Member List of Party Concerned

1. Field Survey

Ministry of Communications, Transport, Posts and Construction (MCTPC)

Mr. Bouathong VONGLOKHAM	Minister
Mr. Kaya PALI	Director, Dept. of Posts & Telecommunications
Mr. Phetsamone VIRAPHANTH	Deputy Director
Mr. Khanngeun KHAMAVONGSA	Director, International Relations Division, Office of the Permanent Secretary
Mr. Snith XAPHAKDY	Chief of Telecommunication Division
Mr. Phanoulangsy PHIMMACHANH	Chief of Freqyency Management Div.
Mr. Somphone DETHOUDOM	Director of Housing and Urban Planning Dept.

Entreprise D'Etat des Posts etTelecommunications Lao (EPTL)

Mr. Palami PHOMMATHANSY	Director General
Mr. Padapphet SAYAKHOT	Director of Projects, Telecommunication Projects
Mr. Houmphanh INTHARATH	Assistant Director of Projects
Mr. Khammouane XOUMSYHAPHANYA	Switching Engineer
Mr. Syyang CHERTOI	Earth Station Manager
Mr. Somnuck BOUAKHAMPHONTHIRAT	Switching Engineer
Mr. Chansamone	Switching
Mr. Bounthom	Civil Engineer
Mr. Chitpasong	Transmission Engineer
Mr. Thongsay CHOMMANIVONG	Manager Outside Plant, Telecommunications Projects

Committee for Planning and Cooperation (CPC)

Mr. Somchith INTHAMITH	Deputy Director

Ministry of Foreign Affairs

Mr. Souchay PHILATHIVONG	Director of North and South Asia Division

Ministry of Finance

Mr. Holady VOLARATH	Deputy Director, Foreign Currency Affairs Dept.

Lao National Television

Mr. Phoumy PHENGSAVATH	Deputy Director

2. Explanation of Draft Final Report

Ministry of Communications, Transport, Posts and Construction (MCTPC)

Mr. Somlith PHOUTHONESY	Deputy Director, Dept. of Posts & Telcom
Mr. Khanngeun KHAMAVONGSA	Director, International Relations Division, Office of the Permanent Secretary
Mr. Snith XAPHAKDY	Chief of Telecommunication Division
Mr. Phanoulangsy	Chief of Freqyency Management Div.

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Mr. Syyang CHERTOI	Earth Station Manager
Mr. Somnuck BOUAKHAMPHONTHIRAT	Switching Engineer
Mr. Chansamone	Switching
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Mr. Chitpasong	Transmission Engineer
Mr. Thongsay CHOMMANIVONG	Manager Outside Plant, Telecommunications Projects

Committee for Planning and Cooperation (CPC)

Mr. Somchith INTHAMITH	Deputy Director

Ministry of Foreign Affairs

Mr. Souchay PHILATHIVONG	Director of North and South Asia Division

ATTACHMENT

1. Objective

The objective of the Project is to improve the international telecommunications system by constructing an INTELSAT standard-A earth station with relevant facilities.

2. Project site

The Project site is Vientiane Municipality. (see attached site map.)

3. Responsible organization and executing agency

(1) Responsible organization :
Ministry of Communications, Transports, Posts and Construction

(2) Executing agency :
Enterprise d'Etat des Postes et Télécommunications Lao

4. Items requested by the Government of Lao PDR

After discussions with the Basic Design Study Team, the following items were requested by the Laotian side.

(1) Construction of an INTELSAT standard-A earth station at Nathom, including necessary facilities and buildings,

(2) Construction of a microwave transmission link between the earth station and the International Switching Center in Numphou Exchange, and

(3) Expansion of the capacity of international trunks, enhancement of the capability of the billing system and addition of statistics system to the existing telephone switching system in Numphou Exchange

However, the final items and the scale of the Project shall be decided after further studies.

5. Japan's Grant Aid system

(1) The Government of Lao PDR has understood the system of Japan's Grant Aid explained by the team.

