

THE EFFECT OF TELECOMMUNICATIONS
NETWORK EXPANSION
ON THE ECONOMIC GROWTH OF THE
UNITED STATES

1971

THE EFFECT OF TELECOMMUNICATIONS NETWORK EXPANSION

1971

REPUBLIC OF THE PHILIPPINES

FEASIBILITY REPORT ON THE TELECOMMUNICATIONS
NETWORK PROJECT
IN THE NORTHERN PART OF LUZON

[VOLUME IV]

JICA LIBRARY



1029001[3]

DECEMBER, 1978

JAPAN INTERNATIONAL COOPERATION AGENCY

国際協力事業団	
受入 月日 '84. 9. 21	148
登録No. 09816	78
	SDS

VOLUME IV

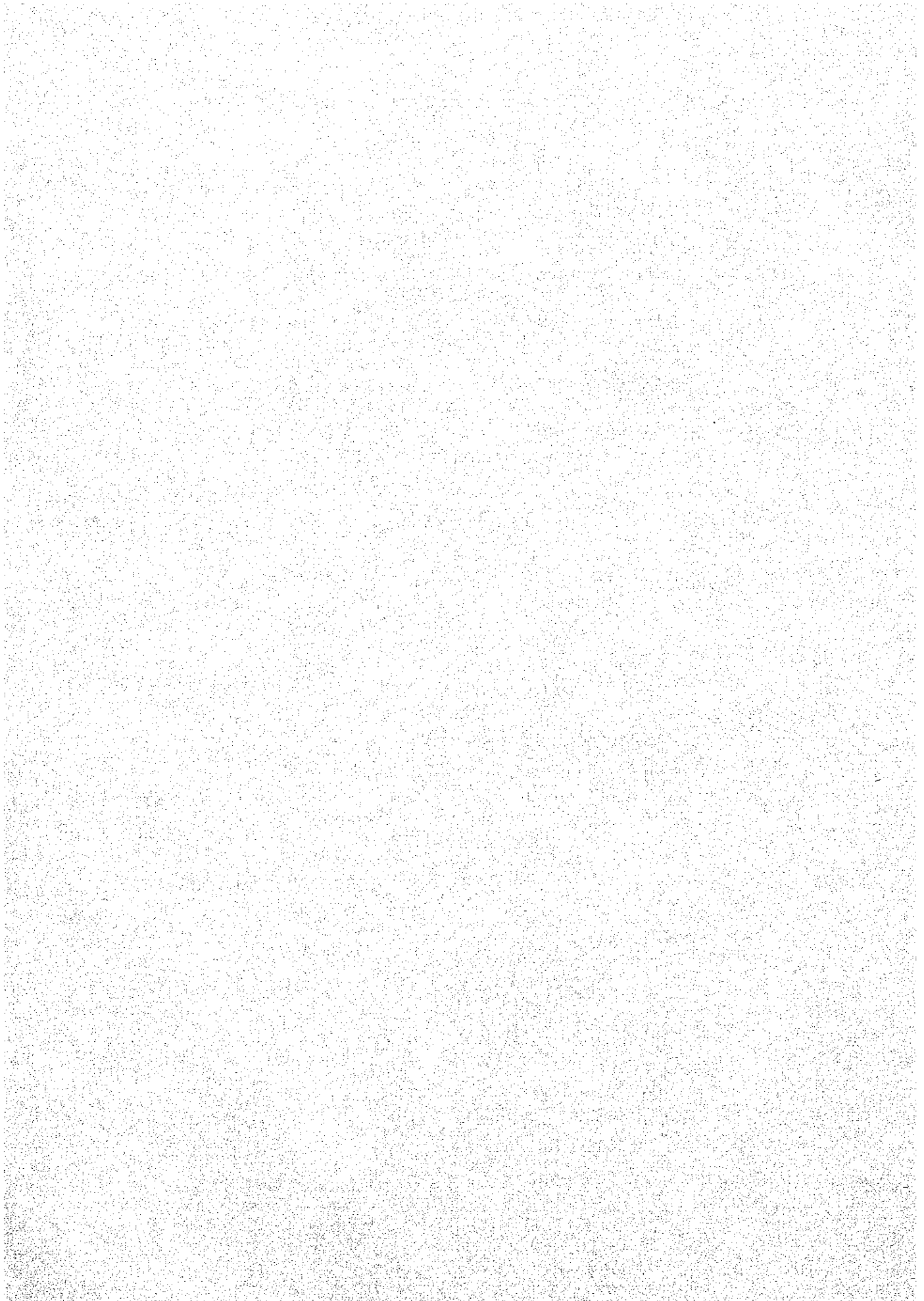
CONTENTS

XVII ANNEX

[III] DOCUMENTS

	<u>Page</u>
(1) Minutes of meeting on scope of work on feasibility for telecommunication network in Region Nos. I and II of the Republic of the Philippines ...	1
(2) Minutes of meeting on conclusion of survey work of the feasibility study team for the rural telecommunication network in Region Nos. I and II of the Republic of the Philippines	11
(3) Interim report of the Japanese survey team (JICA) in connection with the feasibility study for the rural telecommunications systems project in Regions I and II (Northern Luzon, the Philippines)	17
(4) Telecommunications development Regions I and II project profiles, Bureau of Telecommunications	33
(5) Rural telecommunications project Region I and II, Bureau of Telecommunications	47
(6) Letter dated on April 29, 1978 issued by Director, Bureau of Telecommunications	73
(7) Letter dated on May 15, 1978 issued by Assistant Director, Bureau of Telecommunications	83
(8) Letter dated on August 31, 1978 issued by Director, Bureau of Telecommunications	87
(9) Letter of instructions Nb. 674 Malacanãng Manila	91
(10) Letter dated on August 29, 1978 issued by Senior Vice President, DOMSAT	95

- (1) Minutes of meeting on scope of work on feasibility for telecommunication network in Region Nos. I and II of the Republic of the Philippines



MINUTES OF MEETING ON SCOPE OF WORK
ON FEASIBILITY STUDY FOR TELECOMMUNICATION NETWORK
IN REGION NOS. 1 AND 2
OF THE REPUBLIC OF THE PHILIPPINES

DECEMBER 1977

BETWEEN

BUREAU OF TELECOMMUNICATIONS
OF
DEPARTMENT OF PUBLIC WORKS,
TRANSPORTATION & COMMUNICATIONS
OF THE PHILIPPINES

AND

JAPANESE PRELIMINARY STUDY TEAM
FOR TELECOMMUNICATION NETWORK
IN THE REGIONS ABOVE

MINUTES OF MEETING ON SCOPE OF WORK ON THE
FEASIBILITY STUDY FOR TELECOMMUNICATION NETWORK
IN REGION NOS. 1 AND 2 IN THE PHILIPPINES

The meeting was held on December 2, 1977 at the Conference Room of the Bureau of Telecommunications of the Philippines to discuss the Draft of Scope of Work on the feasibility study for the Telecommunication Network in Region Nos. 1 and 2. Attending the meeting are:

DPWTC

Mr. SABINIANO PEREZ, Special Technical Assistant

Mr. BIENVENIDO PADILLA, Assistant Chief, Plans and Programs

BUTEL

Gen. CEFERINO S. CARREON, Director

Engr. MANUEL B. CASAS, Assistant Director

Col. ROMEO P. DE GUZMAN, Technical Consultant

Engr. CEFERINO A. ADRIANO, Chief of Planning and Programming Section

EMBASSY OF JAPAN

Mr. HIROSHI KONO, First Secretary of Embassy of Japan in the Philippines

JAPANESE TEAM

Mr. SHIGERU FUKUDA, Chief of Team

Mr. YASUKAZU SUGIYAMA, Member of Team

Mr. IWAYUKI SHIMIZU, Member of Team

Mr. MASAHIRO YOSHIHARA, Member of Team

Mr. TOKUICHI KATAGIRI, Member of Team

1. Gen. CEFERINO S. CARREON expressed his thanks to the members of the Japanese team who have been visiting the Philippines in response to the request of the Government of the Republic of the Philippines, and expected that the objectives of Preliminary Study Team were attained.

Mr. FUKUDA, Chief of the Japanese Team, appreciated the cooperation extended by the Philippines to the Japanese Team in their two weeks survey work.

2. The Japanese Team submitted the draft copy of the Scope of Work to Gen. CEFERINO S. CARREON for consideration.

Gen. CEFERINO S. CARREON and the Japanese Team discussed about the draft of the Scope of Work.

Both the Bureau of Telecommunications and the Japanese Team agree on the draft of the Scope of Work, hereto attached.

Manila, December 2, 1977



CEFERINO S. CARREON
Director
Bureau of Telecommunications



SHIGERU FUKUDA
Chief of Japanese
Preliminary Study Team
for Region Nos. 1 and 2 in the
Philippines

Scope of Work
on
Feasibility Study for Telecommunication
Development Project in Region Nos. 1 and 2
of the Republic of the Philippines

I. Introduction

In response to the request of the Government of the Philippines, the Government of Japan has decided to conduct a study to determine the feasibility for Development of Telecommunication Facilities in Region Nos. 1 and 2 in accordance with pertinent laws and regulations in force in Japan. Japan International Cooperation Agency (JICA), the official agency responsible for implementation of technical cooperation program of the Government of Japan, will carry out the study.

The present document sets forth the scope of work with regard to the abovementioned study, which is to be carried out in close cooperation with the authorities concerned.

II. Objective of the Study

The study aims to confirm feasibility of Telecommunications Development Project in Region Nos. 1 and 2.

III. Outline of the Study

The study will be carried out through field survey in the Republic of the Philippine and analysis work in Japan, Items to be covered by the study are as follows:

1. General side

- (1) Present status of telecommunication facilities and services.
- (2) Telecommunication development plan.
- (3) Radio and TV network expansion plan.
- (4) Technical standards of telecommunication facilities.
- (5) Telecommunication service revenue and expenditure.
- (6) Present tariff system.

2. Project side

- (1) Telephone demand forecast.
- (2) Telephone traffic forecast.
- (3) Trunk circuit estimate.
- (4) Telephone installation plan.
- (5) System design.
 - (i) Telephone exchanges
 - (ii) Transmission : Radio
 - (iii) Transmission : Cables
 - (iv) Telex exchanges
 - (v) Buildings
- (6) Implementation policy.
- (7) Operation and maintenance after completion.
- (8) Economic Analysis.
- (9) Project evaluation.

IV. Report

1. Preparation of Report

The JICA will prepare and submit 20 copies of the following reports to the Government of the Philippines.

1) Draft final report

Within about three months after the completion of the field survey, the Draft final report will be submitted to the Government of the Philippines by an Explanation Team. The Philippines is requested to provide the JICA with its comments during the stay of the team which will be dispatched from the JICA to the Philippines to discuss the project.

2) Final report

Within about one and half month after the return of the Explanation Team JICA will submit the final report to the Philippine Government.

2. Contents of Report

The report will contain the following items:

- 1) Telephone demand forecast
- 2) Telephone traffic forecast
- 3) Trunk circuit estimate
- 4) Telephone installation plan
- 5) Telecommunication standard
- 6) System design
 - i) Telephone exchange
 - ii) Transmission : Radio
 - iii) Transmission : Cables
 - iv) Telex exchange
 - v) Building
- 7) Implementation schedule
- 8) Operation and maintenance after completion
- 9) Economic analysis
- 10) Project evaluation

V. Undertaking of the Government of the Republic of the Philippines.

1. To provide the team with the following information:

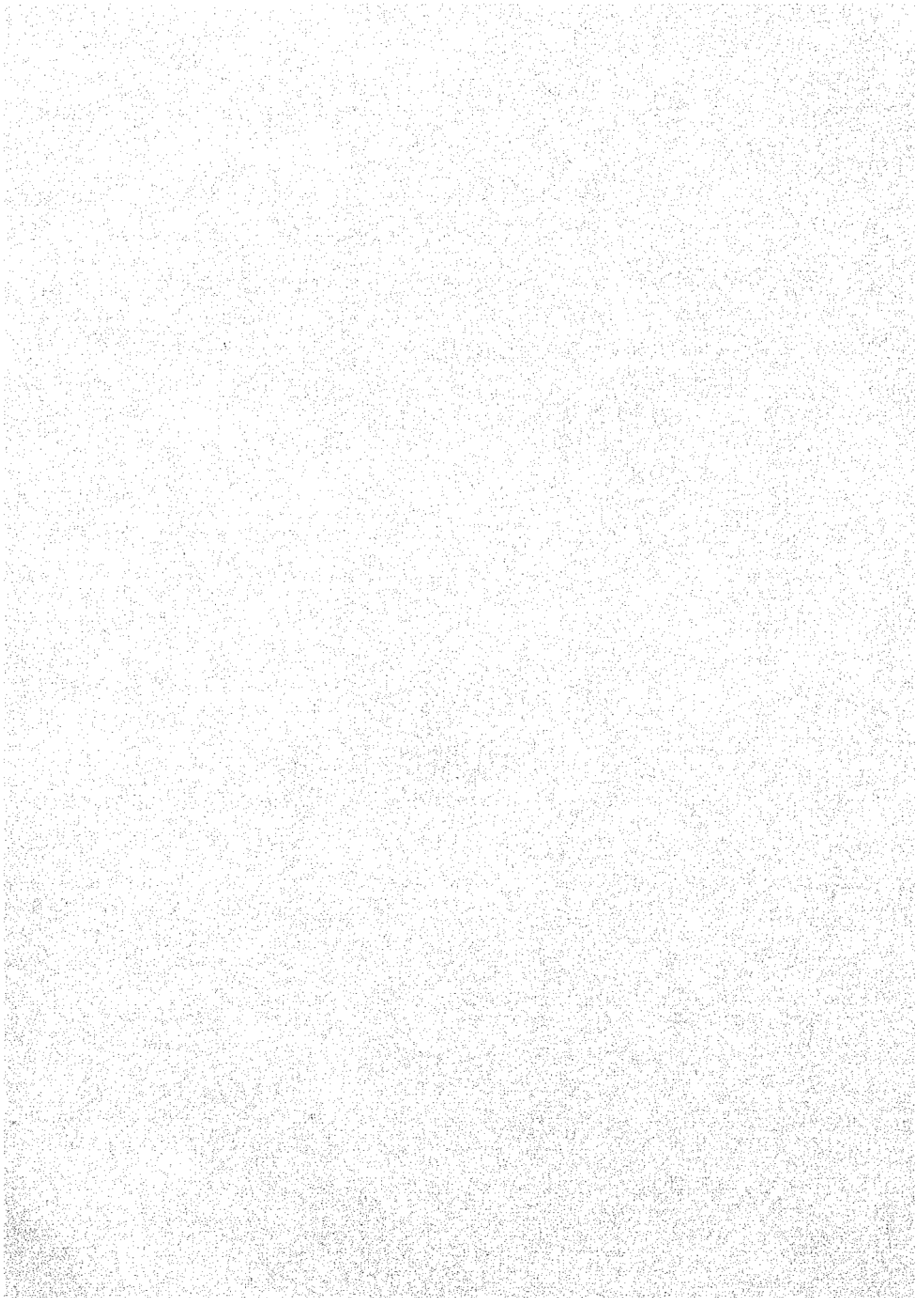
- (1) General from DPWTC
 - a) Statistical data on national economy
 - b) National development plan
 - c) Latest census data
 - d) Present organization, number of employees and the budget of the Government
 - e) Present organization and officer's names and positions.
- (2) Pertinent telecommunications data from BUTEL and BOC
 - a) Present status of telecommunications facilities and services

- b) Telecommunication network expansion plan
 - c) Radio and TV network expansion plan
 - d) General meteorological statistics (PAGASA)
 - e) Telecommunication service revenue and expenditure
 - f) Present tariff system
2. To assign at least four counterpart officials during survey.
 3. To provide the team with an office suitably furnished for the study.
 4. To provide the team with necessary transportation (at least four service vehicles) facilities.
 5. To exempt the team from taxes and duties on the materials, equipment and personal effects brought into the Republic by the team. At least one-month advanced information shall be provided the Philippines.
 6. To make necessary arrangements for the Study team to bring the data and materials concerning the study into Japan.
 7. To prepare for the study team necessary permits for implementation of outdoor work.

VI. Undertaking of the Government of Japan

To transfer the knowledge to the official counterparts during the field survey.

- (2) Minutes of meeting on conclusion of survey work of the feasibility study team for the rural telecommunication network in Region Nos. I and II of the Republic of the Philippines



MINUTES OF MEETING ON CONCLUSION OF SURVEY WORK OF THE
FEASIBILITY STUDY TEAM FOR RURAL TELECOMMUNICATIONS
NETWORK IN REGION NOS. 1 AND 2 OF THE REPUBLIC
OF THE PHILIPPINES

MAY 12, 1978

BETWEEN

BUREAU OF TELECOMMUNICATIONS
OF
DEPARTMENT OF PUBLIC WORKS,
TRANSPORTATION & COMMUNICATIONS
OF THE PHILIPPINES

AND

JAPANESE SURVEY TEAM FOR RURAL TELECOMMUNICATION
NETWORK IN THE ABOVE REGIONS

MINUTES OF MEETING ON CONCLUSION OF SURVEY WORK OF THE
FEASIBILITY STUDY TEAM FOR RURAL TELECOMMUNICATIONS
NETWORK IN REGION NOS. 1 AND 2 IN THE PHILIPPINES

The meeting was held on May 12, 1978 at the Conference Room of the Bureau of Telecommunications of the Philippines. Attending the meeting are:

DPWTC

Mr. BIENVENIDO PADILLA, Assistant Chief, Plans and Programs

BUTEL

Gen. CEFERINO S. CARREON, Director

Engr. MANUEL B. CASAS, Assistant Director

Col. ROMEO P. DE GUZMAN, Technical Consultant

Engr. RICARDO S. ALALAY, Chief, Planning Division

Engr. CEFERINO A. ADRIANO, Chief, Planning and Programming Section

EMBASSY OF JAPAN

Mr. KENJIRO IZUMI, First Secretary of Embassy of Japan in the Philippines

JAPANESE TEAM

Mr. SHIGERU FUKUDA, Leader

Mr. YASUKAZU SUGIYAMA, Sub Leader

Mr. MORIKAZU TAKAHASHI, Member

Mr. MOTOAKI UOTOME, Member

Mr. MITSU HARU ANDO, Member

Mr. MASAMI MAEDA, Member

Mr. YASUO SUZUKI, Member

Mr. SHOZABURO SHIMAMURA, Member

Mr. MAKOTO HONGO, Member

Mr. MASARU YAMAZAKI, Member

Mr. IKUO KOMAGATA, Member

Mr. TOKUICHI KATAGIRI, Member

Mr. TATSUMI OKU, Member

1. Gen. CEFERINO S. CARREON expressed his thanks to the members of the members of the Japanese team who have been conducting the survey in the Philippines in response to the request of the Government of the Republic of the Philippines, and expressed hope that the objectives of the Survey Team were attained.

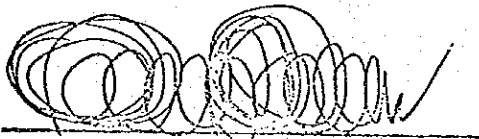
Mr. FUKUDA, Leader of the Japanese Team, appreciated the cooperation extended by the Philippines to the Japanese Team in their survey work.

2. The Japanese Team submitted the Interim Report on the result of the survey to Gen. CEFERINO S. CARREON for consideration.

Gen. CERFERINO S. CARREON and the Japanese Team discussed the Interim Report submitted which is to be followed by a Draft Final Report sometime August 1978 and the Final Report one and a half months later.

Both the Bureau of Telecommunications and the Japanese Team agree on the contents of the report hereto attached.

Quezon City, May 12, 1978

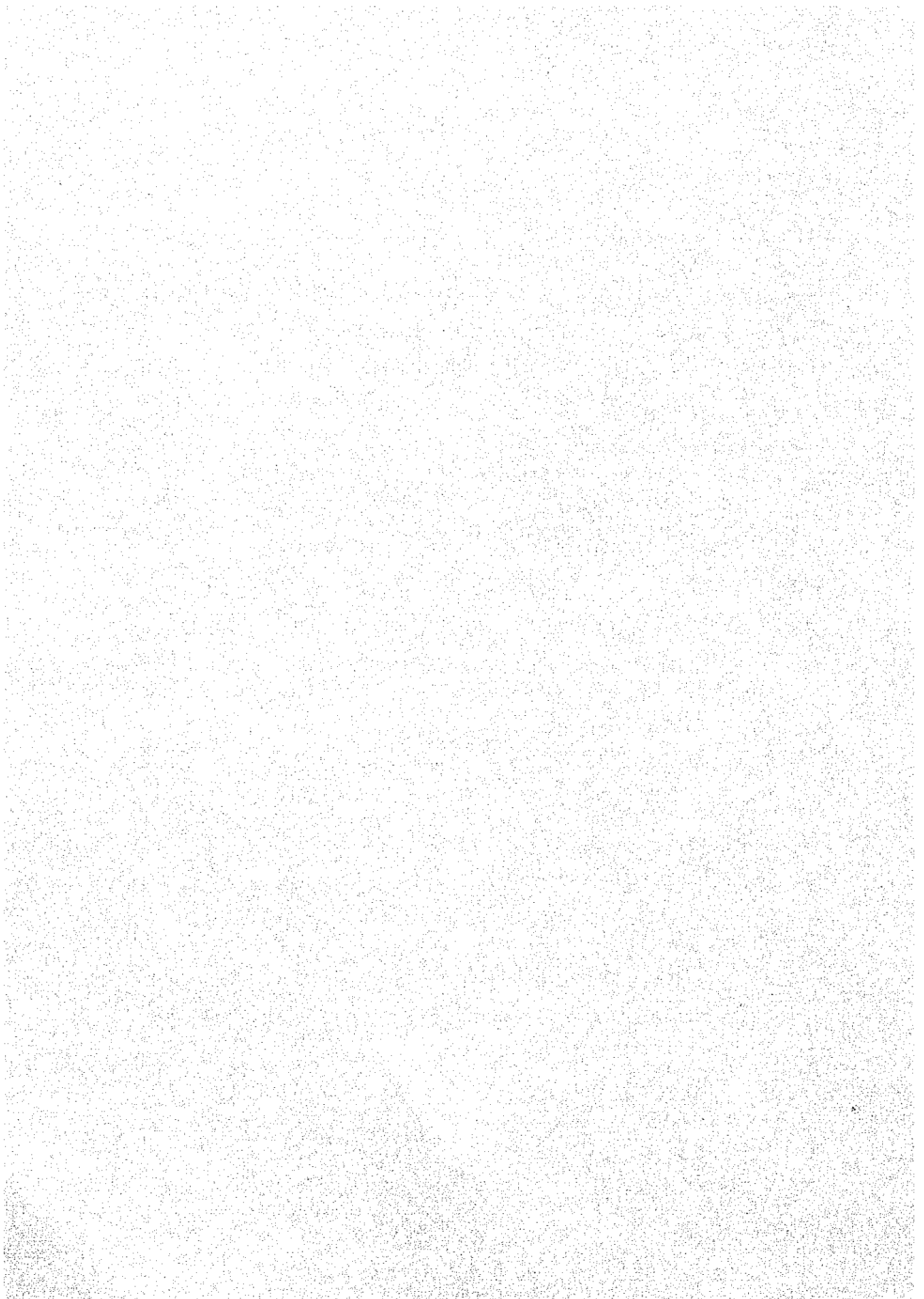


CEFERINO S. CARREON
Director
Bureau of Telecommunications



SHIGERU FUKUDA
Chief of Japanese Survey Team

- (3) Interim report of the Japanese survey team (JICA) in connection with the feasibility study for the rural telecommunications systems project in Regions I and II (Northern Luzon, Philippines)



INTERIM REPORT ON THE PROPOSED TELECOMMUNICATION SYSTEM
FOR NORTHERN LUZON

1. Preface

The Japanese telecommunication survey team conducted the feasibility survey for establishing the telecommunication network in the Northern Luzon from 27th February to 12th May 1978.

