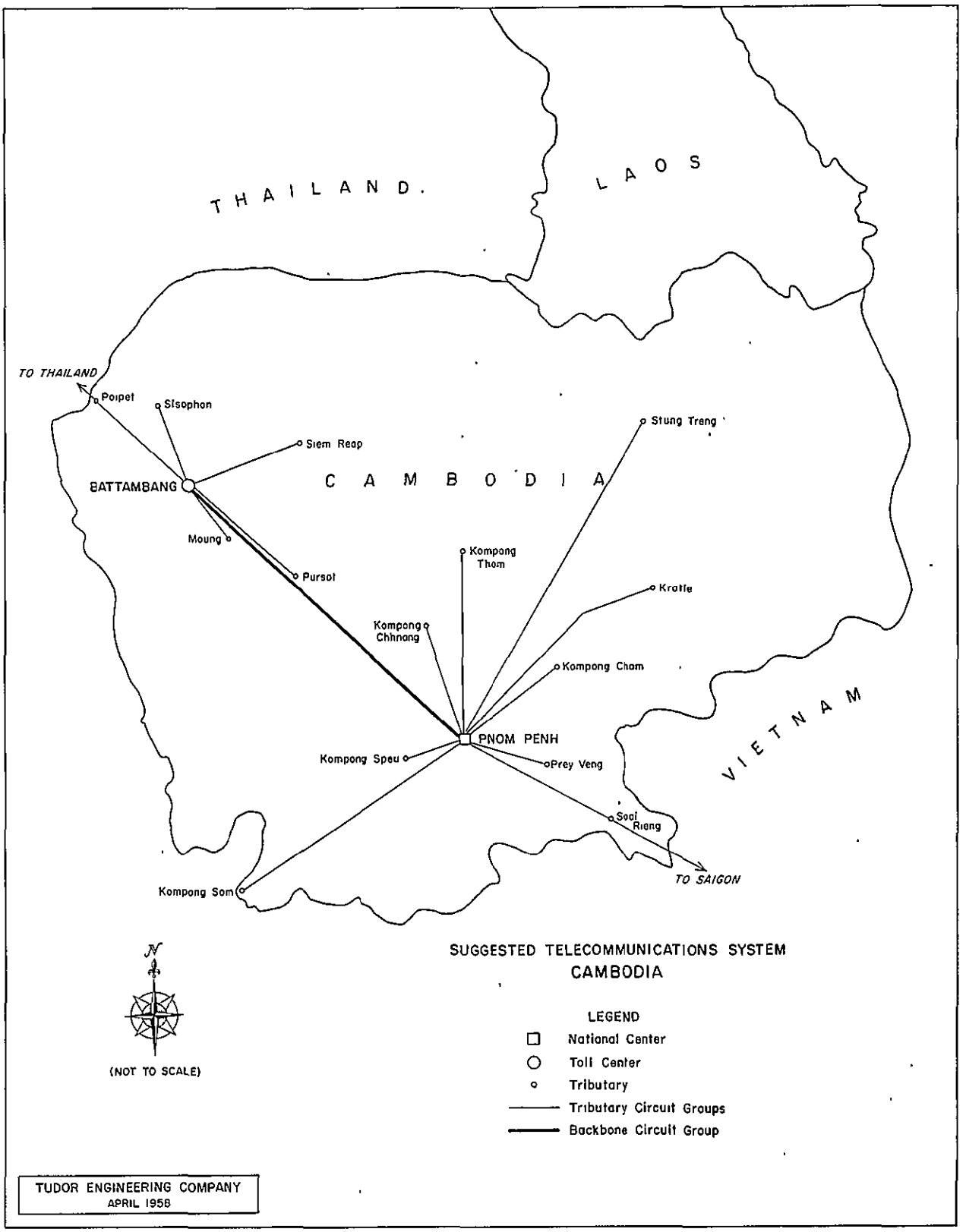
THAILAND.
LAOS
TO THAILAND
Poipet
Sisophon
Siem Reap
Stung Treng
BATTAMBANG
CAMBODIA
Moung
Pursat
Kompong Thom
Kratie
Kompong Chhnang
Kompong Cham
VIETNAM
PNOM PENH
Kompong Speu
Prey Veng
Soai Rieng
TO SAIGON
Kompong Som
N
(NOT TO SCALE)
SUGGESTED TELECOMMUNICATIONS SYSTEM
CAMBODIA
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PLATE 4

POSSIBLE TELECOMMUNICATIONS SYSTEM FOR CAMBODIA

Plate No. 4, attached, gives in outline form a recommended telecommunications plan for the Kingdom of Cambodia. This was prepared to indicate the possibility of ultimately coordinating a plan for Cambodia with the telecommunications plans for Thailand, Vietnam and Laos into one unified system. It should be adequate to take care of all commercial and special telecommunications requirements for some time to come. Pnom Penh has been designated as the national center, with Battambang as the only other toll center. It is understood that the French are now installing in Pnom Pneh a 2000 line dial office, but are making no provision for outside plant and station equipment.

Major items recommended for construction are given below:

Project	Estimated Cost
Pnom Penh, outside plant and station equipment	$ 200,000
Battambang, 400 line dial office with toll board, outside plant and station equipment	122,000
Fourteen tributaries equipped with unattended dial offices, outside plant and station equipment	330,000
Toll Plant	
VHF radio relay, Pnom Penh to all other offices except Kratie and Strung Treng (600 miles)	2,100,000
Two single side band circuits to serve Kratie and Strung Treng	25,000
International circuits from Pnom Penh to Paris, Hongkong, and Singapore	75,000
Training	100,000
Power	80,000
Total	$ 3,052,000