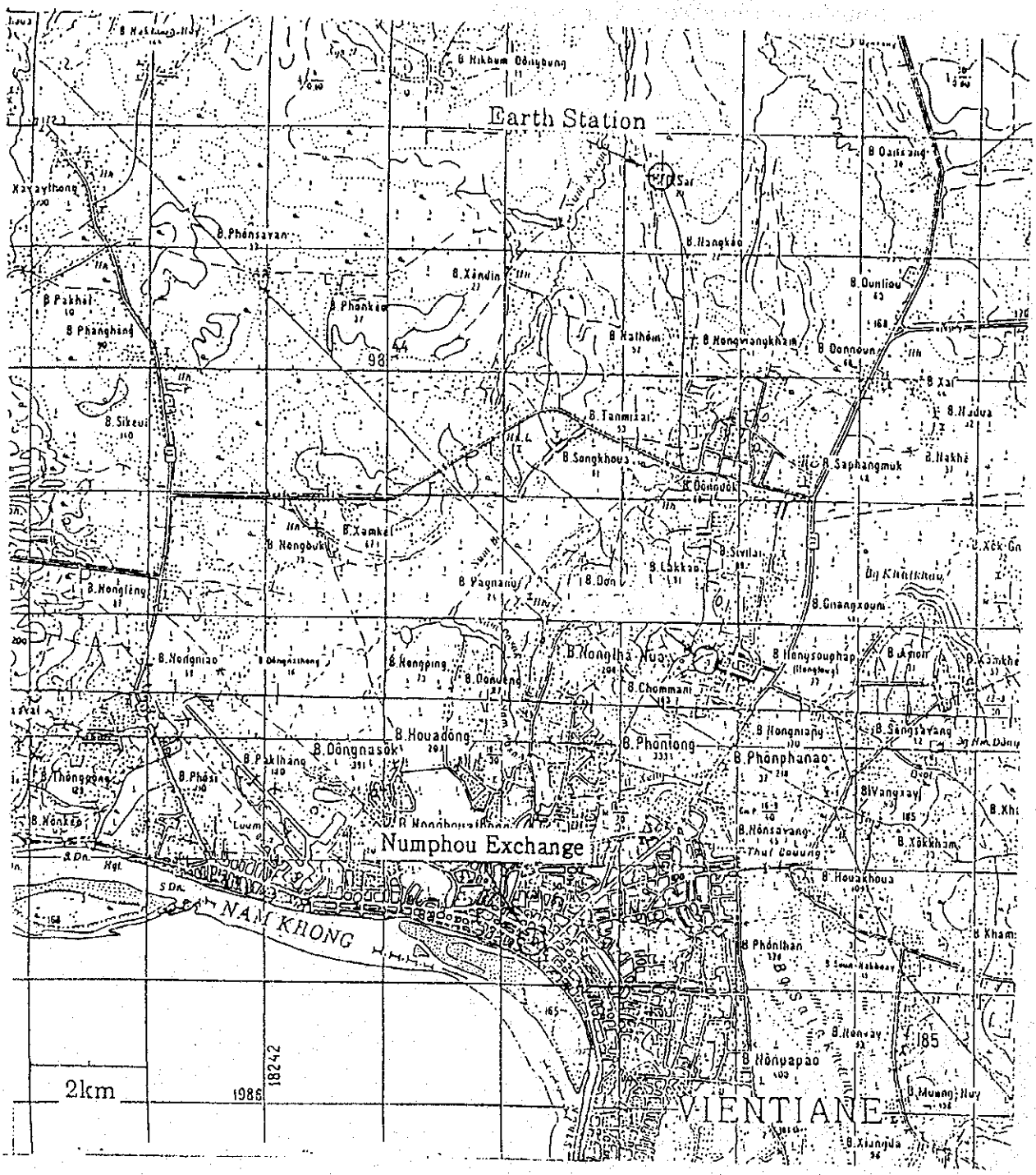
(2) The Government of Lao PDR shall take necessary measures, described in Annex for smooth implementation of the Project, on condition that the Grant Aid assistance by the Government of Japan is extended to the Project.

6. Schedule of the Study

(1) The consultants will proceed to further studies in Lao PDR until November 4.

(2) JICA will prepare the draft report in English and dispatch a mission to Lao PDR to explain its contents in January, 1995.

(3) In case that the contents of the report is accepted in principle by the Laotian side, JICA will complete the final report and send it to the Government of Lao PDR by March, 1995.