The number of rural towns, municipalities/cities in Regions I and II visited by the team reaches 130.

During the field survey, the team was deeply impressed by the interest shown, far exceeding our expectations, by each locality to the introduction of modern telecommunication systems.

In those areas, the team has observed other on-going infrastructure projects many of them almost completed. Road building and electrification projects essential for development are examples but almost none for telecommunications.

Therefore, the team hopes to see that the project is implemented as early as possible since the completion of the project will result not only to the development of these regions but also development throughout the country. Specifically, the Phase I defined in the report, means a minimum complete package for a telecommunication system in those areas. The team would also like to see at least an earlier and complete accomplishment of the Phase I first.

2. Items of Survey

Main items studied are the following:

(1) General

- a. Present status of telecommunication facilities and services
- b. Telecommunication development plan
- c. Radio and TV network expansion plan
- d. Technical standards of telecommunication facilities
- e. Telecommunication services revenue and expenditure
- f. Present tariff system

(2) Pertaining to Project in Particular

- a. Telephone demand forecast
- b. Telephone traffic forecast
- c. Trunk circuit estimate
- d. Telephone installation plan
- e. System design
 - i) Telephone exchanges
 - ii) Transmission : Radio
 - iii) Transmission : Cables
 - iv) Telex exchanges
 - v) Buildings
- f. Implementation policy
- g. Operation and maintenance after completion
- h. Economic analysis
- i. Project evaluation

3. Project Component

In accordance with the BUTEL's proposal for establishment/development of the rural telecommunication systems the team confirmed the project proposed is in general technically feasible.

According to the team's estimation, the total cost of foreign currency for the original proposal of the BUTEL largely exceeds 24 million US Dollars.

Therefore, the project is to be divided into two phases, and Phase I which costs approximately 24 million US Dollars in foreign currency shall start first. Phase II would be financed by another loan.

The places where the facilities are to be located are listed in the following tables:

(1) Local Exchange and IPTS

Province	Phase I		Phase II		Remarks
	Loc. Ex.	IPTS	Loc. Ex.	IPTS	
Ilocos Norte	4	4	5	4	
Ilocos Sur	3	3	2	2	
Pangasinan	3	3	8	4	
N. Vizcaya	1		3	2	
Isabela	3	1	4	5	
Ifugao		1		2	
Quirino	1		1	1	
Cagayan	2	6	2	6	
Batanes		1			
Mt. Province	1	0	0	1	
Benguet			1	1	
La Union				1	
Kalinga-Apayao				2	
Abra	1				
Total	19	19	26	31	L. EX. 45 IPTS 50 TOTAL 95

(2) Toll Switching Center

Phase I	Phase II
i. Secondary Center Baguio ii. Primary Center Laoag Vigan Dagupan Ilagan Tuguegarao Bayombong	Primary Center Binalonan
1 Secondary and 6 Primaries	1 Primary

(3) Microwave Network

Phase I	Phase II
i. Laoag-Vigan (2 hops, 74.2 kms) ii. Vigan-Baguio (5 hops, 156.2 kms) iii. Baguio-Bayombong (6 hops, 187.2 kms) iv. Bayombong-Ilagan (3 hops, 106.5 kms) v. Ilagan-Tuguegarao (1 hop, 54 kms)	None

17 hops 580.1 kms

(4) Spur Route (Radio)

Phase I		Phase II	
Ilocos Norte	5 hops		5 hops
Ilocos Sur	2 hops		2 hops
Abra	2 hops		
La Union			3 hops
Pangasinan	4 hops		8 hops
Batanes	2 hops		
Cagayan	8 hops		4 hops
Kalinga-Apayao			6 hops
Isabela	3 hops		8 hops
Quirino			1 hop
Ifugao	1 hop		3 hops
N. Vizcaya			1 hop
Mt. Province	5 hops		
Benguet			2 hops
Total	32 hops		43 hops

(5) Cable Section

Number of Sections	Total Length		Remarks
	Phase I	Phase II	
(1) Ilocos Norte			
4 sections	18.0 km	50.9 km	
7 sections		50.9 km	
(2) Ilocos Sur			
6 sections	33.4 km		
3 sections		19.9 km	
(3) Pangasinan			
5 sections	30.4 km		
6 sections		42.6 km	
(4) ABRA			
1 section	0.5 km		
(5) Mt. Province			
2 section	2.0 km		
1 section		0.8 km	
(6) Benguet			
2 sections		3.5 km	
(7) Cagayan			
4 sections	43.8 km		
2 sections		18.3 km	
(8) Isabela			
1 section	4.0 km		
6 sections		41.4 km	

Number of Sections	Total Length		Remarks
	Phase I	Phase II	
(9) Quirino 1 section		9.2 km	
(10) N. Vizcaya 2 sections 5 sections	20.1 km	43.8 km	
(11) Ifugao 1 section	1.0 km		
58 sections	143.2 km (29 sections)	230.4 km (30 sections)	

(6) Telegraph

Phase I	Phase II
<p>i. <u>Telex Exchange</u></p> <p>Baguio (500L)</p> <p>Tuguegarao (100L)</p> <p>ii. <u>Telex Concentrator</u></p> <p>San Fernando, La Union (50L)</p> <p>iii. <u>Gentex</u></p> <p>14 municipalities</p>	<p>Laoag (50L)</p> <p>Vigan (50L)</p> <p>Dagupan (100L)</p> <p>Ilagan (50L)</p> <p>Santiago (50L)</p> <p>Bayombong (50L)</p> <p>22 municipalities</p>

(7) Civil Works (Tower, Buildings and Roads)

Name of Construction	Phase I		Phase II		Total
1. Building	65	8,900 m ²	68	7,800 ton	16,700 m ²
2. Radio Tower	33	1,600 ton	35	1,700 ton	3,300 ton
3. Leveling of Ground	17	1,800 m ³	14	1,200 m ³	3,000 m ³
4. Road	8	20 km	14	20 km 3 km <u>1/</u>	40 km 3 km
5. Purchase of Site <u>2/</u>	8	368,000 m ²	14	470,000 m ²	838,000 m ²

Notes:

1/ Required length of repairing

2/ For estimate purposes only. Assuming the owner will not donate the site.

4. Installation Work

The present project encompasses wide geographic areas and requires high level techniques of various telecommunication fields. This project may be considered as the first total project involving complete telecommunication network for BUTEL.

BUTEL must establish headquarters for installation in order to accomplish the project but, considering the actual situation of BUTEL, it will be necessary to implement the project on turn-key basis. Besides, it is necessary to recruit consultants for detailed design and evaluation of tender applications.

Furthermore, for smoother implementation of the project, the same will require a group to take charge of coordination among various items of the project, such as final choosing of site of construction, scheduling of installation and delivery of equipment and materials. In this

regard, it will be also desirable that Japan extends cooperation in dispatching of experts.

5. Project Execution Plan

The project execution plan in Phase I is as shown in Fig. 1.

6. Tentative Cost Estimation

Unit: Million

	Phase I		Phase II		Remarks
	Foreign Currency	Local Currency	Foreign Currency	Local Currency	
	Jap. Yen (U.S. \$)	Pesos	Jap. Yen (U.S. \$)	Pesos	
1. Switching	1848(7.70)	3.58	1990(8.29)	2.15	
2. Radio and Transmission	2231(9.30)	3.47	783(3.26)	1.40	
3. Outside Plant	623(2.60)	20.18	755(3.15)	27.50	
4. Telegraph	356(1.48)	0.66	439(1.87)	-	
5. Civil Works	-	71.84	-	56.55	
6. Others	-	7.78	-	8.67	
7. Contingency	708(2.95)	21.50	555(2.31)	9.63	
8. Consultant		-	380(1.58)	-	
a) Detailed Design	240(1.00)				
b) Others	240(1.00)				
Total	6246(26.03)	129.01	4902(20.42)	105.90	

Note: 1 US Dollar = 240 Japanese Yen
= 7.3 Pesos

: The contingency of Phase II does not include price escalation.

Distinction of foreign currency and local currency is made as follows:

Foreign Currency

Radio and Transmission equipment
Telephone exchange equipment
Telegraph equipment
Power equipment
Trunk cables
Feeder cables and antennas
Testing equipment
Consultancy

Local Currency

Cables and wire (not including trunk cables and feeder cables)
Subscriber lines equipment
Radio Towers
Buildings
Construction roads
Transportation charge of materials in Philippines
Rental or purchase of sites
Storage charge
Cars
Labor

7. Others

(1) Frequency Bands

The radio system in the project quite requires the frequency band mentioned below.

- The 6 GHz upper band, recommended by the CCIR, for the main route.
- The 2 GHz band recommended by the CCIR; 900 MHz, 400 MHz, and VHF less than 100 MHz for the spur route.

In both regions, many frequencies have been already assigned to existing radio systems. In order to achieve an effective use of those frequency bands and to avoid interference, the proposed frequencies above are essential for the realization of the radio

systems proposed for the area.

(2) Provision of Sufficient Trunk Lines for Long Distance Call between Baguio and Manila

The majority of long distance calls from the area of the project will be composed by those directed to Manila.

Therefore, efficient operation of the projected network will be dependent on the existence of sufficient trunk lines between Baguio and Manila. Since BUTEL does not construct another micro system between these two cities in order to avoid duplication of investments, it must lease micro trunk lines from PLDT. Accordingly, the latter has to construct necessary facilities before the project is accomplished. The provision of this trunk lines constitute the substantial condition to make the project feasible.

The lease is to be made by supergroup and the multiplexing equipment other than supergroup translators should be accordingly installed at BUTEL centers in Baguio and Manila for this project.

(3) Maintenance and Operation

The project requires personnel of high technical level experienced in the aspects of maintenance and operation to cope with the modern and high techniques applied in the project.

Therefore, it is urgent to employ or acquire experienced personnel and this fact makes it necessary to improve the training center of telecommunications for training employees continuously. Japanese technical cooperation is needed in this matter.

On the other hand, consideration must be given towards development of competent force to properly handle maintenance and operation work.

Fig. 1 Project Execution Plan

Date	1978												1979												1980												1981												1982											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Item																																																												
Feasibility Study																																																												
Discuss and Field Survey	[Bar: 5-12]																																																											
Explanation for Final Report	[Bar: 7-8]																																																											
Preparation for Proj. Detailed Design & Tender Specification													[Bar: 5-7]																																															
Tender Announcement and Closing													[Bar: 7-8]												[Bar: 9-10]																																			
Evaluation and Negotiation																									[Bar: 9-10]																																			
Installation Manufacturing of Equipment																									[Bar: 4-7]												[Bar: 1-6]												[Bar: 1-6]											
Installation of Equipment																																					[Bar: 1-6]												[Bar: 1-6]											
Acceptance Test																																					[Bar: 1-6]												[Bar: 1-6]											
Civil & Building Purchase of Site													[Bar: 7-12]																																															
Access Road													[Bar: 7-12]												[Bar: 1-6]												[Bar: 1-6]												[Bar: 1-6]											
Construction of Bldg. and Tower																									[Bar: 1-6]												[Bar: 1-6]												[Bar: 1-6]											

- (4) Telecommunications development Regions I and II project profiles, Bureau of Telecommunications

PROJECT PROFILE

1. Description of Project

- (1) Name - Development of Telecommunications Facilities in Region No. I
(Ilocos Region)
- (2) Location and Targets : (Please See Annex A)
- (3) Activities Involved

The project will involve : a) establishment of rural telephone exchanges in deserving municipalities of Mt. Province, Ilocos Norte, Ilocos Sur, Benguet and Pangasinan; b) establishment of telex exchanges in the regional centers of San Fernando, La Union.

2. Background

The above project is picked out from the 10-Year Plan of the Bureau of Telecommunications to involve only the provinces under Region No. I. It may be desirable for the Bureau to work out a loan agreement for the development of telecommunication facilities in the Ilocos Region, it being one of the depressed areas in the country, specifically needing government assistance. This project is therefore an essential part of the main projects of the Bureau of Telecommunications lines up in its 10-Year Infrastructure Program.

3. Justifications

(1) Rural Telephone System

The extension of local telephone service to the rural areas is one of the project aimed at correcting disparities in local economic status between rural and urban statements. The telephone service is expected to catalyze the expansion of local commercial activities and is therefore essential contributory to countryside development. The municipalities listed are apart from those programmed by private agencies in the areas concerned to avoid duplication of system.

(2) Establishment of Telex Exchanges

A 100-L telex exchange will be installed in San Fernando, La Union. This will take care of the transmission and reception of

record messages urgently needed by businessmen and commercial establishments. The exchange is also expected to revolutionize handling of telegraph messages thru automation.

(3) Expansion/Development of Microwave UHF Links

These multi-channel radio links or facilities (960 channel capacity) will be used to interconnect the provincial capitals with one another and with the main switching center of the Bureau in Bagulo City. The above facilities will also tie up the rural telephone exchanges with one another and provide access to the main network of the Bureau and to other system belonging to the private companies. It is also pointless to install telephone exchanges without toll outlet to other areas of the country.

(4) Connection to DOMSAT

The system to be established under the plan shall link with DOMSAT facilities. An earth station is proposed to be established by the latter in Laoag. The BUTEL facilities will therefore be tied up with DOMSAT for access not only to Manila but to other points of the country.

(5) Beneficiaries - The Ilocos Region in particular and the whole country in general.

(6) Priority - The proposed project will solve the frequent inadequency of telecommunications in Ilocos Region. Because of this, the project should be given top priority to be able to support other development activities being planned in the area by the other economic sectors.

4. Estimated Cost and Schedule

(1) Project Preparation

1) Local	P 3,059,015.00
2) Foreign	P 7,137,725.00
TOTAL	<u>P10,196,740.00</u>

(2) Detailed Engineering	
1) Local	P12,236,100.00
2) Foreign	P28,550,900.00
TOTAL	<u>P30,787,000.00</u>

(3) Construction Phase	
1) Local	P45,885,375.00
2) Foreign	P107,065,875.00
TOTAL	<u>P152,951,250.00</u>

GRAND TOTAL P203,935,000.00

- (4) Operation & Maintenance
- P1,500.00/telephone exchange
- For 20 Telephone Exchanges P 30,000.00
- * Conversion Factor \$.1 = P7.50

5. Agencies Responsible

(1) Project Preparation

By the Bureau of Telecommunications with possible assistance from foreign consultants (preparation of project studies)

(2) Project Execution

By private contractor in coordination with the Bureau of Telecommunications

(3) Operation/Maintenance

The regional offices of the Bureau shall be responsible for the operation of the rural telephone exchanges; the microwave/UHF facilities shall be handled by LLS, Central Office of the Bureau.

6. Status and Schedule of Project Development and Implementation

- (1) Project Identification - Sept. 1977 by BUTEL
- (2) Pre-feasibility Studies - By Dec. 1977 by BUTEL with the assistance of

- consultants (if
project is financed
by foreign loans)
- (3) Feasibility Study - Dec. 1977 to June 1978 by BUTEL
 - (4) Funds Negotiations - Dec. 1977 to June 1978 by BUTEL (BUTEL thru NEDA & DPWTC)
 - (5) Detailed Engineering - 1978 - 1979 by BUTEL and contractor
 - (6) Construction - 1978 - 1982 by BUTEL

BUREAU OF TELECOMMUNICATIONS
 10-Year Telecom Expansion Program
 For Region No. I
 (Ilocos Region)

A. LOCAL TELEPHONE EXCHANGES:

CY 78-

- | | |
|-------------------------|--------|
| 1. Bontoc, Mt. Province | - 300L |
| 2. Alaminos, Pangasinan | - 500L |

CY 79-

- | | |
|----------------------------|--------|
| 1. Asingan, Pangasinan | - 300L |
| 2. San Fabian, Pangasinan | - 300L |
| 3. San Jacinto, Pangasinan | - 300L |

CY 80-

- | | |
|-------------------------|--------|
| 1. Cabugao, Ilocos Sur | - 300L |
| 2. Bolinao, Pangasinan | - 300L |
| 3. Mapandan, Pangasinan | - 300L |

CY 81-

- | | |
|--------------------------|--------|
| 1. Dingras, Ilocos Norte | - 300L |
| 2. Vintar, Ilocos Norte | - 300L |

CY 82-

- | | |
|---------------------------|--------|
| 1. Alcala, Pangasinan | - 300L |
| 2. Sison, Pangasinan | - 300L |
| 3. Urbiztondo, Pangasinan | - 300L |

CY 83-87

- | | |
|-----------------------------|--------|
| 1. Bakod, Benguet | - 200L |
| 2. Mankayan, Benguet | - 200L |
| 3. Narvacan, Ilocos Sur | - 200L |
| 4. Sto. Domingo, Ilocos Sur | - 300L |
| 5. Tagudin, Ilocos Sur | - 300L |
| 6. Bani, Pangasinan | - 300L |
| 7. Binalonan, Pangasinan | - 500L |

B. TOLL SWITCHING CENTER:

1. Baguio City
2. Laoag, Ilocos Norte

C. TELEX EXCHANGE AND TELEPRINTERS:

1. San Fernando, La Union (100-L)

D. BACKBONE NETWORK:

1. Baguio - Ilocos Region

PROJECT PROFILE

1. Description of Project

- (1) Name - Development of Telecommunications
Facilities in Region No. II (Cagayan Valley)
- (2) Location and Targets: (Please See Annex "A")
- (3) Activities Involved

The project will involve: a) establishment of rural telephone exchanges in deserving municipalities of Batanes, Cagayan, Isabela and Nueva Vizcaya; b) establishment of telex exchanges in the regional center of Tuguegarao, Cagayan; c) expansion/development of microwave, and UHF links to interconnect the exchanges to the capital and the capital to the main switching center in Baguio; and d) the interconnection of the above facilities with DOMSAT earth station in Tuguegarao.

2. Background

The above project is picked out from the 10-Year Plan of the Bureau of Telecommunication to involve only the provinces under Region No. II. It maybe desirable for the Bureau to work out a loan agreement for the development of telecommunications facilities in the Cagayan Valley, it being one of the depressed areas in the country specifically needing

government assistance. This project is therefore an essential part of the main projects of the Bureau of Telecommunications lined up in its 10-Year Infrastructure Program.

3. Justification

(1) Rural Telephone System

The extension of local telephone service to the rural areas is one of the projects aimed at correcting disparities in local economic status between rural and urban settlements. The telephone service is expected to catalyze expansion of local commercial activities and is therefore essentially contributory to countryside development. The municipalities listed are apart from those programmed by private agencies in the areas concerned to avoid duplication of systems.

(2) Establishment of Telex Exchanges

A 100-L Telex Exchange will be installed in Tuguegarao, Cagayan. This will take care of transmission and reception of record messages urgently needed by businessmen and commercial establishments. The exchange is also expected to revolutionize handling of telegraph messages thru automation.

(3) Expansion/Development of Microwave UHF Links

These multi-channel radio links or facilities (960 channel capacity) will be used to interconnect the provincial capitals with one another and with the main switching center of the Bureau in Baguio City. The above facilities will also tie up the rural telephone exchanges with one another and provide access to the main network of the Bureau and to other systems belonging to the private companies. It is pointless to install telephone exchanges without toll outlet to the other areas of the country.

(4) Connection to DOMSAT

The system to be established under the plan shall be linked with DOMSAT facilities. An earth station is proposed to be established by the latter in Tuguegarao. The BUTEL facilities will

therefore be tied up with DOMSAT for access not only to Manila but other points of the country.

(5) Beneficiaries

The Cagayan Region in particular and the whole country in general.

(6) Priority

The proposed project will solve the present inadequacy of telecommunications in Cagayan Valley. Because of this, the project should be given top priority to be able to support other development activities being planned in the area by the other economic sectors.

4. Estimated Cost and Schedule

(1) Project Preparation

1) Local	P 794,475.00
2) Foreign*	P1,853,775.00
TOTAL	P2,648,250.00

(2) Detailed Engineering

1) Local	P3,177,900.00
2) Foreign*	P7,415,100.00
TOTAL	P10,593,000.00

(3) Construction Phase

1) Local	P11,917,125.00
2) Foreign	P27,806,625.00
TOTAL	P39,723,750.00

GRAND TOTAL P52,965,000.00

(4) Operation and Maintenance

P1,500.00/Telephone exchange

For 16 Telephone Exchanges P24,000.00

Conversion Factor \$.1 = P7.50

5. Agencies Responsible

(1) Project Preparation

By the Bureau of Telecommunications with possible assistance from foreign consultants (preparation of project studies)

(2) Project Execution

By private contractor in coordination with the Bureau of Telecommunications.

(3) Operation/Maintenance

The regional offices of the Bureau shall be responsible for the operation and maintenance of the rural telephone exchanges; the microwave/UHF facilities shall be handled by the LLS, Central Office of the Bureau.