Earth Station
Numphou Exchange
NAM KHONG
VIENTIANE
2km
1986
18242

Site Map

ANNEX

Undertakings to be taken by the Government of Lao PDR
in case Japan's Grant Aid is executed

1. To secure the land of the site for the Project
2. To clear, level and reclaim the site prior to commencement of the construction
3. To undertake incidental outdoor works such as gardening, fencing, gates and exterior lighting in and around the site
4. To provide following facilities for implementing the Project
   1) Electricity distributing line to the site
   2) City water distribution main to the site
   3) Drainage city main to the site
   4) Telephone
   5) General furniture such as carpets, curtains, tables, chairs, etc.
5. To secure floor space, power supplies, grounding, space for antenna on the existing tower and a route for wave guides with regard to the equipment of an approach link, a switching system and its relating systems, which are to be introduced under the Project, at Numphou Exchange
6. To take necessary measures for radio coordination procedures depicted in Radio Regulations and for an application for use of INTELSAT space segment
7. To negotiate with foreign telecommunications administrations concerned for establishment of international circuits
8. To bear commissions to the Japanese foreign exchange bank for the banking services based upon Banking Arrangement
9. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment brought in for the Project
10. To accord Japanese Nationals whose services may be required in connection with the supply of products and the services under the verified contract such facilities as may be necessary for their entry into Lao PDR and stay therein for the performance of their work
11. To maintain and use properly and effectively the facilities constructed and equipment purchased under the Grant
12. To bear all the expenses other than those to be borne by the Grant

MINUTES OF DISCUSSIONS
BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF SATELLITE COMMUNICATION SYSTEM IN
LAO PEOPLE'S DEMOCRATIC REPUBLIC.
(CONSULTATION ON DRAFT REPORT)

In October 1994, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study team on the project for Improvement of Satellite Communication System (hereinafter referred to as "the Project") to the Lao People's Democratic Republic, and through discussions, field survey, and technical examination of the results in Japan, has prepared the draft report of the study.

In order to explain and to consult the Laotian side on the components of the draft report, JICA sent to the Lao PDR a study team, which is headed by Mr. Yusuke Kitamura, Director, Training Div., Tsukuba International Center of JICA, and is scheduled to stay in the country from January 6 to 12, 1995.

As a result of discussions, both parties confirmed the main items described on the attached sheet.

Vientiane, January 11 , 1995

Mr. Yusuke Kitamura
Leader
Basic Design Study Team
JICA

Mr. Somlith PHOUTHONESY
Deputy Director, Department of Posts and Telecommunications
Ministry of Communications, Transports, Posts and Construction

ATTACHMENT

1. Components of Draft Report

The Government of the Lao PDR has agreed and accepted in principle the components of the Draft Report proposed by the team.

2. Sites for the Project

Sites for the Project are Earth Station at Nathom, Repeater Station at Saylom, and Numphou Exchange. The location and layout of each site are shown in Annex-1.

3. Japan's Grant Aid System

(1) The Government of Lao PDR has understood the system of Japanese Grant Aid, described in Annex-2, explained by the team.

(2) The Government of Lao PDR will take the necessary measures, described in Annex-3, for smooth implementation of the Project on condition that the Grant aid assistance by the Government of Japan is extended to the Project.