6. Status and Schedule of Project Development and Implementation

- | | | | |
|-----------------------------|---|------------------------|---|
| (1) Project Identification | - | Sept. 1977 | by BUTEL |
| (2) Pre-feasibility Studies | - | by Dec. 1977 | by BUTEL with the assistance of consultants (if project is financed by foreign loans) |
| (3) Feasibility Study | - | Dec. 1977 to June 1978 | by BUTEL |
| (4) Funds Negotiation | - | Dec. 1977 to June 1978 | by BUTEL (thru NEDA & DPWTC) |
| (5) Detailed Engineering | - | 1978 - 1979 | by BUTEL & Contractor |
| (6) Construction | - | 1978 - 1982 | by BUTEL |

BUREAU OF TELECOMMUNICATIONS
10-Year Telecom Expansion Program
For Region No. II
(Cagayan Valley)

A. LOCAL TELEPHONE EXCHANGES:

CY 78-

- | | | |
|-------------------|---|------|
| 1. Basco, Batanes | - | 200L |
| 2. Alicia Isabela | - | 300L |

CY 80-

- | | | |
|-------------------------|---|------|
| 1. Enrile, Cagayan | - | 200L |
| 2. Cabarruguis, Quirino | - | 200L |

CY 81-

- | | | |
|-------------------------|---|------|
| 1. Baggao, Cagayan | - | 300L |
| 2. Ballesteros, Cagayan | - | 300L |

CY 82-

- | | | |
|--------------------------|---|------|
| 1. Sanchez-Mira, Cagayan | - | 200L |
| 2. Callang, Isabela | - | 200L |

CY 83-87

- | | | |
|---------------------------|---|------|
| 1. Tuao, Cagayan | - | 200L |
| 2. Solana, Cagayan | - | 200L |
| 3. Banaue, Ifugao | - | 200L |
| 4. San Mariano, Isabela | - | 200L |
| 5. San Mateo, Isabela | - | 300L |
| 6. Tumauni, Isabela | - | 200L |
| 7. Bambang, Nueva Vizcaya | - | 200L |
| 8. Dupax, Nueva Vizcaya | - | 200L |

B. TOLL SWITCHING CENTER

- | |
|-----------------------------|
| 1. Tuguegarao, Cagayan |
| 2. Bayombong, Nueva Vizcaya |

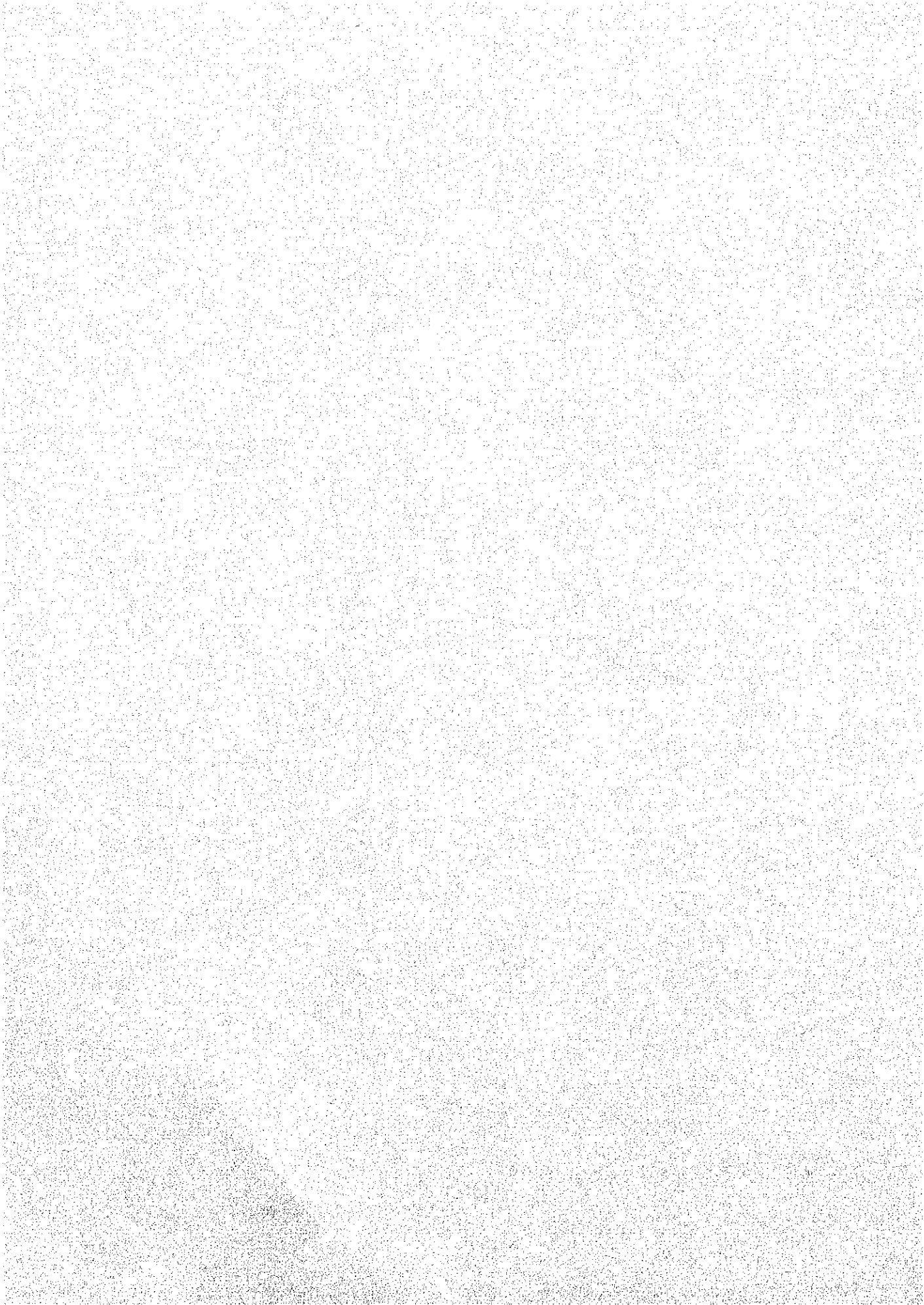
G. TELEX EXCHANGE AND TELEPRINTERS

1. Tuguegarao, Cagayan (100-L)

D. BACKBONE NETWORK

1. Baguio - Cagayan Valley Network

(5) Rural telecommunications project Region I and II, Bureau
of Telecommunications



AGENCY: Bureau of Telecommunications

RURAL TELECOMMUNICATIONS PROJECT
REGIONS I AND II

1. Project Description:

1.1 Name - Rural Telecommunications Project

1.2 Location - Ilocos and Cagayan Valley Regions (Region Nos. I and II)

1.3 Activities Involved -

The Project will involve -

- a) Establishment of rural telephone exchanges/systems in 36 deserving municipality of Region No. I (Mt. Province, Ilocos Norte, Ilocos Sur, Benguet and Pangasinan) and 25 deserving municipalities of Region No. II (Batanes, Cagayan, Ifugao, Isabela, Neuva Vizcaya and Quirino);
- b) Installation of 27 manual toll switchboards at existing BUTEL and private local telephone exchanges for long distance call interconnection;
- c) Establishment of telex exchanges in the regional centers of San Fernando, la Union and Tuguegarao, Cagayan;
- d) Expansion/development of microwave and UHF links to interconnect the exchanges to the capital, and the capital to the main switching centers; and
- e) Interconnect of the aforementioned facilities with DOMSAT earth stations in Tuguegarao and Laoag.

2. Project Components:

The Project will compose:

1.1 Region No. I -

- a) Toll Switching Center - 2

- b) Local Telephone Exchange - 36 (with a total capacity of 9,000 lines)
- c) Telex Exchange - 1 (with a total capacity of 100 lines)
- d) Teleprinter Machine - 50
- e) Toll Manual Switchboard (For Toll Interconnection with existing BUTEL and private telephone system) - 17
- f) PBX (For Inter-Provincial Toll Service with single channel radio line terminated to local telephone exchange) - 15
- g) Microwave/UHF/VHF radio transmission system to interconnect all these new and existing telecom facilities

1.2 Region No. II -

- a) Toll Switching Center - 2
- b) Local Telephone Exchange - 25 (with a total of 4,500 lines)
- c) Telex Exchange - 1 (with a total of 100 lines)
- d) Teleprinter Machine - 50
- e) Toll Manual Switchboard (For Toll Interconnection with existing BUTEL and private telephone system) - 10
- f) PBX (For Inter-provincial Toll service with single channel radio link terminated to local telephone exchange) - 19
- g) Microwave/UHF/VHF radio transmission system to interconnect all these new and

connect all these new and
wziarinf telecom facilities,
government and private.

3. Cost Breakdown:

3.1 Region No. I -

	<u>Item</u>	<u>Local</u>	<u>Forex</u>	<u>Total (P)</u>
a)	Telephone (Local & Long Distance)	P54,000,000	\$10,800,000	P135,000,000
b)	Telex (Switching)	225,000	170,000	1,500,000
c)	Teleprinter	-	300,000	2,250,000
d)	Manual SWBD	3,825,000	2,890,000	25,500,000
e)	PBX (IPTS)	337,500	255,000	2,250,000
	TOTAL -----	P58,387,500	\$14,415,000	P166,500,000

3.2 Region No. II -

	<u>Item</u>	<u>Local</u>	<u>Forex</u>	<u>Total (P)</u>
a)	Telephone (Local & Long Distance)	P27,000,000	\$ 5,400,000	P 67,500,000
b)	Telex (Switching)	225,000	170,000	1,500,000
c)	Teleprinter	-	300,000	2,250,000
d)	Manual SWBD	2,250,000	1,500,000	15,000,000
e)	PBX (IPTS)	427,500	323,000	2,850,000
	TOTAL -----	P29,902,500	\$ 7,893,000	\$ 89,100,000
	GRAND TOTAL -----	<u>P88,290,000</u>	<u>\$22,308,000</u>	<u>\$255,600,000</u>

4. Project Relevance to National Development Plan:

4.1 Problem to Solve:

For a developing country like the Philippines, telephone communications is a vital requirement. But many parts of the country are still without telephone service. At present, there are about 531,000 telephones only in the country, two-thirds of which are in Metro Manila, one-sixth are in the primary urban centers and the rest in the secondary and tertiary urban centers. To the 45 M Filipinos, this is equivalent to UF 3 which is far below the recommended UF 8 for developing countries.

4.2 Integration of Government and Private Telecommunication Facilities -

Integration has been recognized as the primary solution to most problems affecting the sector which is presently characterized by duplicative telecommunication services. In this regard, the BOC set guidelines towards the rationalization and integration of domestic networks particularly in the telephone service. The guidelines are based on the ONE OPERATOR-ONE AREA concept. Under this concept private systems like the PLDT, RETELCO, and PILTEL were given the first options to select the places where they will provide services as included in their programs. The remaining municipalities in the list prepared by a Plan Committee and identified as needing telephone service were then assigned to BUTEL. This in effect makes the private and government sectors complimentary to each other.

Further, in line with the implementing strategies of the approved Five-Year Philippine Development Plan, the DPWTC has taken initiative towards the preparation of an operational National Telecommunications Master Plan giving primary importance to the design of the nationwide telecommunications network.

BUTEL's proposal to extend telephone service to the rural areas is also intended to correct disparities in economic conditions between the rural and urban settlements as this service is expected to catalyze the expansion of local commercial activities which is also essential to countryside development.

In this project BUTEL avoids the possibility of future duplication of facilities and services by selecting only the places not included in the private line up. However, the radio links to be provided shall have enough capacity to integrate operation of existing and proposed exchanges of private firms. In addition, the system shall be tied up with DOMSAT stations for access not only to Manila but to other points of the country.

Telex service will take care of the transmission and reception of record messages urgently needed by the businessmen and commercial establishment. This is expected also to revolutionize the handling of telegram messages, thru automation.

The project was picked out from the 10-year plan of the Bureau (approved by NEDA) involving the provinces under Regions I and II.

5. Description of Agency (BUTEL):

5.1 Functions -

The Bureau of Telecommunications as described in PO No. 1 has the following functions:

- a) Provide telecom facilities for government offices.
- b) Provide communication services to augment limited existing similar private communication services.
- c) Extend services into areas where no such service is available.
- d) Assist private sectors in providing and maintaining backbone network.

5.2 Present Facilities -

The Bureau of Telecommunications has at present the following facilities:

- a) Twenty two (22) telephone exchanges in the capital towns and cities in the Philippines with an installed capacity of 11,500 telephones.
- b) Twelve (12) additional telephone exchanges in the provinces presently under installation with total capacity of 3,200 lines

or 3,775 telephones.

- c) An Inter-Provincial telephone service providing long distance telephone service to/from 100 localities.
- d) An International Telephone Switchboard for overseas calls direct to Guam, Japan, Taipei and Hongkong.
- e) 1,320 telegraph or radio/telegraph station all over the country.
- f) A 700-line telex system with switching centers of 100 lines each at Baguio, Cagayan de Oro and Cebu and 400 lines in Manila.

BUREAU OF TELECOMMUNICATIONS

Planning Division

Planning and Programming Section

BUREAU OF TELECOMMUNICATIONS
10-Year Telecom Expansion Program
For Region No. I
(Ilocos Region)

A. Local Telephone Exchanges:

CY '78 -

- | | |
|--------------------------|--------|
| 1. Bacarra, Ilocos Norte | - 300L |
| 2. Bontoc, Mt. Province | - 300L |
| 3. Alaminos, Pangasinan | - 500L |

CY '79 -

- | | |
|----------------------------|--------|
| 1. Asingan, Pangasinan | - 300L |
| 2. San Fabian, Pangasinan | - 300L |
| 3. San Jacinto, Pangasinan | - 300L |

CY '80 -

- | | |
|-------------------------|--------|
| 1. Cabugao, Ilocos Sur | - 300L |
| 2. Bolinao, Pangasinan | - 300L |
| 3. Mapandan, Pangasinan | - 300L |

CY '81 -

- | | |
|--------------------------|--------|
| 1. Dingras, Ilocos Norte | - 300L |
| 2. Vintar, Ilocos Norte | - 300L |

CY '82 -

- | | |
|---------------------------|--------|
| 1. Alcala, Pangasinan | - 300L |
| 2. Sison, Pangasinan | - 300L |
| 3. Urbiztondo, Pangasinan | - 300L |

CY '83-'87

- | | |
|-----------------------------|--------|
| 1. Bokod, Benguet | - 200L |
| 2. Mankayan, Benguet | - 200L |
| 3. Narvacan, Ilocos Sur | - 200L |
| 4. Sto. Domingo, Ilocos Sur | - 300L |
| 5. Tagudin, Ilocos Sur | - 300L |

6.	Bani, Pangasinan	- 300L
7.	Binalonan, Pangasinan	- 500L
8.	San Quintin, Pangasinan	- 200L
9.	Pagudpud, Ilocos Norte	- 200L
10.	Pasuquin, Ilocos Norte	- 200L
11.	Piddig, Ilocos Norte	- 200L
12.	Sarrat, Ilocos Norte	- 200L
13.	Paoay, Ilocos Norte	- 200L
14.	Santa, Ilocos Sur	- 200L
15.	Sta. Maria, Ilocos Sur	- 200L
16.	Magsingal, Ilocos Sur	- 200L
17.	Sinait, Ilocos Sur	- 200L
18.	Badoc, Ilocos Norte	- 200L
19.	Bangui, Ilocos Norte	- 200L
20.	Pinili, Ilocos Norte	- 200L
21.	Solsona, Ilocos Norte	- 200L
22.	Espiritu, Ilocos Norte	- 200L

B. Toll Switching Center:

1. Baguio City
2. Laoag, Ilocos Norte

C. Telex Exchange and Teleprinters:

1. San Fernando, La Union (100-L)

D. Backbone Network:

1. Baguio - Ilocos Region

E. Toll (Switchboard) Station:

1. Dagupan City
2. Bugallon, Pangasinan
3. Lingayen, Pangasinan
4. Sta. Barbara, Pangasinan
5. Mangaldan, Pangasinan
6. Pozorrubio, Pangasinan
7. Umingan, Pangasinan
8. San Fernando, La Union

9. Bengued, Abra
10. Vigan, Ilocos Sur
11. Candon, Ilocos Sur
12. Laoag City
13. Baguio City
14. Agoo, La Union
15. San Carlos City
16. Urdaneta, Pangasinan
17. Malasique, Pangasinan

F. Inter-Provincial Telephone Station (PBX):

Region I

1. Caoayan, Ilocos Sur
2. Sta. Lucia, Ilocos Sur
3. Aringay, La Union
4. Sto. Tomas, La Union
5. Currimao, Ilocos Norte
6. Marcos, Ilocos Norte
7. Burgos, Ilocos Norte
8. Nueva Era, Ilocos Norte
9. Sagada, Mt. Province
10. Aguilar, Pangasinan
11. Balungao, Pangasinan
12. Bautista, Pangasinan
13. Natividad, Pangasinan
14. San Nicolas, Pangasinan
15. Sta. Maria, Pangasinan

DETAILED BREAKDOWN OF COST ESTIMATESFOR REGION I

<u>I. Direct Costs</u>		<u>Local</u>	<u>Total</u>
Building Materials		13,700,000	13,700,000
Office Equipment		390,000	390,000
Office Furnitures		195,000	195,000
Water Pump		780,000	780,000
Generators	365,000	-	365,000
Toll Switchboard	13,700,000	-	13,700,000
Radio Equipment	21,000,000	-	21,000,000
PBX	3,000,000	-	3,000,000
Telephone Switching	31,000,000	-	31,000,000
Materials for Toll & Telephone Ex.	5,433,000	2,580,000	
Access Road		28,000,000	28,000,000
Right of Way		100,000	100,000
Lot		120,000	120,000
Contingencies		220,000	220,000
Labour		4,800,000	4,800,000
 <u>II. Indirect Costs</u>			
Storage		710,000	710,000
Profit	7,537,500	5,089,500	12,627,000
Tax	26,075,000	1,700,610	27,775,610
 Total -----	P108,112,500	P58,387,500	P166,500,000
	\$ 14,415,000		

BUREAU OF TELECOMMUNICATIONS
10-Year Telecom Expansion Program
For Region No. II
(Cagayan Valley)

A. Local Telephone Exchanges:

CY '78 -

- | | | | |
|----|-----------------|---|------|
| 1. | Basco, Batanes | - | 200L |
| 2. | Alicia, Isabela | - | 300L |

CY '80 -

- | | | | |
|----|----------------------|---|------|
| 1. | Enrile, Cagayan | - | 200L |
| 2. | Cabarroguis, Quirino | - | 200L |

CY '81 -

- | | | | |
|----|----------------------|---|------|
| 1. | Baggao, Cagayan | - | 300L |
| 2. | Ballesteros, Cagayan | - | 300L |

CY '82 -

- | | | | |
|----|-----------------------|---|------|
| 1. | Sanchez Mira, Cagayan | - | 200L |
| 2. | Callang, Isabela | - | 200L |

CY '83 - '87

- | | | | |
|-----|------------------------|---|------|
| 1. | Tuao, Cagayan | - | 200L |
| 2. | Solana, Cagayan | - | 200L |
| 3. | Banaue, Ifugao | - | 200L |
| 4. | San Mariano, Isabela | - | 200L |
| 5. | San Mateo, Isabela | - | 300L |
| 6. | Tumauini, Isabela | - | 200L |
| 7. | Bambang, Nueva Vizcaya | - | 200L |
| 8. | Dupax, Nueva Vizcaya | - | 200L |
| 9. | Aritao, Nueva Vizcaya | - | 200L |
| 10. | Bagabag, Nueva Vizcaya | - | 200L |
| 11. | Diffun, Quirino | - | 200L |
| 12. | Alcala, Cagayan | - | 200L |

- 13. Claveria, Cagayan - 300L
- 14. Gonzaga, Cagayan - 200L
- 15. Angadanan, Isabela - 200L
- 16. Gamu, Isabela - 200L
- 17. Naguilian, Isabela - 200L

B. Toll Switching Center:

- 1. Tuguegarao, Cagayan
- 2. Bayombong, Nueva Vizeaya

C. Telex Exchange and Teleprinters:

- 1. Tuguegarao, Cagayan (100-L)

D. Backbone Network:

- 1. Baguio-Cagayan Valley Network

E. Toll (Switchboard) Station:

- 1. Lagaue, Ifugao
- 2. Ilagan, Isabela
- 3. Santiago, Isabela
- 4. Tuguegarao, Cagayan
- 5. Aparri, Cagayan
- 6. Tabuk, Kalinga-Apayao
- 7. Bayombong, Nueva Vizcaya
- 8. Solano, Nueva Vizcaya
- 9. Cauayan, Isabela
- 10. Roxas, Isabela

F. Inter-Provincial Telephone Station (PBX):

Region II -

- 1. Abulug, Cagayan
- 2. Baguey, Cagayan
- 3. Camalaniugun, Cagayan
- 4. Lal-lo, Cagayan
- 5. Lazam, Cagayan
- 6. Piat, Cagayan

7. Sto. Niño, Cagayan
8. Mayoyao, Ifugao
9. Kiangan, Ifugao
10. Aurora, Isabela
11. Cabagan, Isabela
12. Jones, Isabela
13. Mallig, Isabela
14. San Augustin, Isabela
15. Kabugao, Kalinga-Apayao
16. Lubuagan, Kalinga-Apayao
17. Dupax del Norte, Nueva Vizcaya
18. Sta. Fe, Nueva Vizcaya
19. Madella, Quirino

DETAILED BREAKDOWN OF COST ESTIMATESFOR REGION III. Direct Costs

	<u>Forex</u>	<u>Local</u>	<u>Total</u>
Building Materials		7,000,000	7,000,000
Office Equipment		200,000	200,000
Office Furnitures		100,000	100,000
Water Pump		400,000	400,000
Generators	200,000		200,000
Toll Switchboard	7,500,000		7,500,000
Radio Equipment	12,000,000		12,000,000
PBX	1,620,000		1,620,000
Switching Equipment	17,000,000		17,000,000
Materials for Toll & Telephone Ex.	2,500,000	1,600,000	4,100,000
Access Road		13,000,000	13,000,000
Right of Way		50,000	50,000
Lot		60,000	60,000
Contingencies		1,121,568	1,121,568
Labor		2,500,000	2,500,000

II. Indirect Costs

Storage		500,000	500,000
Profit	4,000,000	2,500,000	6,500,000
Tax	14,377,500	870,932	10,248,432

Total	-----	P59,137,500	P29,902,500	P89,100,000
-------	-------	-------------	-------------	-------------

\$ 7,893,000

EXISTING FACILITIES IN REGIONS I & II

LOCAL TELEPHONE EXCHANGES

A. REGION NO. I

PLDT	PILTEL	RETELCO	BUTEL	Others
1 S FDO LU	1 BAGUIO	1 T'NIDAD B 2 LAOAG	1 BANGUED 2 CANDON IS 3 VIGAN IS	1 AGOO LU 2 B'MBANG 3 S CARLOS 4 M'SIQUI 5 UR'NETA P 6 L'GAYEN P 7 ROSALES P

B. REGION NO. II

		1 T'GARAO	1 S'TIAGO I 2 B'MBONG 3 SOLANO NV	1 ILAGAN I
--	--	-----------	---	------------

DETAILED BREAKDOWN OF COST ESTIMATESFOR REGION III. Direct Costs

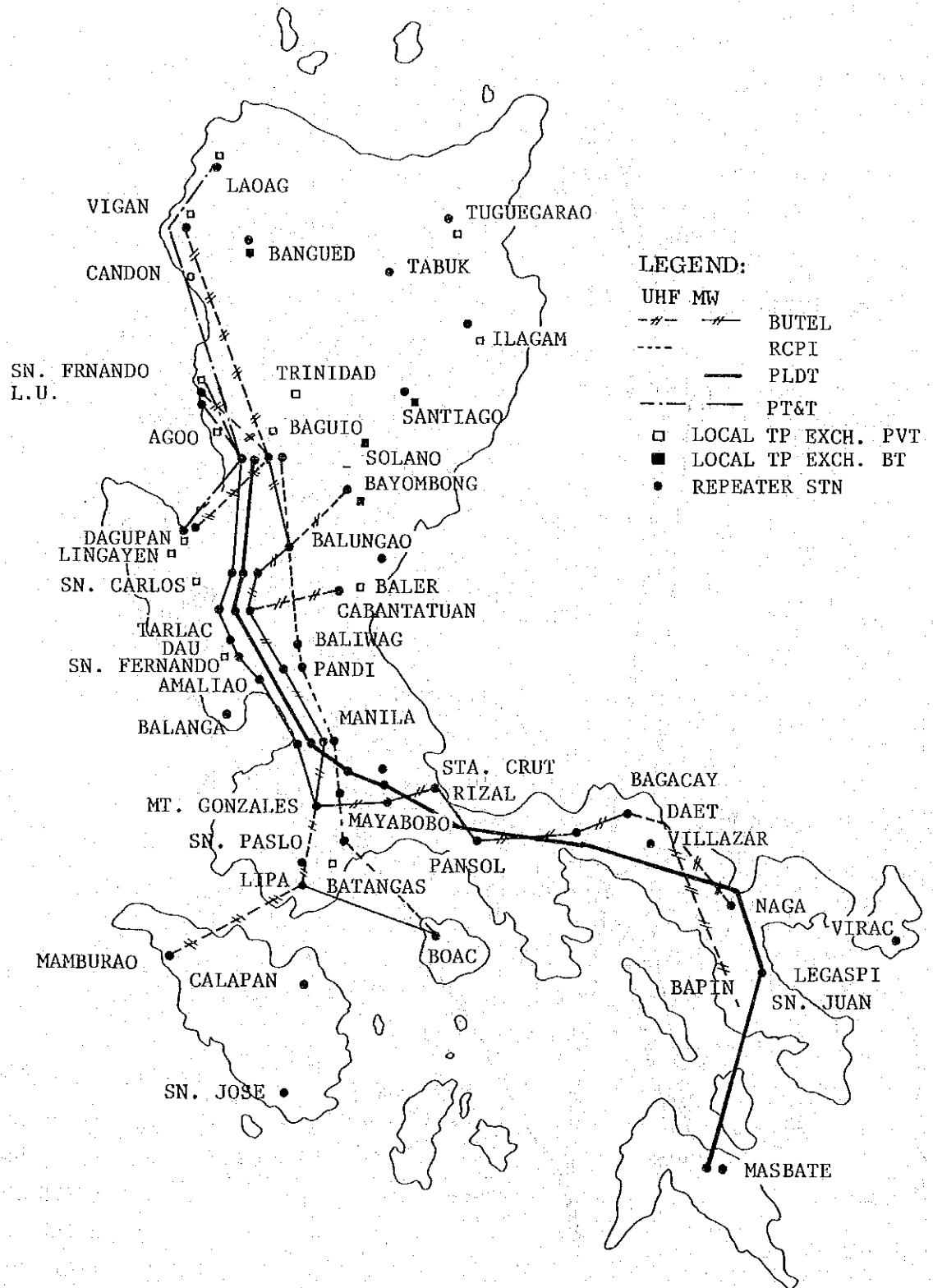
	<u>Forex</u>	<u>Local</u>	<u>Total</u>
Building Materials		7,000,000	7,000,000
Office Equipment		200,000	200,000
Office Furnitures		100,000	100,000
Water Pump		400,000	400,000
Generators	200,000		200,000
Toll Switchboard	7,500,000		7,500,000
Radio Equipment	12,000,000		12,000,000
PBX	1,620,000		1,620,000
Switching Equipment	17,000,000		17,000,000
Materials for Toll & Telephone Ex.	2,500,000	1,600,000	4,100,000
Access Road		13,000,000	13,000,000
Right of Way		50,000	50,000
Lot		60,000	60,000
Contingencies		1,121,568	1,121,568
Labor		2,500,000	2,500,000

II. Indirect Costs

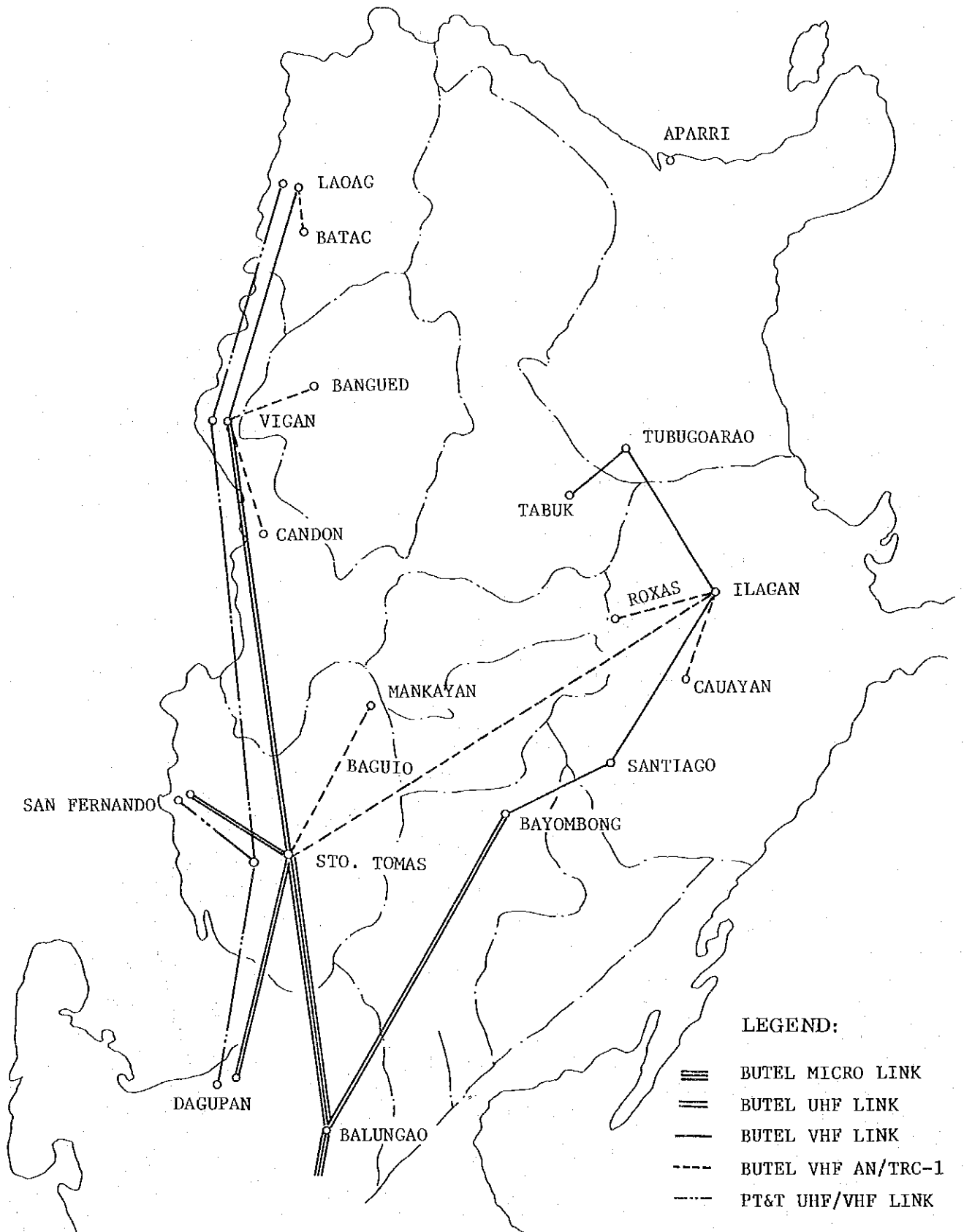
Storage		500,000	500,000
Profit	4,000,000	2,500,000	6,500,000
Tax	14,377,500	870,932	10,248,432
Total	P59,137,500	P29,902,500	P89,100,000

\$ 7,893,000

EXISTING BACKBONE NETWORKS (MW, UHF) & LOCAL
 TP EXCHANGES IN LUZON
 (REGIONS 1 & 2)



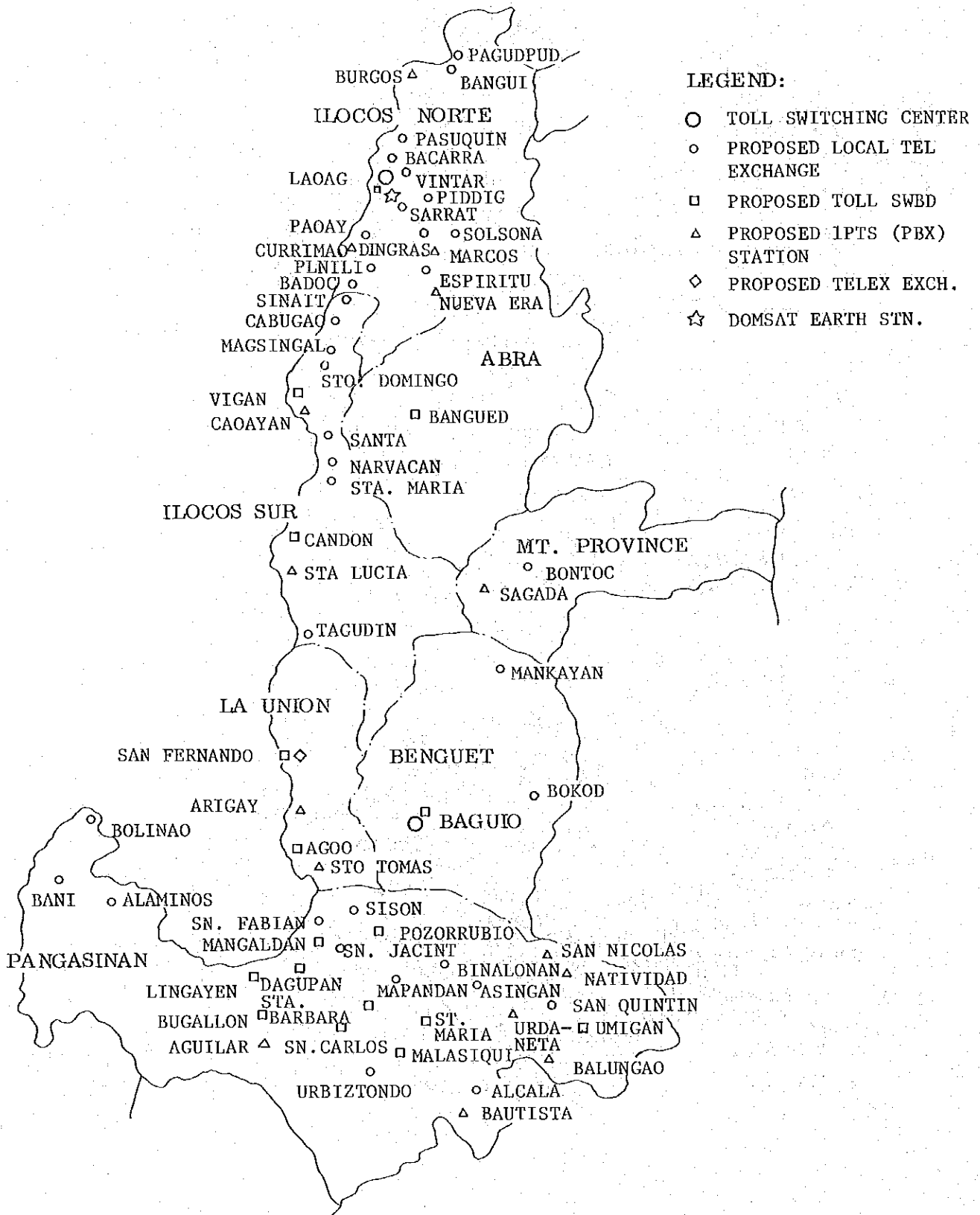
EXISTING TELECOMMUNICATIONS TOLL NETWORK IN LUZON



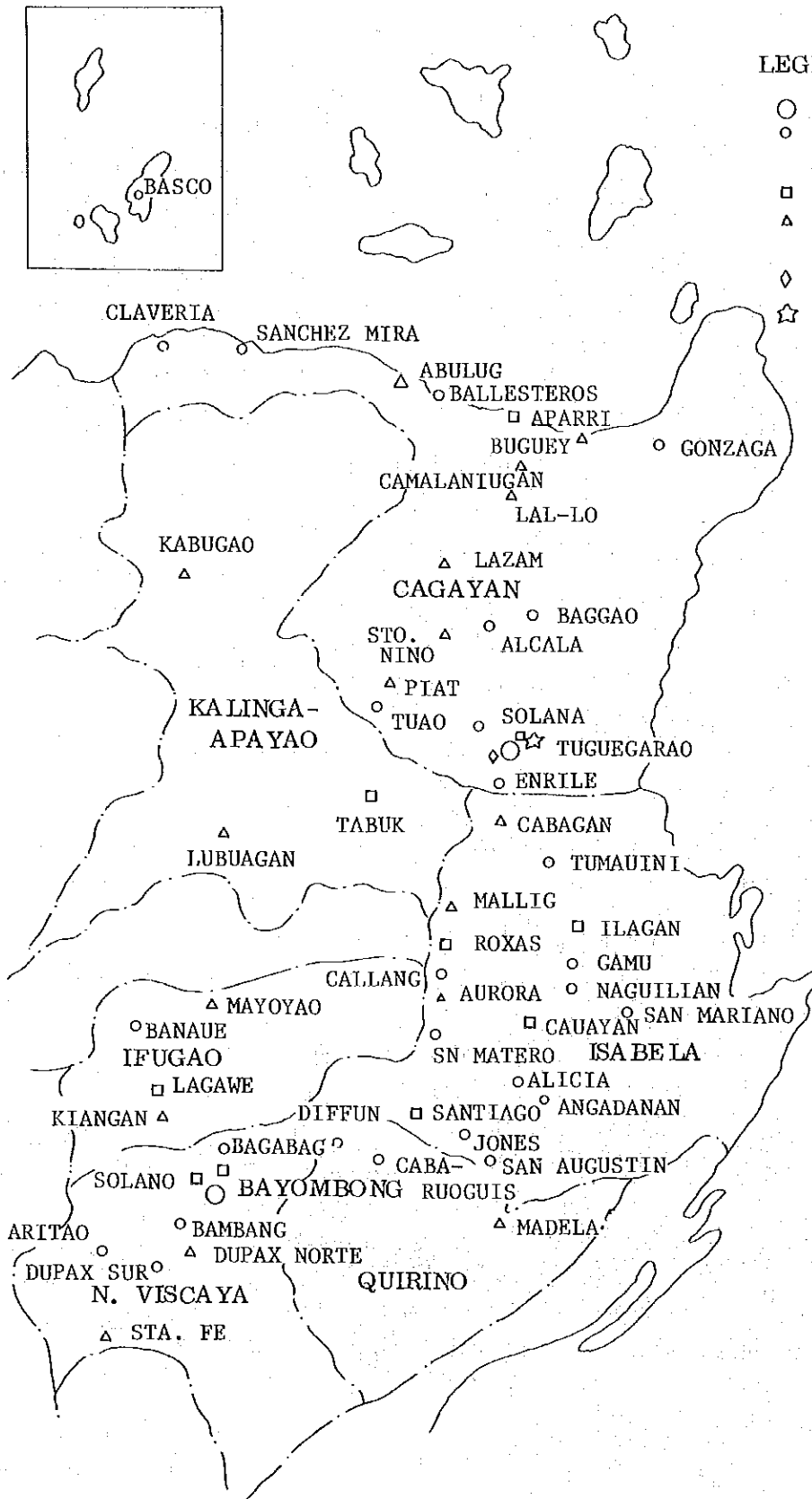
LEGEND:

- ≡≡≡ BUTEL MICRO LINK
- == BUTEL UHF LINK
- BUTEL VHF LINK
- - - BUTEL VHF AN/TRC-1
- · - · - PT&T UHF/VHF LINK

ILOCOS REGION TELECOMMUNICATIONS DEVELOPMENT PLAN

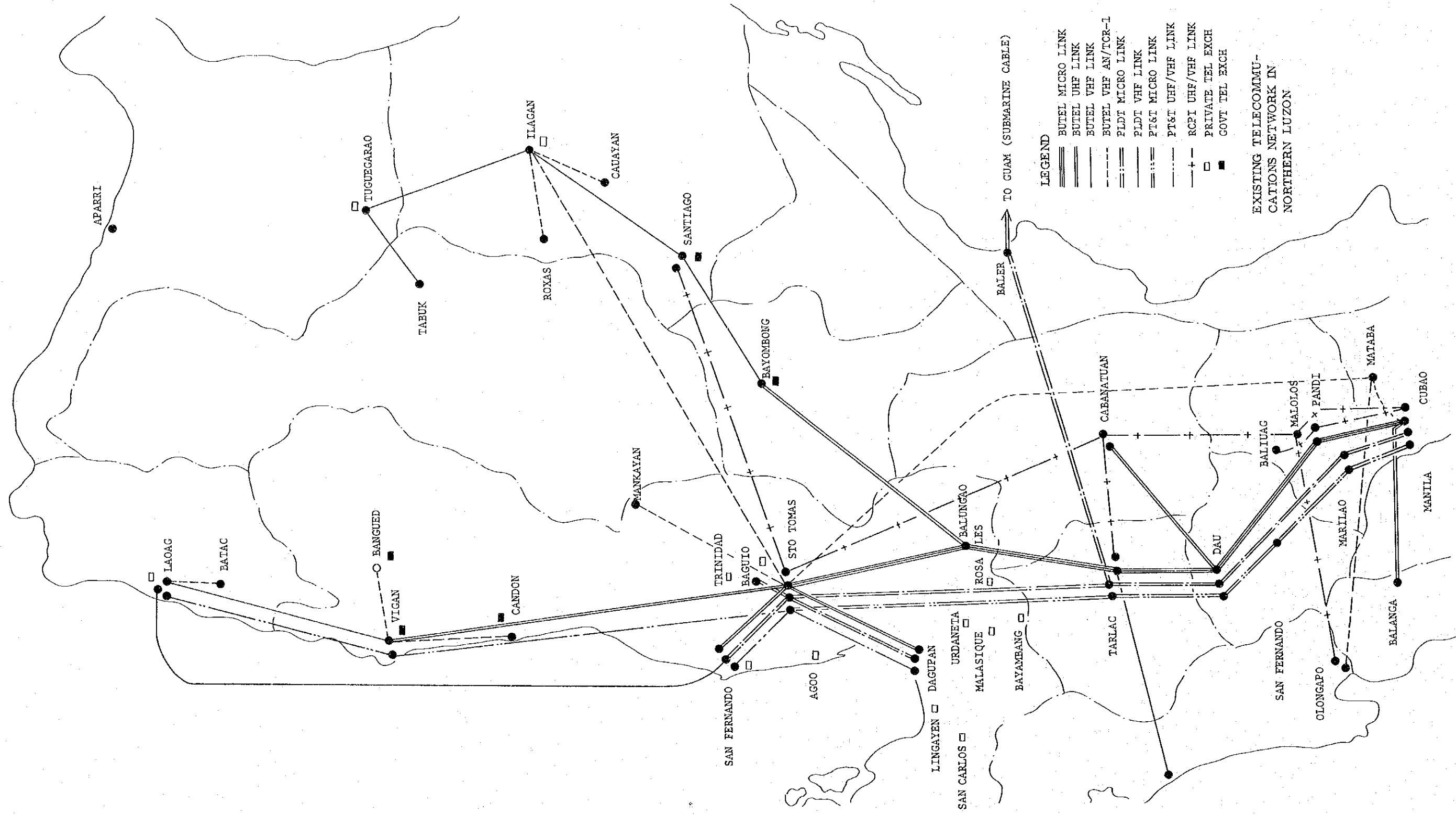


CAGAYAN VALLEY TELECOMMUNICATIONS DEVELOPMENT PLAN



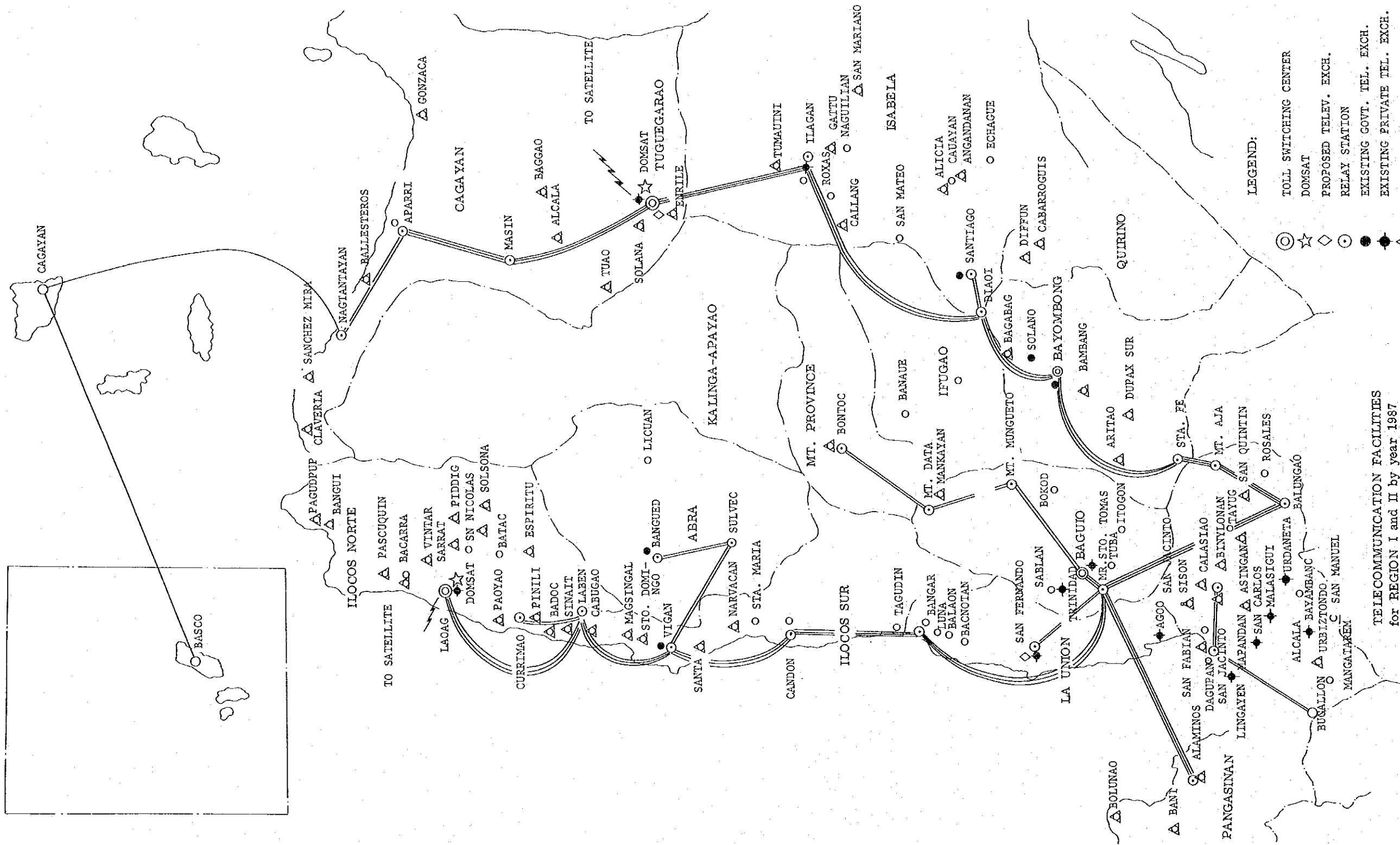
LEGEND:

- TOLL SWITCHING CENTER
- PROPOSED LOCAL TEL. EXCHANGE
- PROPOSED TOLL SWBD
- △ PROPOSED IPTS (PBX) STATION
- ◇ PROPOSED TELEX EXCH.
- ☆ DOMSAT EARTH STN.