4. Further Schedule

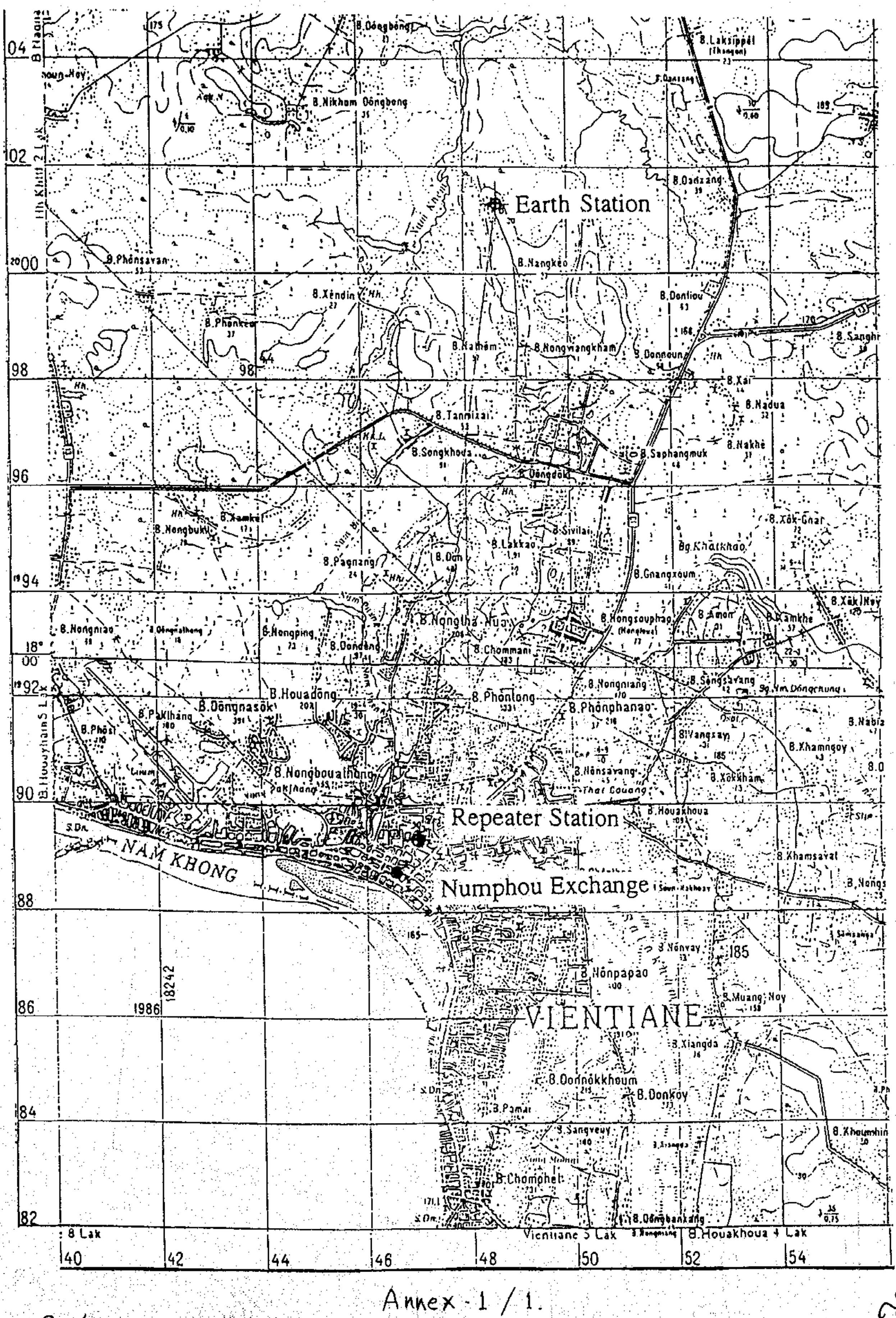
The team will make the Final Report in accordance with the confirmed items, and send it to the Government of the Lao PDR by the end of March 1995.

Annex-1

Location and Layout of Site

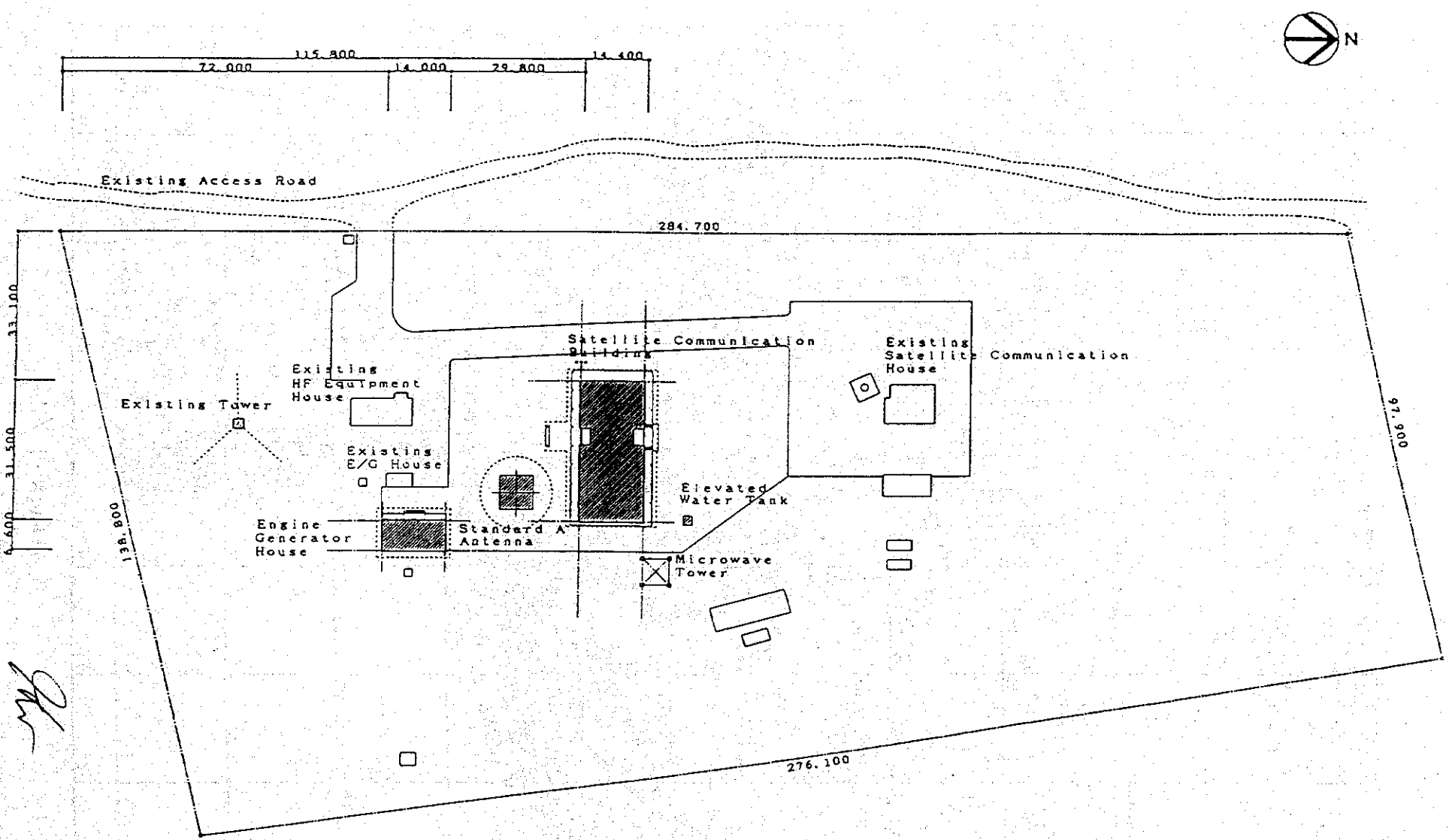
Location and layout of each site for the Project is shown in the following drawings.