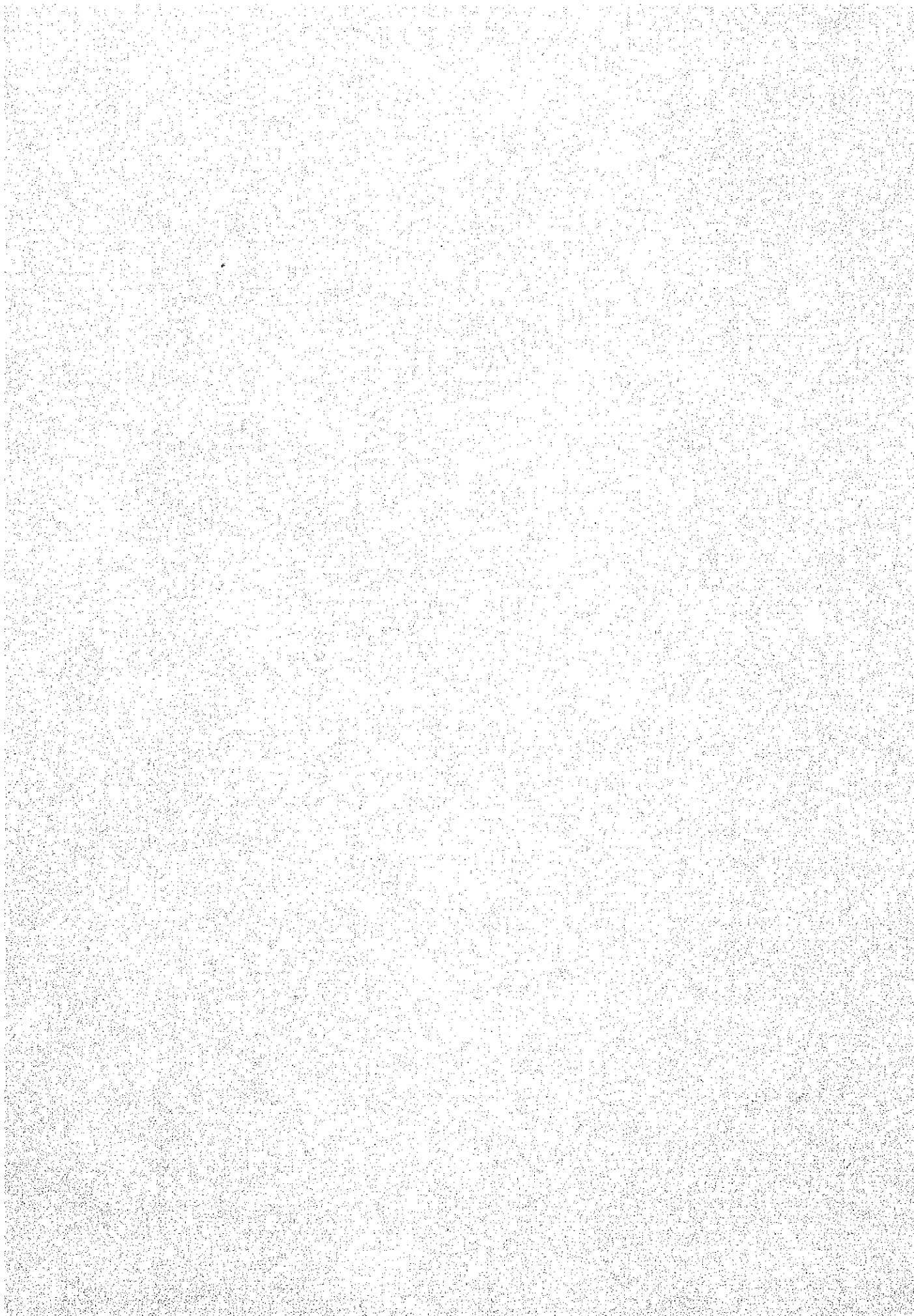


- LEGEND**
- ▬▬▬ BUTEL MICRO LINK
 - ▬▬▬ BUTEL UHF LINK
 - ▬▬▬ BUTEL VHF LINK
 - - - - BUTEL VHF AN/TOR-1
 - ▬▬▬ PLDT MICRO LINK
 - ▬▬▬ PLDT VHF LINK
 - ▬▬▬ PT&T MICRO LINK
 - ▬▬▬ PT&T UHF/VHF LINK
 - + - RCFI UHF/VHF LINK
 - PRIVATE TEL EXCH
 - GOVT TEL EXCH

EXISTING TELECOMMUNICATIONS NETWORK IN NORTHERN LUZON



(6) Letter dated on April 29, 1978 issued by Director, Bureau
of Telecommunications



Republic of the Philippines
Department of Public Works, Transportation
and Communications
BUREAU OF TELECOMMUNICATIONS
Roces Avenue, Quezon City

April 29, 1978

Mr. Yazukazu Sugiyama
Team Manager
JICA Survey Group

Sir;

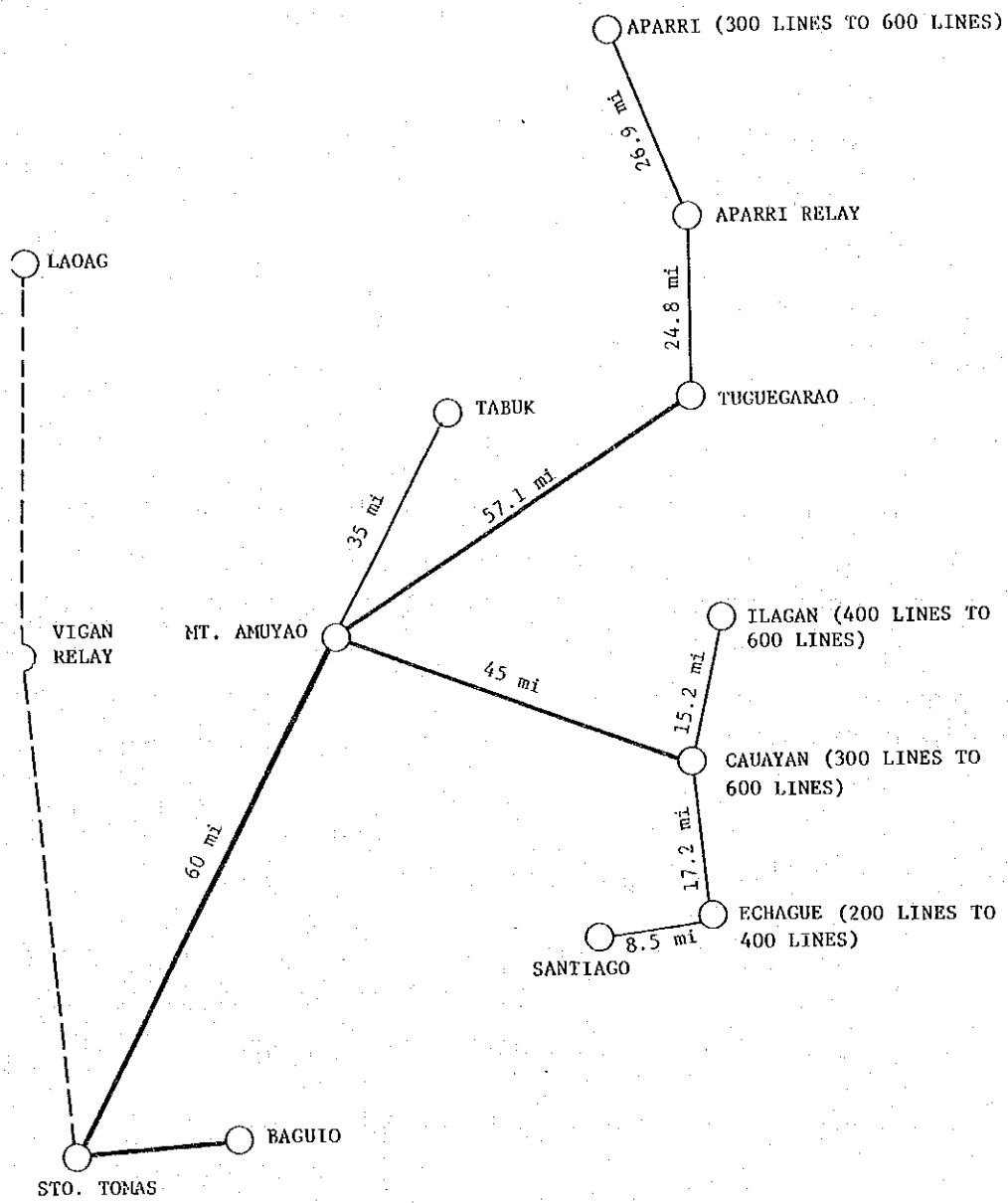
In connection with the survey and study of the proposed Rural Telecommunications Systems Project in Regions I and II, may we request that the team consider the inclusion of Bangued, Abra among those to be provided with new exchanges under the project? In deference to the request of the Government of Abra who is clamoring for the expansion of the existing system of the Bureau in the above town, the construction/installation of a new exchange on a separate site (the present building and lot is not ours and the present equipment is no longer expandable), is considered very necessary considering also that Abra is a capital town.

We also wish to inform you that we are dropping our proposal to establish an exchange in Tabuk in favor of RETELCO. Please see attached sketch of the System they are now setting up in Region II.

Thank you very much for the kind cooperation you have been extending to us.

Very truly yours,

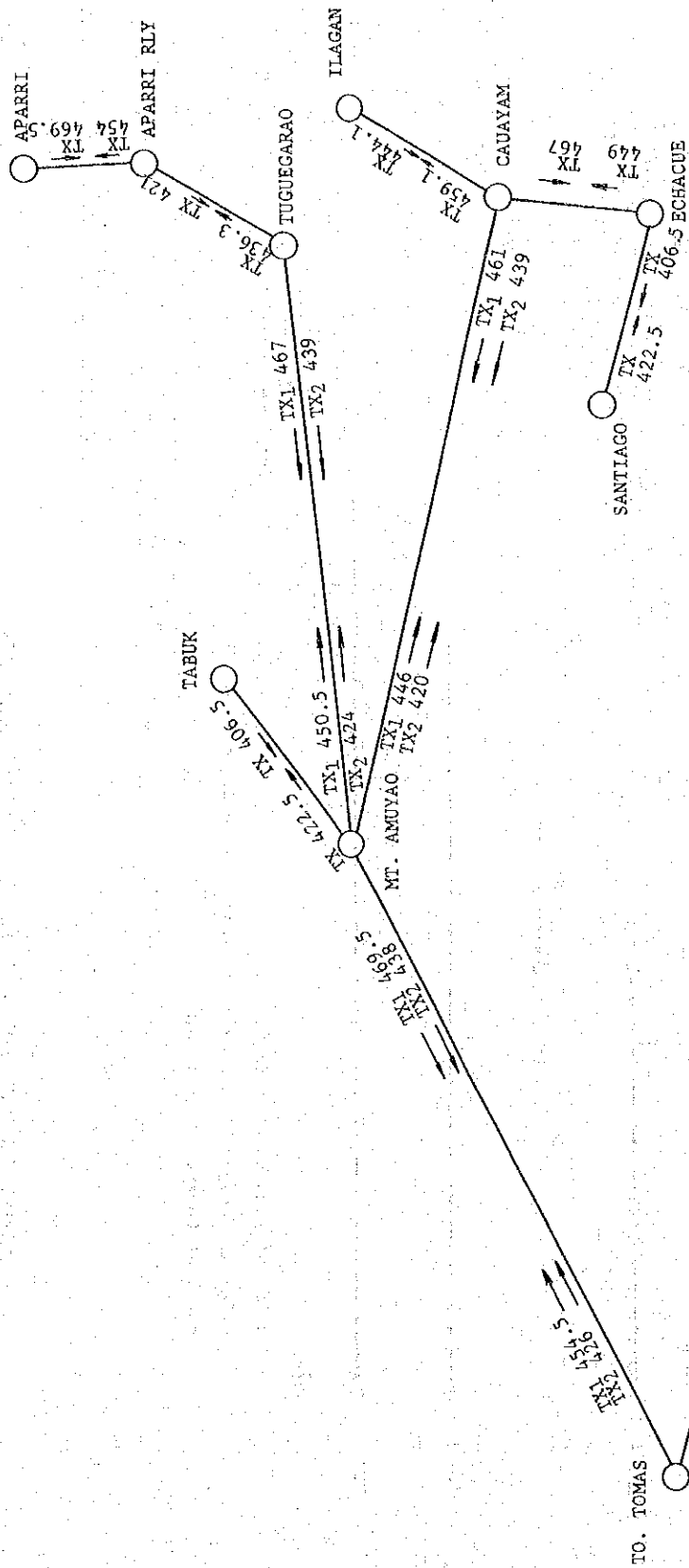
CEFERINO S. CARREON
Director



LEGEND
 - - - - - EXISTING
 _____ PROPOSED UHF LINK (TO BE ORDERED)
 _____ ORDERED

CAGAYAN VALLEY SYSTEM PROJECT 78-16

NOTE: VIGAN IS VIA 71A RADIO

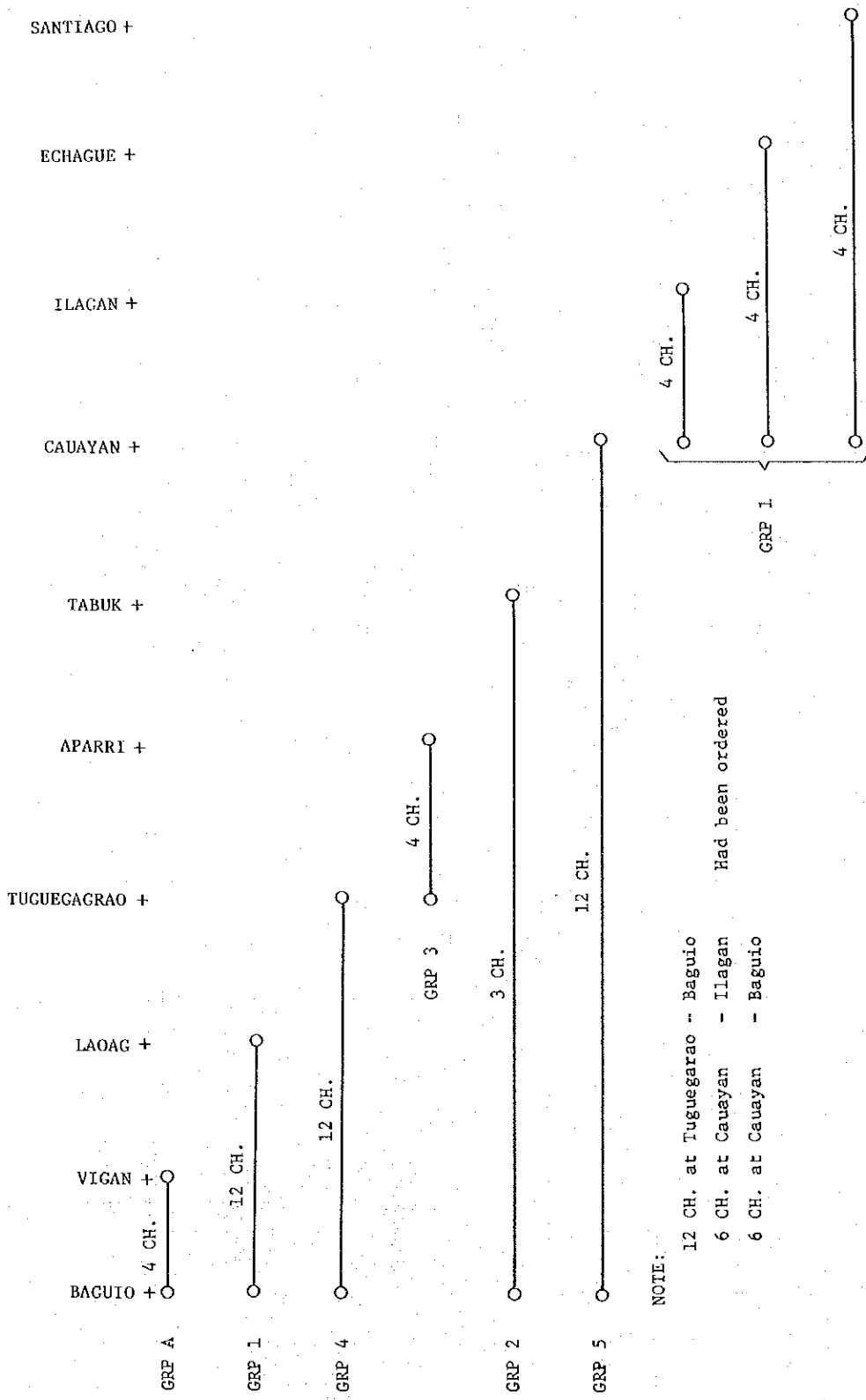


FREQUENCY PLAN (Cagayan Valley System)

LEGEND:

TX₁, TX₂ - ORDERED

TX - TO BE ORDERED



NOTE:

- 12 CH. at Tuguegarao - Baguio
 - 6 CH. at Cauayan - Ilagan
 - 6 CH. at Cauayan - Baguio
- Had been ordered

PROPOSED CAGAYAN VALLEY CHANNELING DIAGRAM
PROJECT 78-16

FRECUENCY PLANT FM72/400

CAGAYAN VALLEY SYSTEM

Sto. Tomas
TX₁ 467
TX₂ 421

Sto. Tomas
TX₁ 454.5
TX₂ 426.0

Mt. Amuyao
TX₁ 450.5
TX₂ 424

Mt. Amuyao
TX₁ 446
TX₂ 420

Mt. Amuyao
TX 422.5

Tuguegarao
TX 436.3

Aparri Relay
TX 454

Cauayan
TX 459.1

Cauayan
TX 467

Exhague
TX 406.5

Baguio
TX₁ 449
TX₂ 436.3

Ht. Amuyao
TX₁ 469.5
TX₂ 442.0

Tuguogarao
TX₁ 467
TX₂ 439

Cauayan
TX₁ 461
TX₂ 435

Tabuk
TX 406.5

Aparri Relay
TX 421

Aparri
TX 469.5

Ilagan
TX 444.1

Echague
TX 469

Santiago
TX 422.5

PROJECT 78-16

GEOGRAPHICAL COORDINATES AND ELEVATION

	Latitude	Longitude	Elevation	Tower HT
1. Mt. Amuyao	17°00'48"	121°07'42"	8,780 ft.	20 ft.
2. Tuguegarao	17°36'51.8"	121°43'35.94"	65 ft.	30 ft.
3. Aparri Relay	17°56'19"	121°40'25"	623 ft.	60 ft.
4. Aparri T. O.	18°21'25"	121°38'21.0"	16 ft.	80 ft.
5. Canayan	16°56'20.06"	121°46'20.94"	195 ft.	70 ft.
6. Echague	16°42'30.85"	121°40'29.22"	220 ft.	70 ft.
7. Santiago	16°41'35.14"	121°32'51.25"	260 ft.	40 ft.
8. Tubuk	17°25'10"	121°26'40"	591 ft.	100 ft.
9. Vigan	17°34'32"	120°23'04"	20 ft.	20 ft.
10. Ilagan	17°07'58.46"	121°52'28.23"	326 ft.	70 ft.

CAGAYAN VALLEY SYSTEM PROJECT 78-16

SCHEDULE OF EQUIPMENT

Station	Radio Equipment FM72/400	Antenna CRA
1. Tubuk	1	2
2. Mt. Amuyao	1	1
3. Aparri	1	2
4. Aparri Relay	2	3
5. Tuguegarao	1	1
6. Ilagan	1	1
7. Cauayan	2	3
8. Echague	2	3
9. Santiago	1	1
Total	12FM72/400	17 CRA

LOCATION	SANTIAGO	HCHAGUE	CAUAYAN	ILAGAN	APARRI	APARRI RELAY	TUQUECARAO
RADIO EQUIPMENT TYPE	- FM72/400	FM72/400	FM72/400	FM72/400	FM72/400	FM72/400	FM72/400
FREQUENCY (CENTER OF BAND)	MHz 407.5	407.5	407.5	407.5	407.5	407.5	407.5
TYPE OF OPERATION	- Unprotected	Unprotected	Unprotected	Unprotected	Unprotected	Unprotected	Unprotected
CHANNEL CAPACITY	24	24	24	24	24	24	24
PATH LENGTH	MILES 8.5	17.2	15.2	15.2	28.8	22.3	22.3
FREE SPACE LOSS (MIDBAND)	DB 107.4	112.5	112.4	112.4	117.9	115.69	115.69
MISC. PATH LOSS	NOTE 1 10	11.5	0	0	12	0	0
TRANS. LINE TYPE	- KABEL	KABEL	KABEL	KABEL	KABEL	KABEL	KABEL
TRANS. LINE LENGTH	FT 60	90	90	90	100	80	80
TRANS. LINE LOSS	DB 0.6	0.9	0.9	0.9	1.0	0.8	0.6
CIRCULATOR FILTER LOSS	DB 1.5	1.5	1.5	1.5	1.5	1.5	1.5
MISC. CONN. & CABLE LOSS	DB 0.5	0.5	0.5	0.5	0.5	0.5	0.5
RECEIVER BRIDGING LOSS	DB						
MAINTENANCE FACTOR	DB 3	3	3	3	3	3	3
TOTAL LOSS	DB 125.9	133.8	121.2	121.2	138.7	124.09	124.09
ANTENNA TYPE	- CRA	CRA	2CRA	CRA	2CRA	2CRA	CRA
ANTENNA SIZE	FT						
REFLECTOR SIZE	FT						
REFLECTOR CL. ACL.	FT						
ANTENNA CL. AGL.	FT						
SPACING	FT						
ANTENNA/REFLECTOR GAIN	DB 13	13	16	13	16	13	13
TOTAL GAIN	DB 26	32	26	26	32	26	26
NET PATH LOSS	DB 99.9	101.8	95.2	95.2	106.7	98.09	98.09
TRANSMIT POWER	DBM 37.78	37.78	37.78	37.78	37.78	37.78	37.78
RCVR. INPUT (FREE SPACE)	DBM 62.12	64.02	57.42	57.42	68.92	60.31	60.31
RCVR. INPUT FOR DBAO	DBM 135.0	135.0	135.0	135.0	135.0	135.0	135.0
FADE MARGIN TO DBAO	DB 35.1	33.2	39.8	39.8	28.3	36.91	36.91
RCVR. INPUT (MEDIAN)	DBM						

NOTE:

1. Accuracy factor, grazing loss and/or shadow loss
CRA - Corner reflector antenna

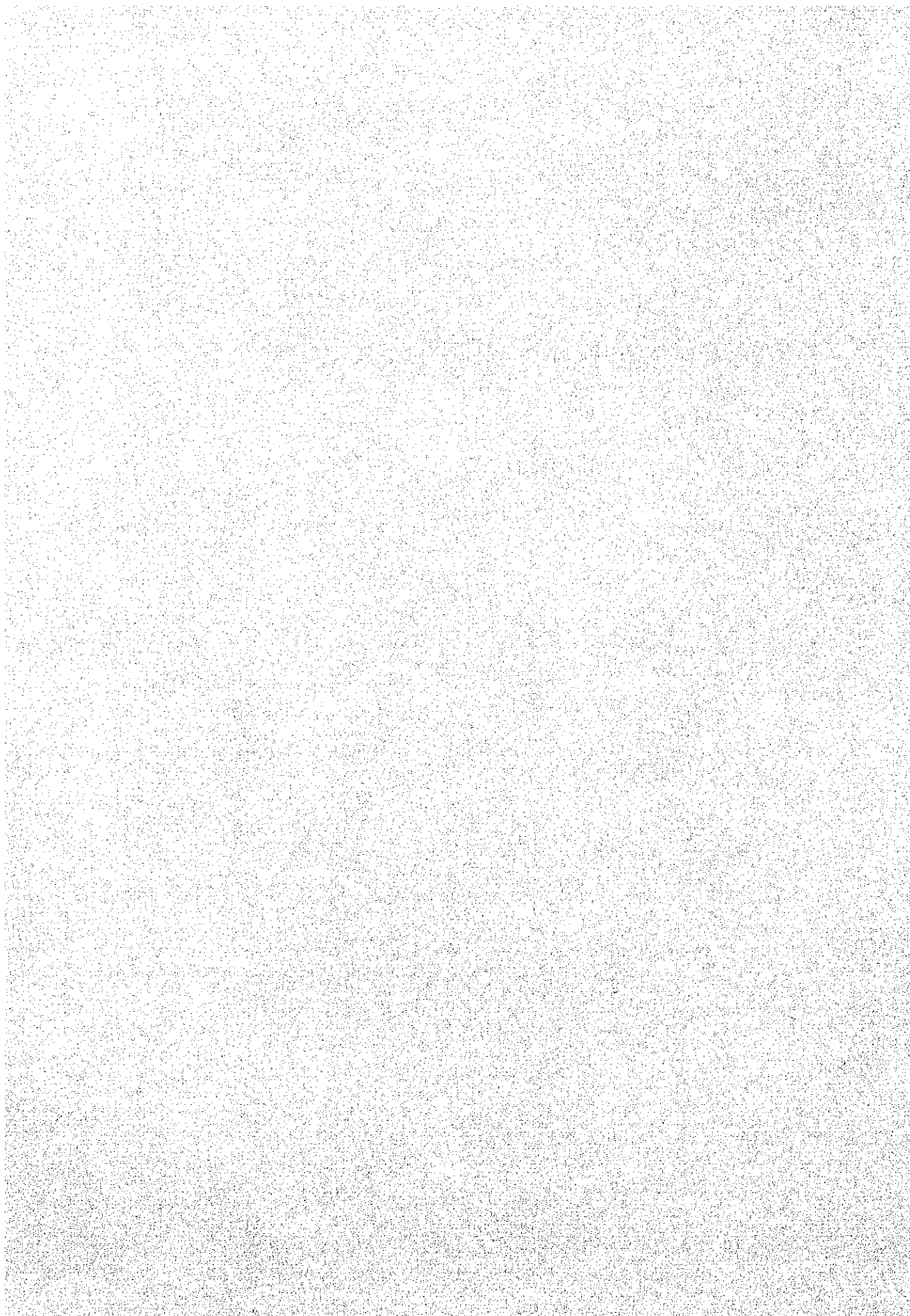
TRANSMISSION CALCULATION (CAGAYAN VALLEY SYSTEM)
PHILIPPINE TELEGRAPH & TELEPHONE CORPORATION

LOCATION	MT. AMUYAO	TABUK			
RADIO EQUIPMENT TYPE	-	FM72/400			
FREQUENCY (CENTER OF BAND)	MHz	407.5			
TYPE OF OPERATION	-	Unprotected			
CHANNEL CAPACITY	-	24			
PATH LENGTH	MILES	35.0			
FREE SPACE LOSS (MIDBAND)	DB	119.7			
MISC. PATH LOSS	NOTE 1	3			
TRANS. LINE TYPE	-	KABEL	KABEL		
TRANS. LINE LENGTH	FT	50	120		
TRANS. LINE LOSS	DB	0.5	1.2		
CIRCULATOR FILTER LOSS	DB	1.5	1.5		
MISC. CONN & CABLE LOSS.	DB	0.5	0.5		
RECEIVER BRIDGING LOSS	DB	-	-		
MAINTENANCE FACTOR	DB	3	3		
TOTAL LOSS	DB	-	131.4		
ANTENNA TYPE	-	CRA	2CRA		
ANTENNA SIZE	FT				
REFLECTOR SIZE	FT				
REFLECTOR CL. AGL.	FT				
ANTENNA CL. AGL.	FT				
SPACING	FT				
ANTENNA/REFLECTOR GAIN	DB	13	16		
TOTAL GAIN	DB	29			
NET PATH LOSS	DB	102.4			
TRANSMIT POWER	DBM	37.78			
RCVR. INPUT (FREE SPACE)	DBM	64.62			
RCVR. INPUT FOR DBAO	DBM	135.0			
FADE MARGIN TO DBAO	DB	32.6			
RCVR. INPUT (MEDIAN)	DBM				

NOTE:

TRANSMISSION CALCULATION (CAGAYAN VALLEY SYSTEM)
 PHILIPPINE TELEGRAPH & TELEPHONE CORPORATION

(7) Letter dated on May 15, 1978 issued by Assistant Director,
Bureau of Telecommunications



Republic of the Philippines
Department of Public Works, Transportation and Communications
BUREAU OF TELECOMMUNICATIONS
Roces Avenue, Quezon City

May 15, 1978

Mr. Shigeru Fukuda
Chief, Japanese Survey Team
(For the Feasibility Study on Rural Telecommunications
Project in Northern Luzon)
Bureau of Telecommunications
Roces Avenue, Quezon City

Sir;

As expressed by General Carreon, Director of Bureau of Telecommunications, it is requested that the following municipalities in Ilocos Norte be included among those to be given preferential consideration under Phase I of the proposed project (Rural Telecommunication Systems - Regions I and II):

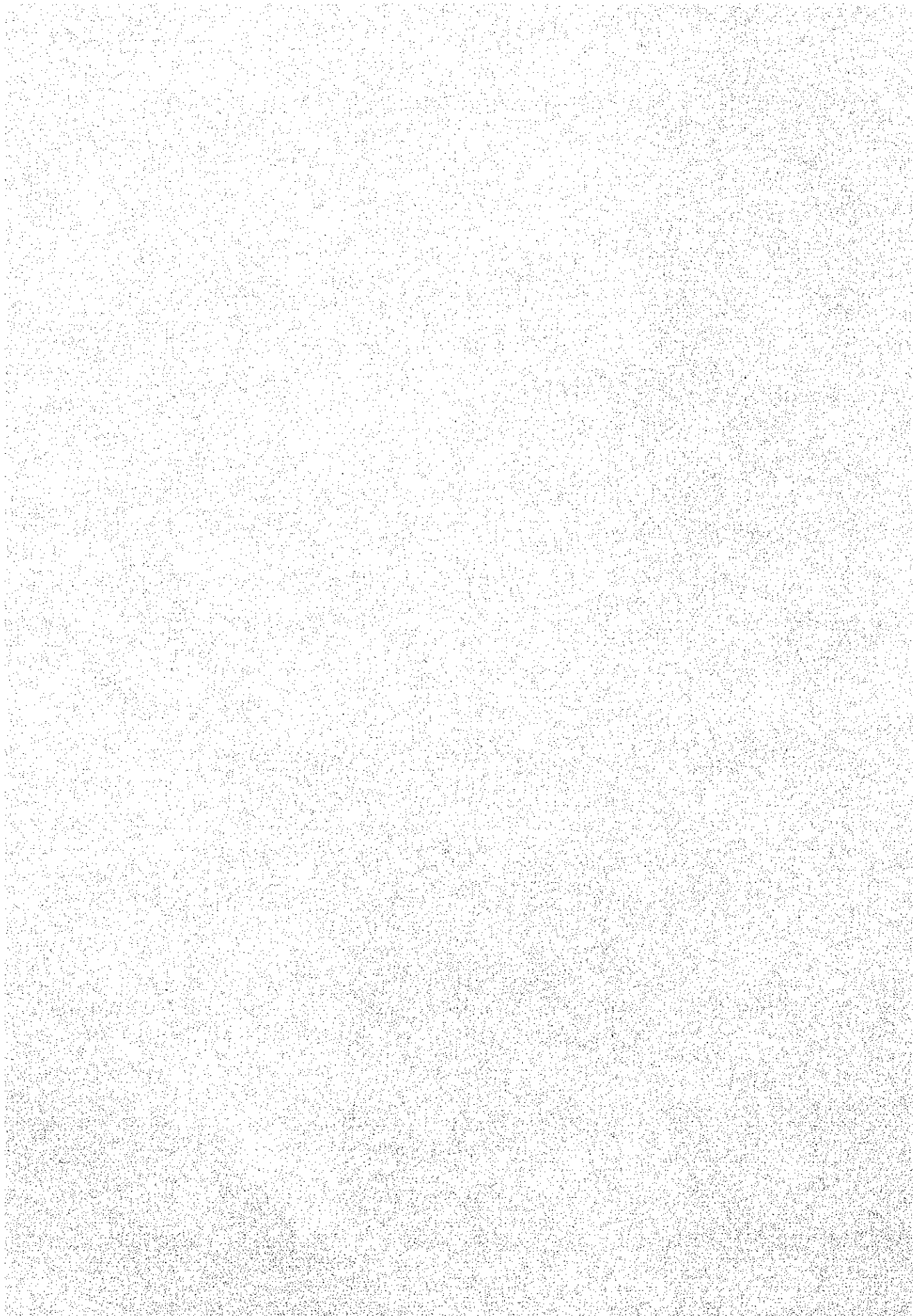
1. Sarrat
2. Paoay
3. Batac

The establishment of local telephone systems in the above municipalities and their interconnection to the main network proposed for Region I will be most desirable.

Very truly yours,

MANIEL B. CASAS
Assistant Director

(8) Letter dated on August 31, 1978 issued by Director, Bureau
of Telecommunications



Republic of the Philippines
Ministry of Public Works, Transportation and Communications
BUREAU OF TELECOMMUNICATIONS
A. Roces Avenue, Quezon City

August 31, 1978

Mr. Shigeru Fukuda
Chief of JICA Mission
for the Feasibility Study
of the Rural Telecommunications
Development Project, Regions I & II

Sir;

Please include in your studies, under Phase I the provision of a 960-channel microwave link from Baguio to Manila to adequately cover the requirements of the proposed facilities in Regions I and II and the existing drop requirements at Tarlac, Dao and Pandi along the present microwave route of this Bureau between the above places. This link is very important because of the following reasons:

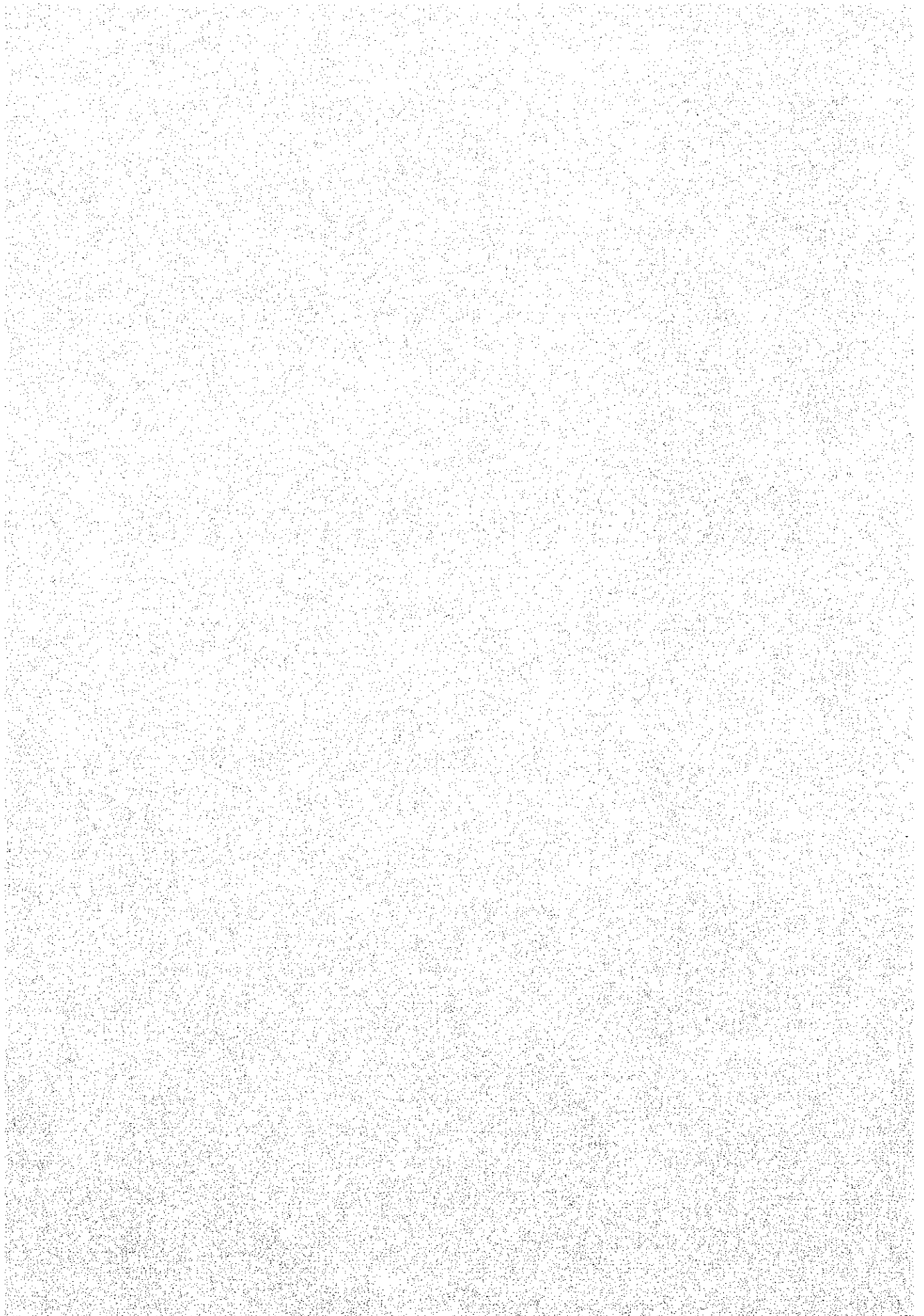
- 1) It will insure the effectiveness of the proposed project for Regions I and II through the provision of the necessary trunks the National Center in Manila.
- 2) If included in the project, it will harmonize equipment complement in the distribution and trunking facilities and provide complete compatibility of working components.
- 3) There is already an existing route of the bureau between the above points with available sites, buildings, and commercial power services.

We will appreciate very much your consideration hereon.

Very truly yours,

CEFERINO S. CARREON
Director

(9) Letter of instructions No. 674 Malacanang Manila



MALACANANG
Manila

LETTER OF INSTRUCTIONS NO. 674

TO: The Secretary of Public Works, Transportation
and Communications
The Secretary of Finance
The Secretary of Industry
The Chairman, Board of Communications

In line with the objectives and purpose of the approved Five-Year Philippine Development Plan, among which are (a) to establish one homogeneous nationwide telecommunication network which will pave the way for an orderly and pregressive development of the telecommunication sector; (b) to establish a framework for the national regulatory system to effectively oversee compliance by both public and private operators with government standard requirements for efficient telecommunication services; and (c) to provide safeguards and ensure vigilance in the interest of national security, I hereby order and direct the following:

1. Preparation of an operational national telecommunications plan giving primary importance to the design of the nationwide (both public and private) telecommunications network.
2. Rationalization of government investments in the sector and preparation of evaluation criteria to guide investment decisions by Government in the sector to determine advisability of every capital investment of Government; integration and coordination of expansion and improvement plans and programs as well as operations of all private and government owned telecommunication facilities and networks with the view of eliminating wasteful competition and instead, effecting maximum utilization of all resources.
3. Recommendations on policies towards complementary development of the operating and manufacturing sectors of the industry giving due consideration to both incentives and regulation of (a) tariffs and taxes (b) rate of return on investments and service rates (c) services and

manufacturing standards (d) licensing and franchising, and (3) all other relevant matters.

4. Creation of a Telecommunication Development Committee for this purpose composed of the Secretary of Public Works, Transportation and Communications, as Chairman, Secretaries of Finance and Industry and the Chairman of the Board of Communications, as members.
5. Creation of a Secretariat under the Department of Public Works, Transportation and Communications to assist the Telecommunication Development Committee, to be composed of technical and administrative personnel from the Department of Public Works, Transportation and Communications, the Department of Finance and Industry, the Bureau of Telecommunications, the Telecommunications Control Bureau, and the Board of Communications and a representative from the Department of National Defense.

The Committee may call upon any service operator, private telecommunications firm/corporation, telecommunication organization/association, and related agencies to carry out the above instructions. If necessary, the Committee may conduct public hearings to secure relevant information on telecommunications.

The Committee shall submit within 60 days from date of formal organization of the Committee and Secretariat, a preliminary report on the preparation of the Integrated National Telecommunications Plan, and recommendations to rationalize the regulatory policies pertaining to the sector.

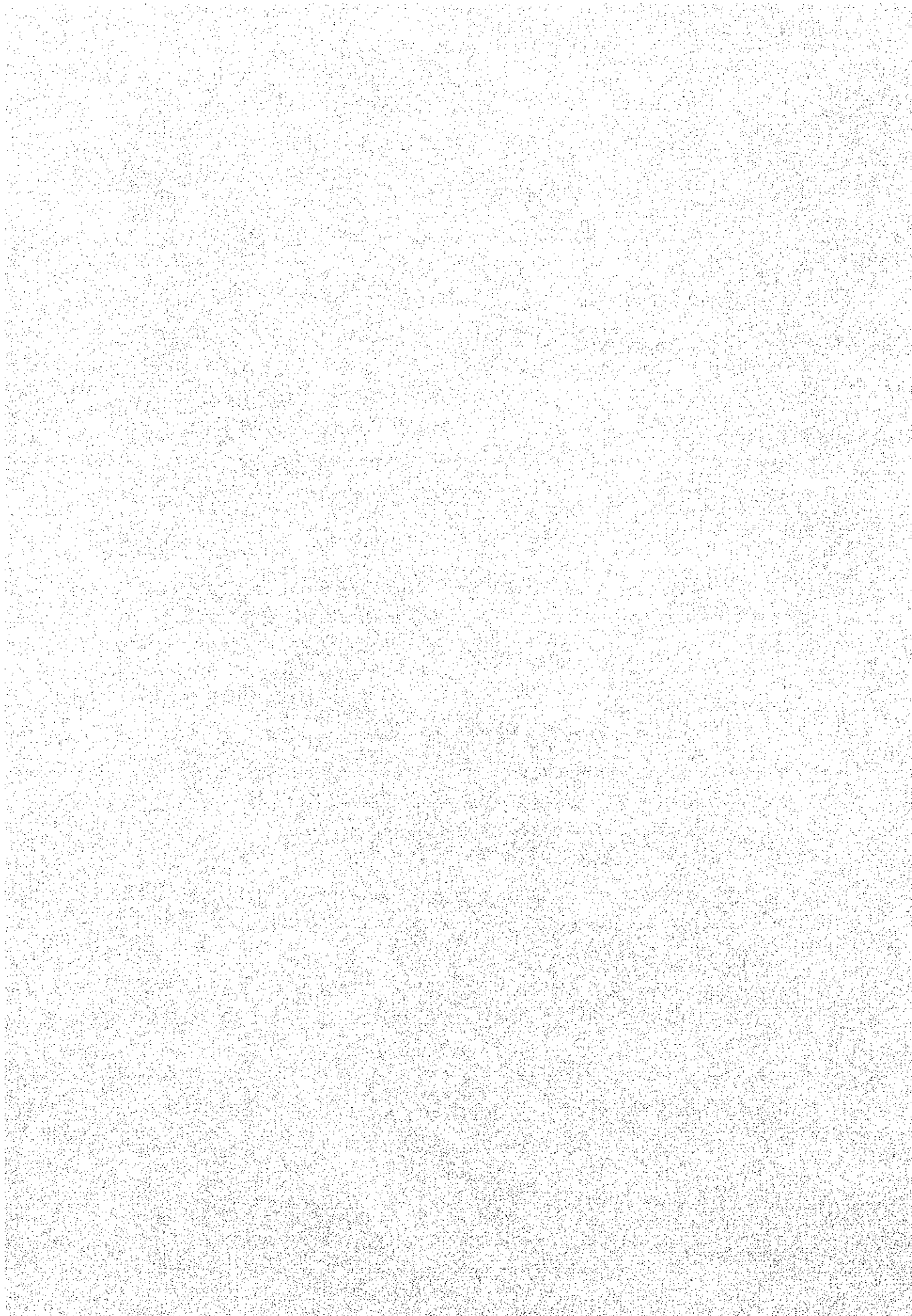
The Committee may draw from available funds of the DPUTC, BUTEL, BOC, and NEDA to support the requirements of the Committee.

Reimbursement of actual transportation and representation allowances is hereby authorized to be granted to Members of the Committee and the Secretariat.

Done in the City of Manila, this 24th day of February, in the year of Our Lord, nineteen hundred and seventy-eight.

(SGD) FERDINAND E. MARCOS

(10) Letter dated on August 29, 1978 issued by Senior Vice
President, DOMSAT



DOMESTIC SATELLITE PHILIPPINES, INCORPORATED
10TH FLOOR, MADRIGAL BLDG., AYALA AVE.,
MAKATI, RIZAL
P.O. BOX 1223 COPO, MAKATI, RIZAL 3117
TEL. 88-26-31 TO 35

August 29, 1977

The Director
Telecommunications Control Bureau
De Los Santos Building
Quezon City

Dear Sir;

In connection with the implementation of the Domestic Satellite System project by DSPI per Presidential Decree No. 947, we have studied interference probabilities of the DOMSAT System to or from all known telecommunications system in the Philippines.