1. Location of Site
2. Layout of the Earth Station
3. Layout of the Repeater Staion
4. Layout of Numphou Exchnage

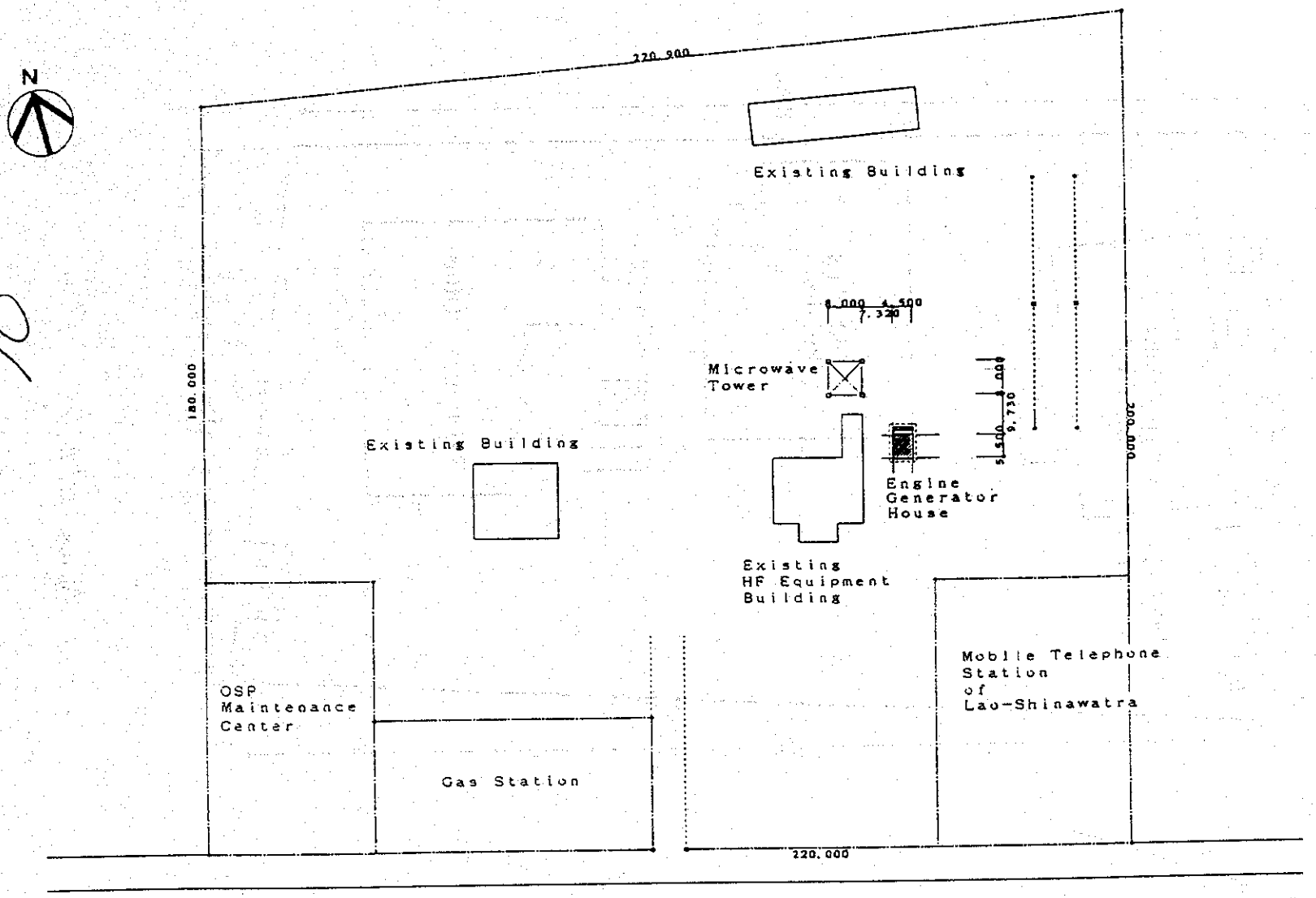


Earth Station
Repeater Station
Numphou Exchange
VIENTIANE
NAM KHONG
B.Nikhom Dôngbong
B.Phônsavan
B.Xêndin
B.Nangkéo
B.Tanmixai
B.Songkhoua
B.Saphangmuk