Based on this study, we are submitting to your office the following recommendations to ensure mutual interference protection of existing and planned telecommunications facilities:

1. DOMSAT television carrier to satellite:

Frequency : 6.005 - 6.045 GHZ
6.345 - 6.385 GHZ

EIRP : 83 dBw

Transmit Stn. : Manila, Davao, Zamboanga, Cagayan de Oro, Cebu, Puerto Princesa, Tacloban, Iriga, Tuguegarao, Laoag, Iloilo (Inclosure #1 are the selected earth station location)

Recommendation : To protect terrestrial facilities from interference, it is suggested that assignment of frequencies between 6.005 to 6.045 GHZ and 6.345 to 6.385 MHZ be avoided within 50 km. radius from the transmitting earth stations.

2. DOMSAT Message carrier to satellite:

Frequency : 6.265 - 6.305 GHZ

EIRP : 53 dBw

Transmit Stn. : Manila, Davao, Zamboanga, Cagayan de Oro, Cebu, Puerto Princesa, Tacloban, Iriga, Tuguegarao, Laoag and Iloilo (Inclosure #1 are the selected earth station location)

Recommendation : To protect terrestrial facilities from interference, it is suggested that assignment of frequencies between 6.265 - 6.305 GHZ be avoided within 50 km radius from the transmitting earth stations.

3. Protection for DOMSAT Earth Stations:

Frequency : 3.780 - 3.820 GHZ

4.120 - 4.160 GHZ

4.040 - 4.080 GHZ

Power Level : -165 dBm/carrier

Receive Stns. : Manila, Davao, Zamboanga, Cagayan de Oro, Cebu, Puerto Princesa, Tacloban, Iriga, Tuguegarao, Laoag, and Iloilo (Inclosure #1 are the selected earth station location)

Recommendation : To protect DOMSAT stations from interference, it is recommended that assignment of 3.780 - 3.820 GHZ; 4.120 - 4.160 GHZ; 4.040 - 4.080 GHZ bands be avoided within 50 km radius from DOMSAT earth stations.

4. DOMSAT Microwave Link Frequencies:

<u>Transmit</u>	<u>Receive</u>
2122.25 - 2122.75 MHZ	2241.25 - 2241.75 MHZ
2150.25 - 2150.75 "	2269.25 - 2269.75 "
2136.25 - 2136.75 "	2255.25 - 2255.75 "
2164.25 - 2164.75 "	2283.25 - 2283.75 "
1919.25 - 1919.75 "	2038.25 - 2038.75 "
1947.25 - 1947.75 "	2066.25 - 2066.75 "

Earth Stations : All DOMSAT station as in Inclosure #1.

Recommendation : To protect terrestrial facilities from interference of DOMSAT stations' transmit frequencies and to protect DOMSAT stations from interference of terrestrial facilities, it is suggested that assignment of frequencies on the bands given in the table above be avoided within 50 km radius from the DOMSAT earth stations.

5. DOMSAT TV Link Frequencies:

Transmit Frequency : 6680 - 6706 MHZ

Receive : 6980 - 7013 MHZ

EIRP : 86 dBw

Earth Stations : All DOMSAT stations as in Inclosure #1

Recommendation : To protect terrestrial facilities from interference from DOMSAT earth stations, it is recommended that assignment of frequencies on the 6680 - 6706 MHZ band be avoided within 50 km radius from the transmitting earth stations.

To protect DOMSAT earth stations from interference, it is suggested that assignment of frequencies on the 6980 - 7013 MHZ band be avoided within 50 km radius from the DOMSAT earth stations.

6. Possible UHF Tail Link

<u>Transmit</u>	<u>Receive</u>
752 MHZ	770 MHZ
757.6 "	787.6 "
756.0 "	786.0 "
754.2 "	772.2 "
819.0 "	849.0 "
818.2 "	849.0 "
811.0 "	841.0 "

<u>Transmit</u>	<u>Receive</u>
816.0 MHZ	846.0 MHZ
791.0 "	841.0 "
811.2 "	842.2 "

Earth Stations : All DOMSAT stations as in Inclosure #1

Recommendation : To protect terrestrial facilities from interference from DOMSAT stations, and to protect DOMSAT stations from interference from terrestrial facilities, it is recommended that the band of frequencies given above should be avoided within 50 km radius from the DOMSAT earth stations.

Very truly yours,

C.G. HECHANOVA
Senior VP

Proposed DOMSATPHIL Earth Station Site

COORDINATES

<u>E/S</u>	<u>Longitude</u>	<u>Latitude</u>
1. Manila (Bo. Sta. Cruz)	121°10'08.38"E	14°36'23.74"N
2. Davao (San Rafael Village)	125°35'44.34"E	07°05'06.5"N
3. Zamboanga (Bo. Tumaga)	122°05'09.78"E	06°56'39.56"N
4. Cagayan de Oro (Bo. Malasag)	124°41'24"E	08°27'30.32"N
5. Cebu (Greenview Subdivision, Mandaue City)	123°56'04.78"E	10°21'42.44"N
6. Bacolod (Kanlaon-View, Murcia)	123°00'27"E	10°37'31"N
7. Palawan (Bo. Sta. Lourdes)*	118°42'58.84"E	09°49'47.94"N
8. Tacloban (Bo. Diit)	124°57'30.33"E	11°15'48"N
9. Laoag (Bo. San Lorenzo, San Nicolas)	120°35'19.43"E	18°08'40.66"N
10. Tuguegarao (Bo. Maddarulog, Enrile)	121°40'11.89"E	17°36'31.22"N
11. Iriga (Agdangan, Baao, Cam. Sur)	123°19'38.39"E	13°29'34.63"N

Notes: Coordinates are taken from points plotted on corresponding maps.

* Coordinates certified by geodetic engineer
as 118°43'02.427"E 09°49'52.245"N

Table 1

DOMSAT FREQUENCY REQUIREMENT

Satellite Frequencies \pm 20 MHZ

STL Freq.

Site	Video 1		Video 2		MSG		Video	
	TX	RX	TX	RX	TX	RX	TX	RX
Control	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Davao	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Zamboanga	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Cagayan de Oro	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Cebu	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Tacloban	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Palawan	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Iriga	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Tuguegarao (Temporary)	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Laoag	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Iloilo	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020
Mobile	6,025	3,800	6,345	4,140	6,285	4,060	6,680	7,020

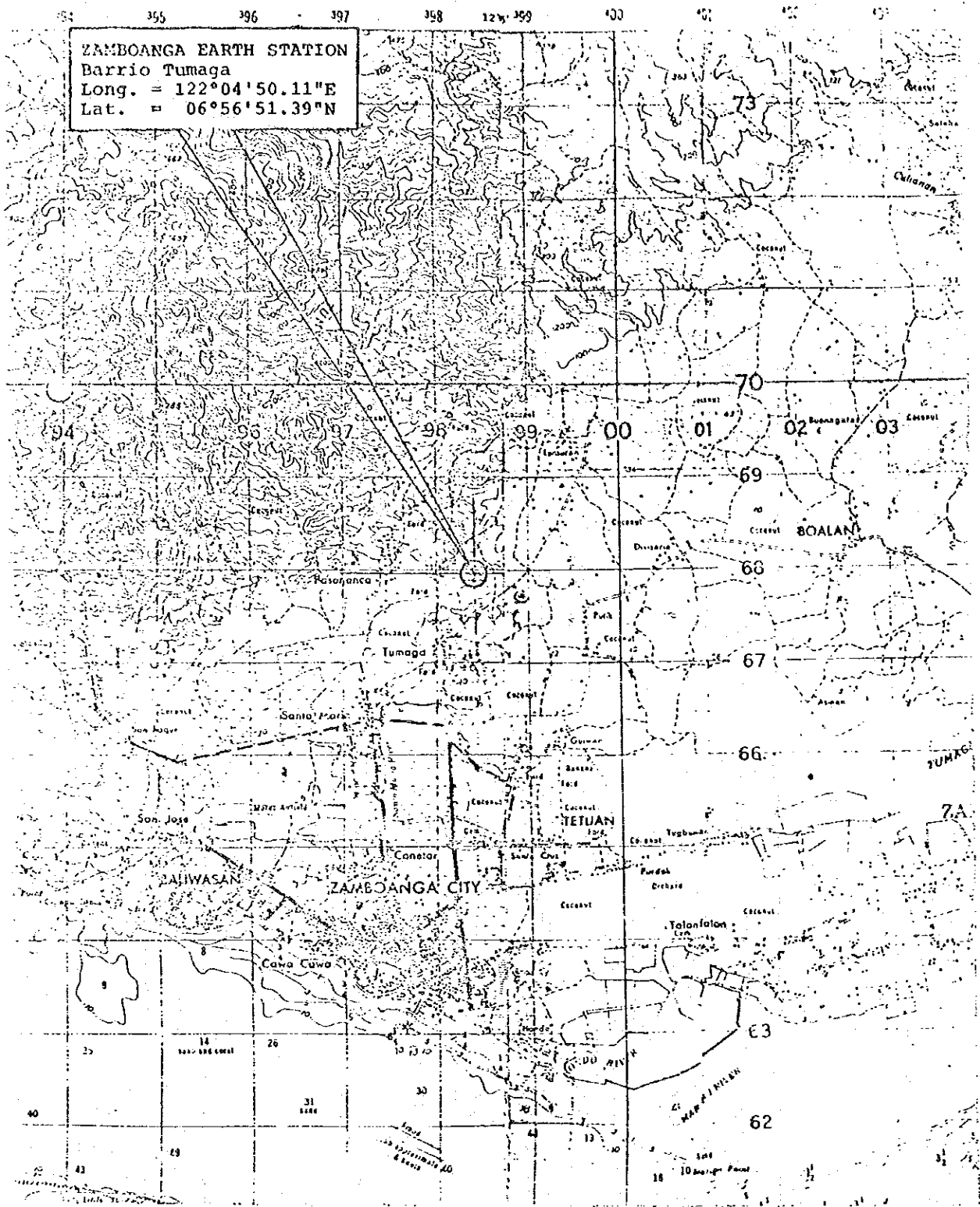
Note: Frequencies in MHZ.

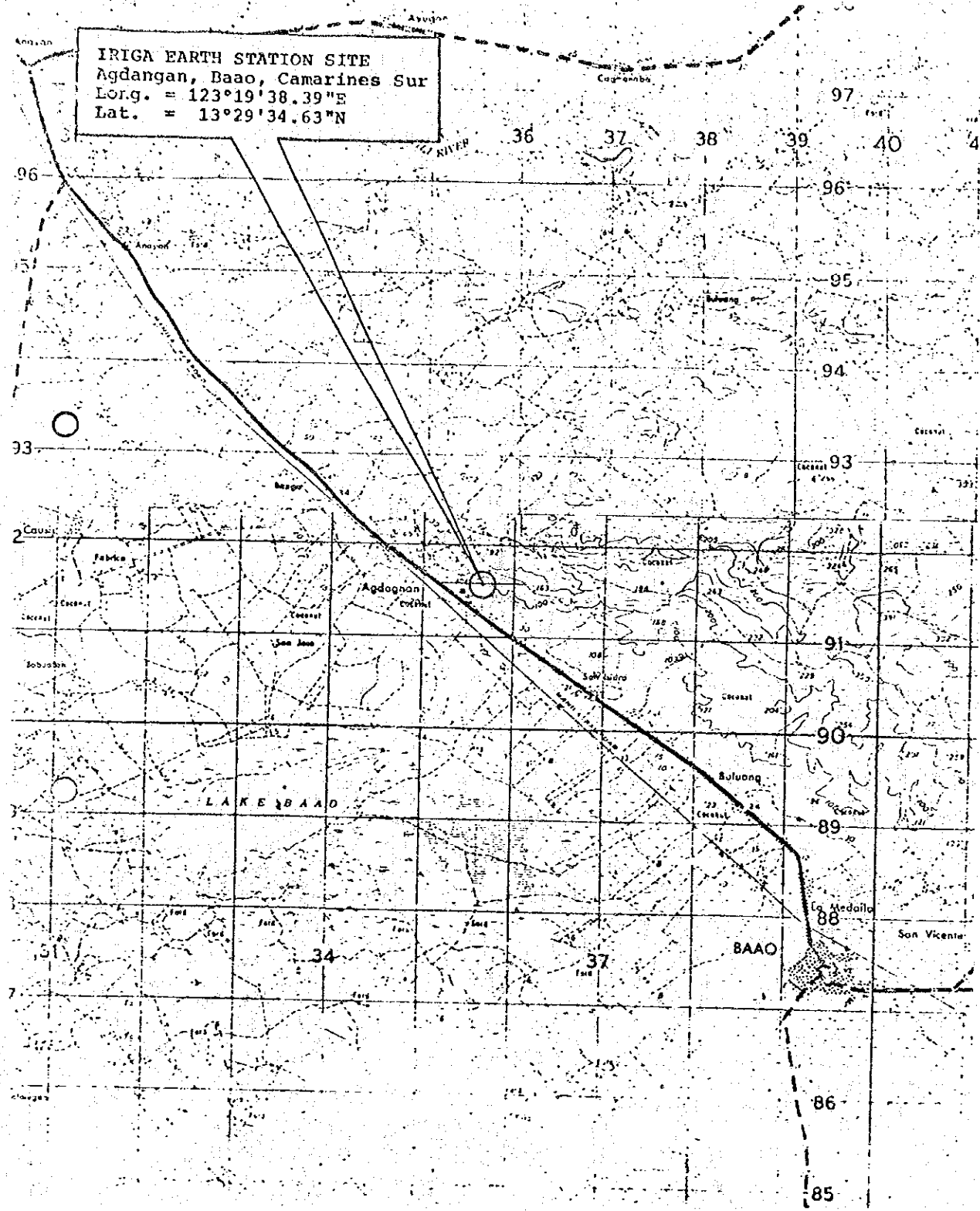
Table 2

Terrestrial Link Frequencies

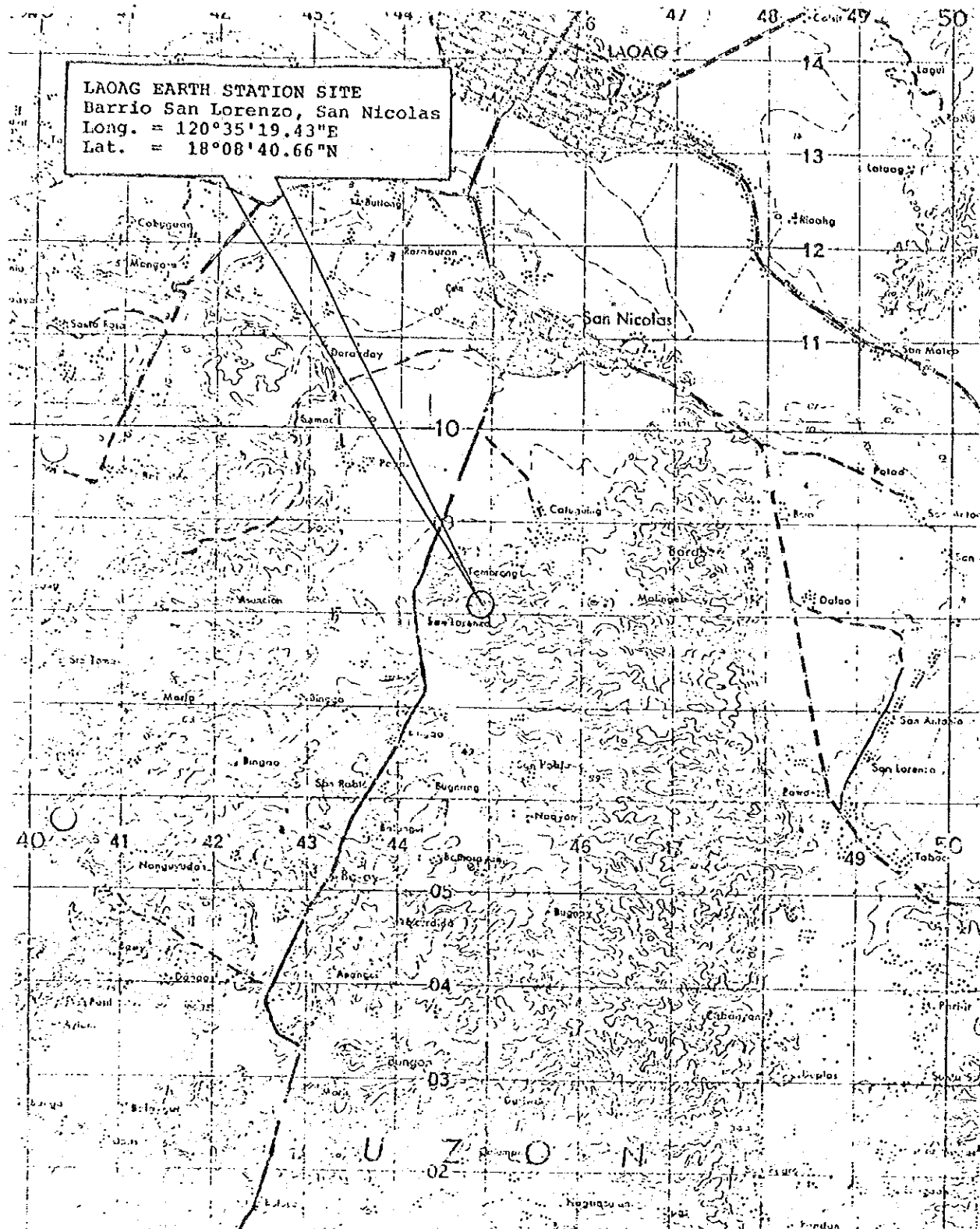
	MSG 1 \pm .5 MHZ		MSG 2 \pm .5 MHZ		MSG 3 \pm .5 MHZ		UHF 1 \pm .1 MHZ		UHF 2 \pm .1 MHZ							
	TX1	RX1	TX2	RX2	TX1	RX1	TX2	RX2	TX	RX	TX	RX				
Control	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	752.0	770.0	754.2	772.2
Davao	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.6	787.6	819.0	849.0
Zamboanga	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.6	787.6	819.0	849.0
Cagayan de Oro	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.6	787.6	818.2	849.0
Cebu	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.6	787.6	811.0	841.0
Tacloban	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.6	787.6	816.0	846.0
Palawan	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.6	787.6	819.0	849.0
Iriga	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.6	787.6	791.0	841.0
Tuguegarao	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.0	786.0	816.0	846.0
Laosag	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.6	787.6	819.0	849.0
Iloilo	2122.5	2241.5	2150.5	2269.5	2136.5	2255.5	2164.5	2283.5	1919.5	2038.5	1947.5	2066.5	757.6	787.6	811.2	842.2

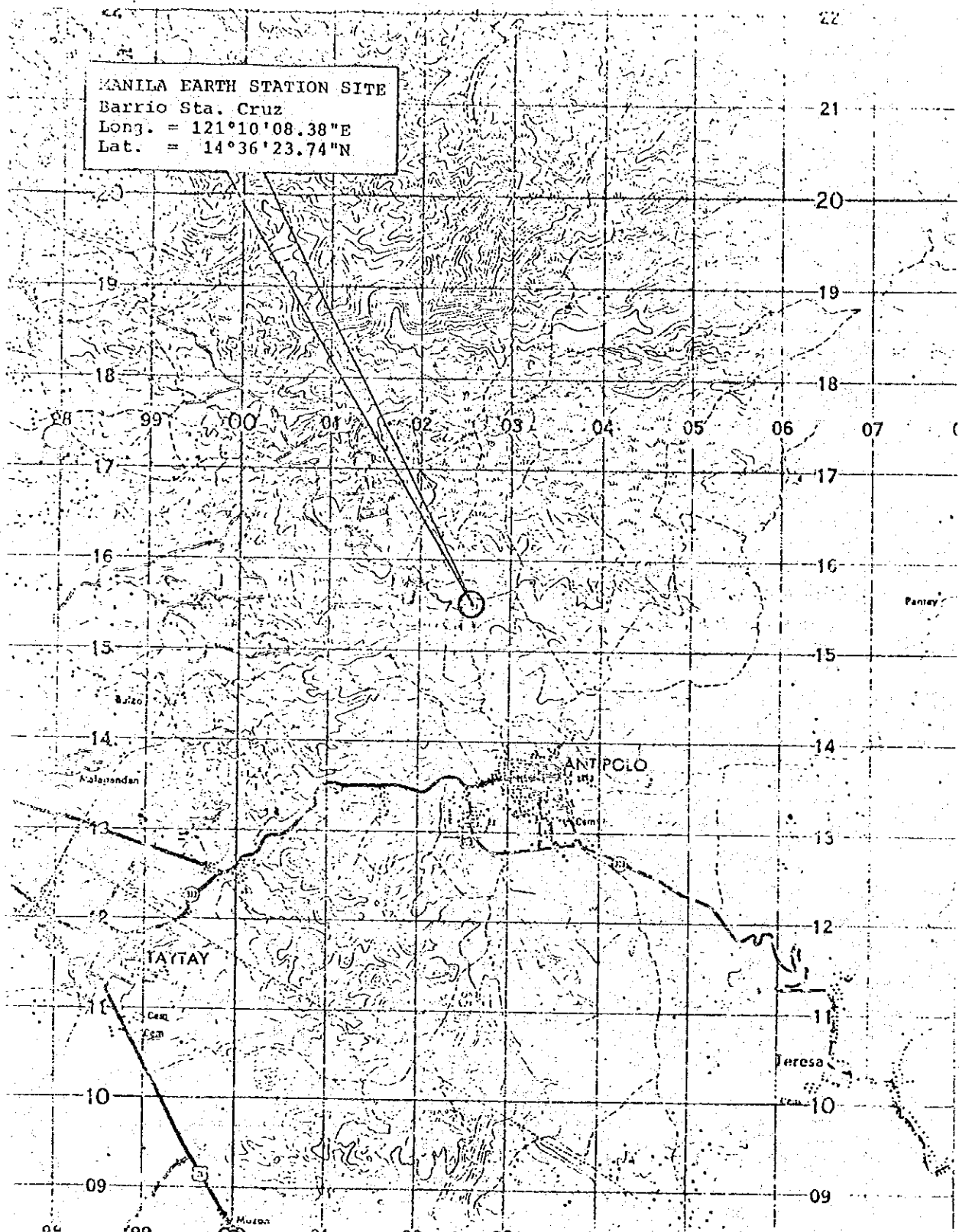
Note: Frequencies in MHz.