B.Nongbuku
B.Xamkél
B.Pagnang
B.Lakkao
B.Gnangxoum
B.Nongtha Nua
B.Chommani
B.Phônlong
B.Phônphanao
B.Houadông
B.Dôngnasôk
B.Nongbouathong
B.Hônsavang
B.Xôkkham
B.Houakhoua
B.Khamsavat
B.Nônpapao
B.Muang Noy
B.Xiangda
B.Donkoy
B.Pamai
B.Sangveuy
B.Chomphet

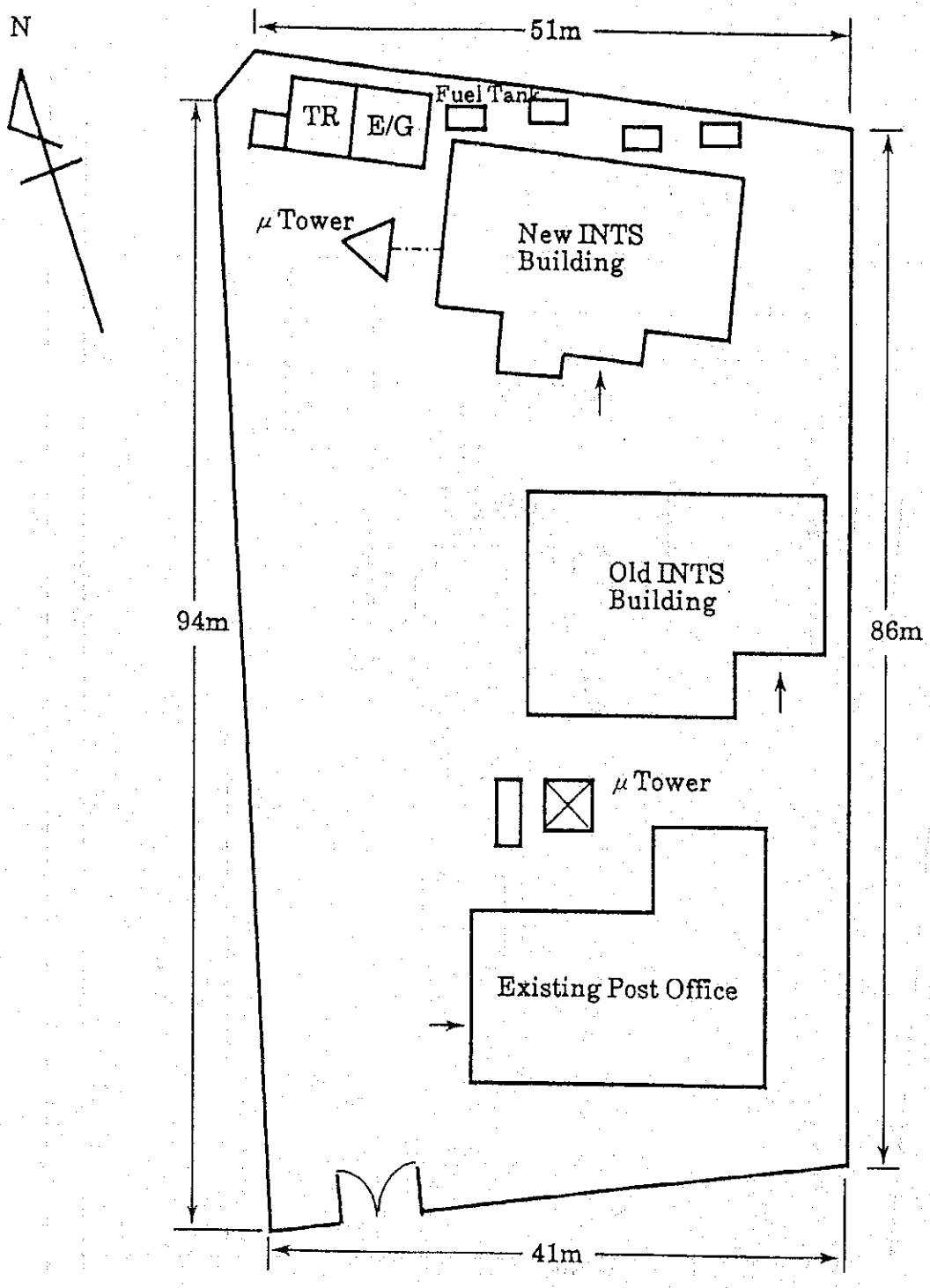
Annex - 1 / 1.


N
115.800
72.000
14.000
29.800
14.400
Existing Access Road
284.700
33.100
31.500
6.600
138.800
97.900
276.100
Existing Tower
Existing HF Equipment House
Existing E/G House
Satellite Communication Building
Existing Satellite Communication House
Elevated Water Tank
Engine Generator House
Standard A Antenna
Microwave Tower

Annex-1/2.


N
220.000
Existing Building
180.000
8.000
4.500
7.320
Microwave Tower
Existing Building
Engine Generator House
Existing HF Equipment Building
200.000
OSP Maintenance Center
Gas Station
Mobile Telephone Station of Lao-Shinawatra
220.000

Annex-1/3.


N
51m
TR
E/G
Fuel Tank
μ Tower
New INTS Building
Old INTS Building
94m
86m
μ Tower
Existing Post Office
41m

Annex - 1 / 4.

Japan's Grant Aid Scheme

1. *Grant Aid Procedures*

1) Japan's Grant Aid Program is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project") is to provide a basic document necessary for the appraisal of the Project by the Japanese Government. The contents of the Study are as follows:

a) Confirmation of the background, objectives, and benefits of the requested project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
b) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
c) Confirmation of items agreed on by both parties concerning the basic concept of the Project.
d) Preparation of a basic design of the Project
e) Estimation of costs of the Project

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA selects (a) firms(s) based on proposals submitted by interested firms. The firm(s) selected carry (ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

3. *Japan's Grant Aid Scheme*

1) What is Grant Aid ?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed.

However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However the prime contractors, namely, consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of "Verification"

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

6) Undertakings required of the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

(1) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.
(2) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.
(3) To secure buildings prior to the procurement in case the installation of the equipment.
(4) To ensure prompt unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.
(5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.
(6) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

7) "Proper Use"

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

8) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

9) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

Necessary measures to be taken by the Government of the Lao PDR
in case Japan's Grant Aid is executed

1. To secure the land of the site for the Project
2. To clear, level and reclaim the site prior to commencement of the construction
3. To undertake incidental outdoor works such as gardening, fencing, gates and exterior lighting in and around the site
4. To provide facilities for distribution of electricity, water supply, telephone, drainage, sewage and other incidental facilities to the Project site
   1) Electricity distributing line to the site, including a transformer for the primary electricity
   2) Water supply at the site, including a well and a water feeding pipe, if necessary
   3) Telephone trunk line and the main distribution panel of building
   4) General furniture such as carpets, curtains, tables, chairs, etc.
5. To obtain a permission to lay, under public roads, conduits and man-holes for fiber-optic cable system to be introduced between the repeater station and Numphou Exchange
6. To take necessary measures for radio coordination procedures depicted in Radio Regulations and for an application for use of INTELSAT space segment
7. To negotiate with foreign telecommunications administrations concerned for establishment of international circuits
8. To bear commissions to the Japanese foreign exchange bank for the banking services based upon Banking Arrangement
9. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment brought in for the Project
10. To accord Japanese Nationals whose services may be required in connection with the supply of products and the services under the verified contract such facilities as may be necessary for their entry into Lao PDR and stay therein for the performance of their work
11. To maintain and use properly and effectively the facilities constructed and equipment purchased under the Grant
12. To bear all the expenses other than those to be borne by the Grant