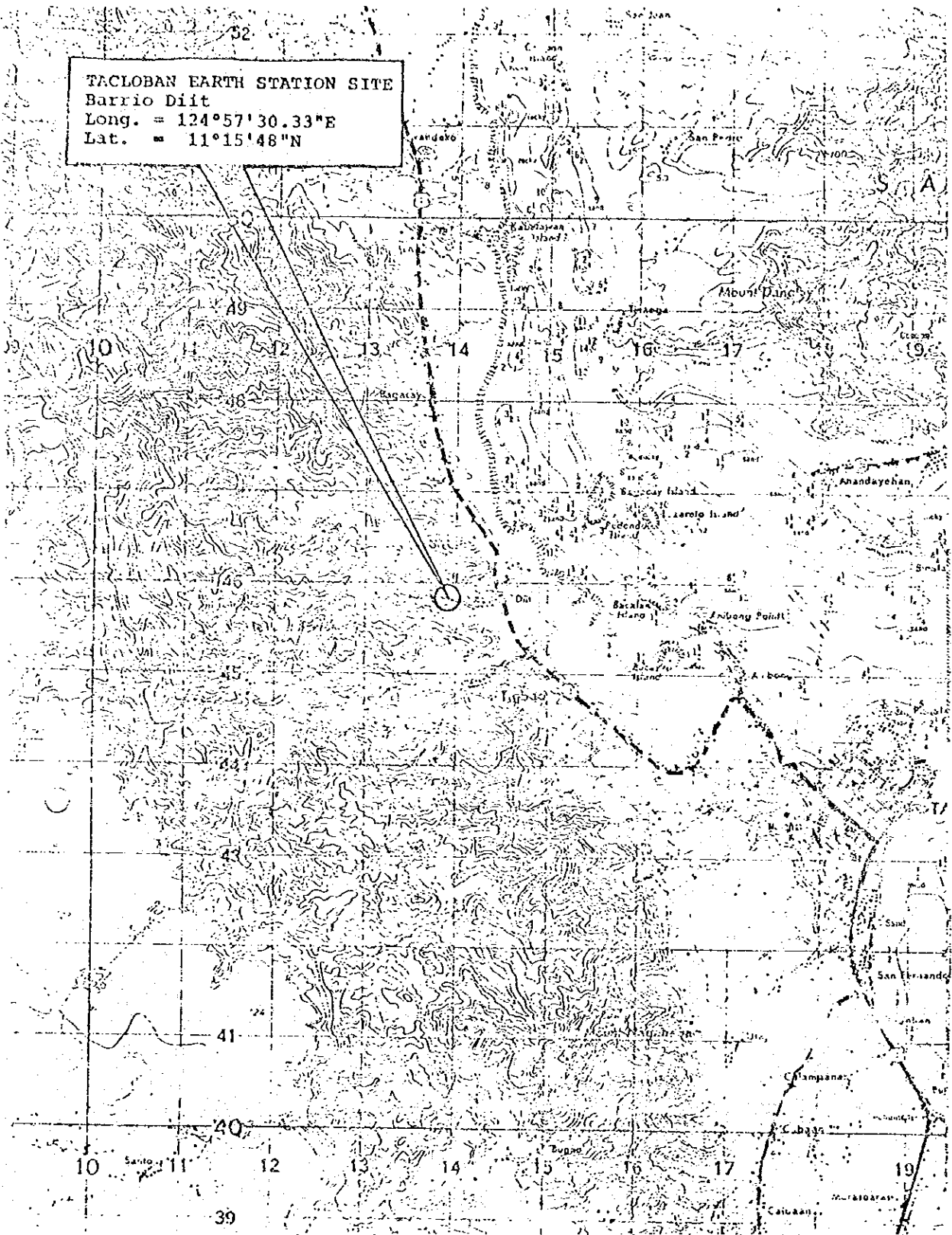


IRIGA EARTH STATION SITE
 Agdangan, Baao, Camarines Sur
 Long. = 123°19'38.39"E
 Lat. = 13°29'34.63"N

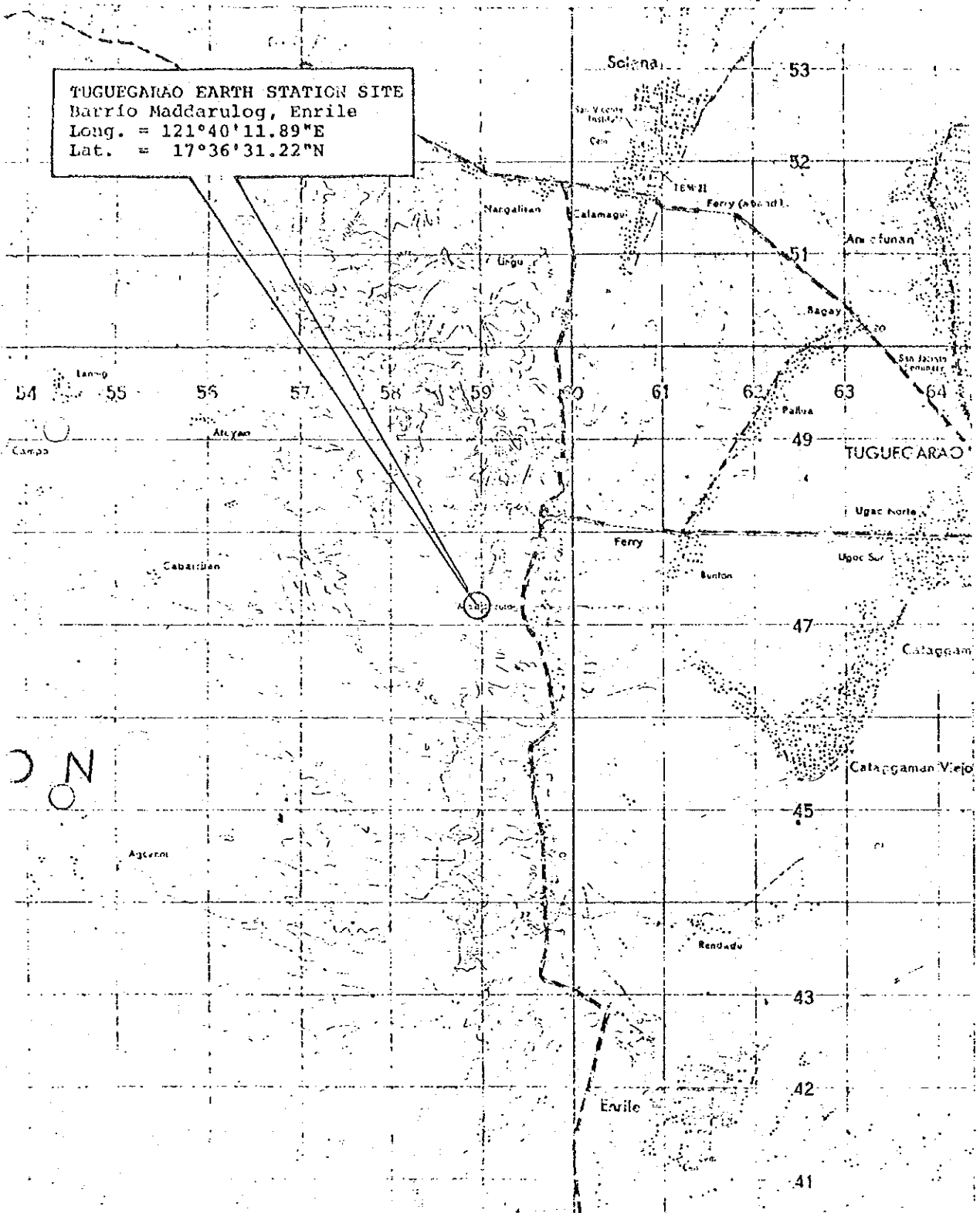




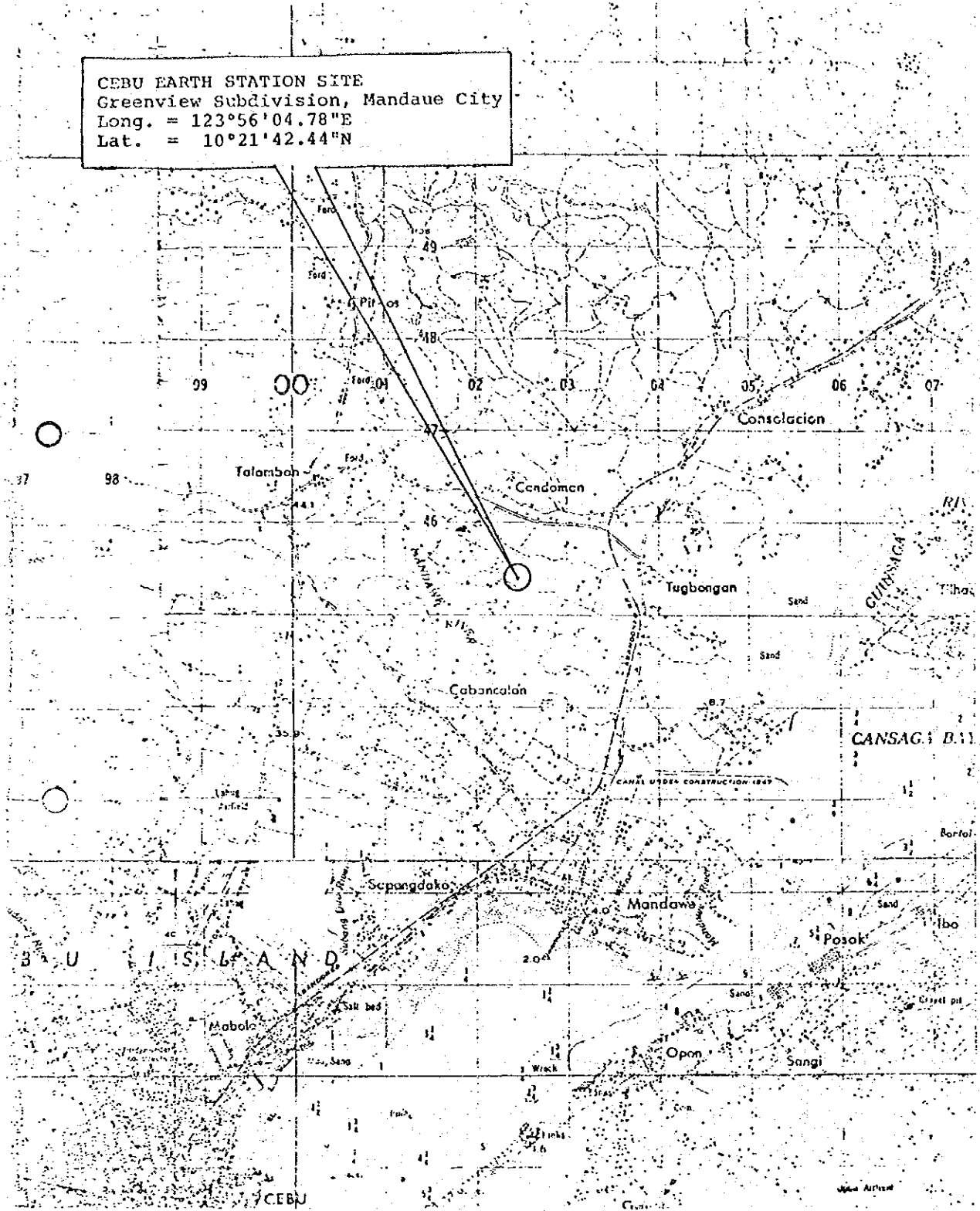
TACLOBAN EARTH STATION SITE
Barrio Diit
Long. = 124°57'30.33"E
Lat. = 11°15'48"N



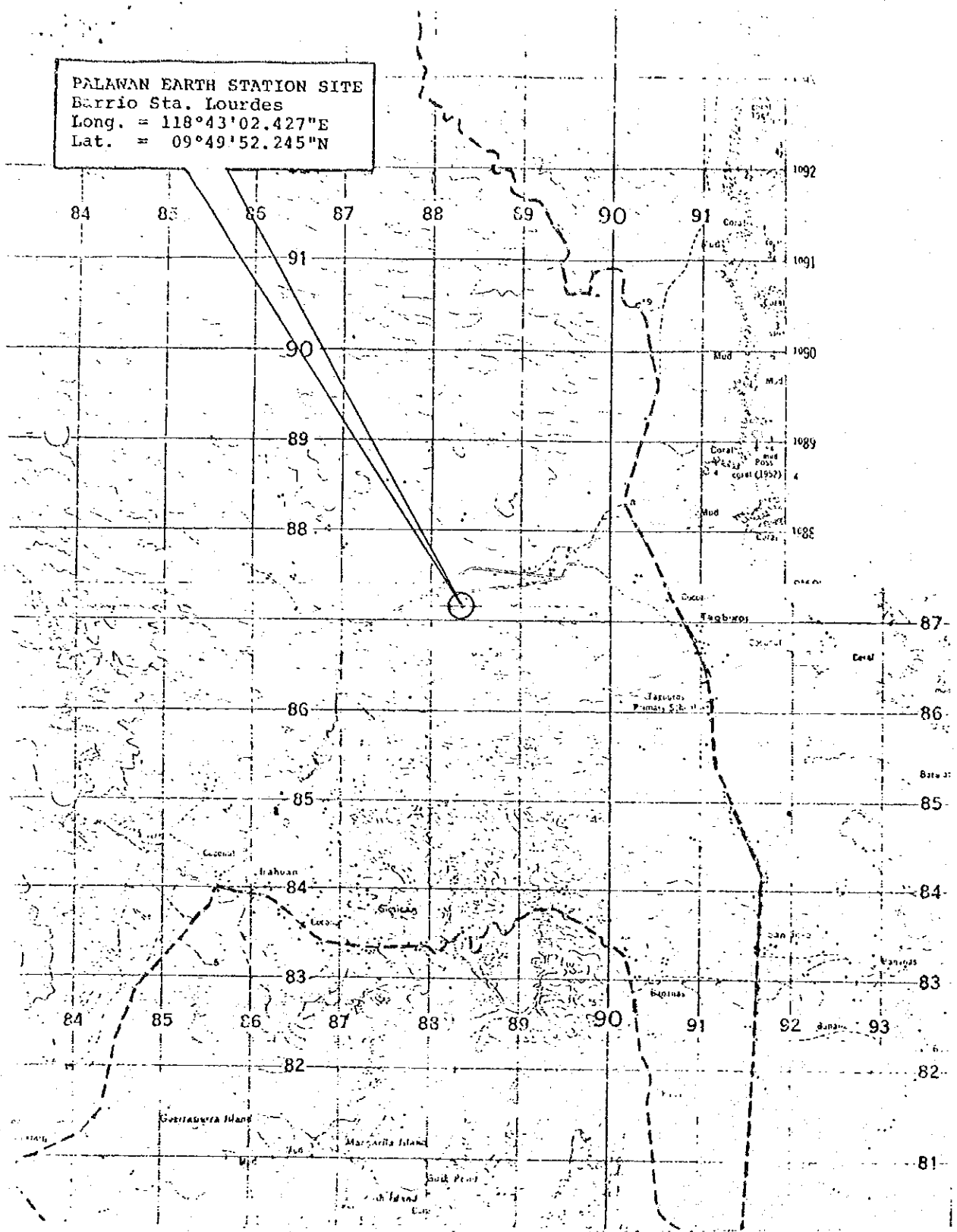
TUGUEGARAO EARTH STATION SITE
Barrio Maddarulog, Enrile
Long. = 121°40'11.89"E
Lat. = 17°36'31.22"N



CEBU EARTH STATION SITE
Greenview Subdivision, Mandaue City
Long. = 123°56'04.78"E
Lat. = 10°21'42.44"N

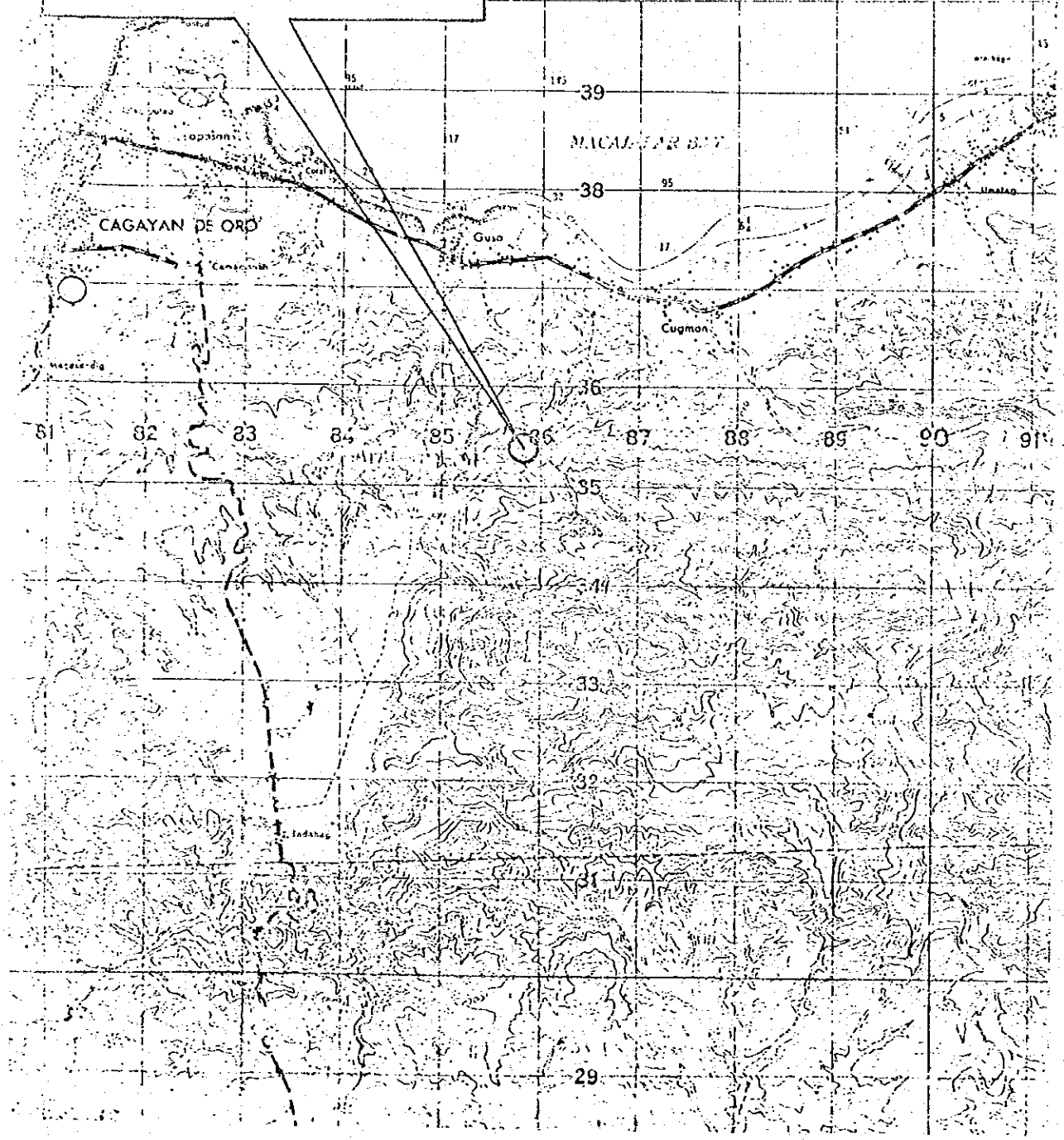
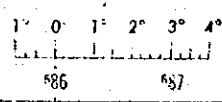


PALAWAN EARTH STATION SITE
 Barrio Sta. Lourdes
 Long. = 118°43'02.427"E
 Lat. = 09°49'52.245"N

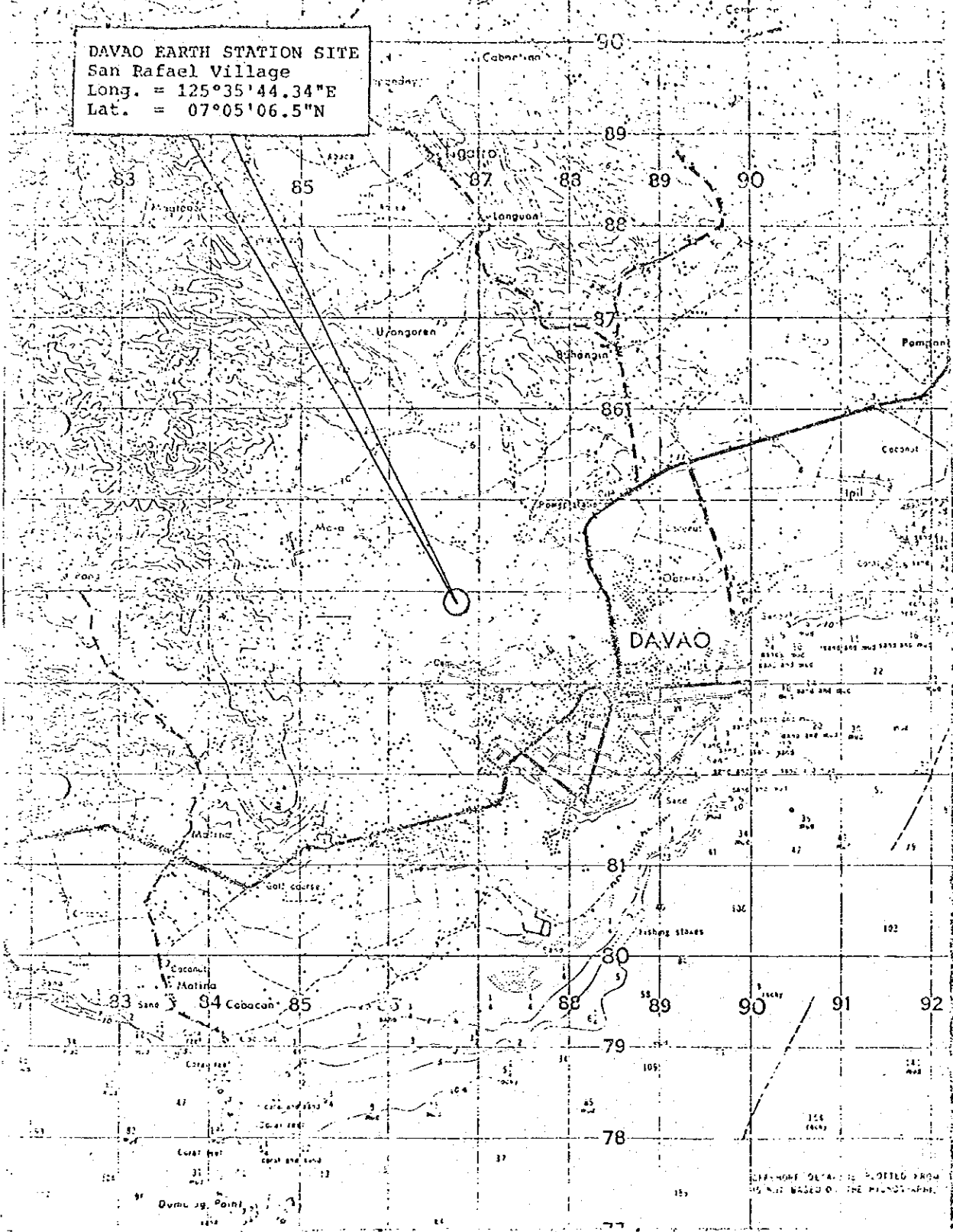


CAGAYAN DE ORO EARTH STATION SITE
Barrio Malasag
Long. = 124°41'24"E
Lat. = 09°27'30.32"N

DFFE
SHE



DAVAO EARTH STATION SITE
San Rafael Village
Long. = 125°35'44.34"E
Lat. = 07°05'06.5"N



CONTOUR INTERVAL 10 METERS
BASED ON THE MOUNTAIN