MINUTES OF DISCUSSIONS
BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF SATELLITE COMMUNICATION SYSTEM IN LAO PEOPLE'S DEMOCRATIC REPUBLIC

In response to a request from the Government of Lao People's Democratic Republic (Lao PDR), the Government of Japan decided to conduct a Basic Design Study on the project for improvement of satellite communication system (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Lao PDR a study team headed by Mr. Yusuke Kitamura, Director, Training Div., Tsukuba International Center of JICA, from October 13 to November 4, 1994.

The team held a series of discussions with the officials concerned of the Government of Lao PDR and conducted a field survey at the study area.

In the course of discussions and field survey, both parties have confirmed the main items described on the attached sheets. The team will proceed to further works and prepare a Basic Design Study report.

Vientiane, October 19, 1994

Mr. Yusuke Kitamura
Leader
Basic Design Study Team
JICA

Mr. Kaya Pali
Director, Department of Posts
and Telecommunications
Ministry of Communications,
Transports, Posts and Construction

Estimation of Cost Borne by the Lao People's Democratic Republic

No.	Item	Cost (Kip)
1	Removal of HF receiving antenna at the earth station	2,160,000
2	Removal of HF transmitting antenna at the repeater station	720,000
3	Levelling of sites at the earth station and the repeater station	25,720,000
4	Installation of a transformer at the earth station	5,760,000
5	Provision of well water feeding at the earth station	500,000
Total		34,860,000

Comparison of Approach Link Implementation Methods

Four plans for connecting the new earth station and the central station have been compared. We have decided to use a relay on through an EPTL's HF transmitting station on Saylom Street in Vientiane.

The four possibilities examined and the reason for deciding on the approach link through the HF transmitting station (hereinafter referred to as "the repeater station") are given below.

1. Approach Link Methods

1.1 Construction of a digital microwave transmission system between the earth station and the central office

This alternative, initially requested by Laos, utilizes the microwave tower of the central office to construct a microwave transmission system.
This can be implemented more economically because the transmission system is established in one hop.

1.2 Constructing a digital fiber-optic transmission system between the earth station and the central office

This alternative involves by laying a digital optical fiber cable between the earth station and the central office.

Laos has constructed an in-city telephone network with optical fiber cables, and a part of the existing cable duct can be utilized. However, the cable route is limited to only one along EPTL's access road to the earth station. Furthermore, in the about 13.3 km to be newly constructed for this link, approximately 5.4 km of the unpaved mountain road makes reliable cable installation for the international trunk difficult.

1.3 Construction of a system using the TV broadcasting tower

This alternative is to construct a digital microwave connection with the earth station utilizing the existing TV broadcasting tower in Vientiane and to construct an optical fiber cable connection to the central office from there. The relay facilities are housed in a shelter constructed on the site of the TV broadcasting tower. The site has sufficient extra space.

Because the TV broadcasting tower is more than 80 m high, by mounting antennas near the top of the tower, the possibility of microwave transmission being affected by high buildings is diminished. In comparison with Method 1.1, construction cost increases for the optical fiber cable system and the shelter.

1.4 Construction of a system using the repeater station

This alternative involves constructing a microwave tower on the site of the repeater station in Vientiane, constructing a digital microwave transmission connection with the earth station and installing an optical fiber cable connection to the central office from the repeater station. The transit facilities are housed in the transmitter room in the existing station building, but an engine generator house needs to be built.

In comparison with Method 1.1, construction cost increases for the tower, the engine generator house and the optical fiber cable system. The optical fiber cable system should have two routes. The first route is about 1.2 km and the second about 1.8 km. The optical fiber cable system can utilize a part of the existing cable duct. The part to be built is about 1.5 km.

2. Examining Performance and Quality

2.1 Microwave transmission method

Although the quality of the link may decline due to heavy rain and other factors, it can still meet international standards. Such provisions as a tower designed to survive strong winds and a lightning rod offer long-term reliability and quality.

2.2 Optical fiber cable transmission method

This method offers good transmission quality up to about 40 km without any repeaters, and is supposedly the best method as long as the cables are not accidentally damaged. There are two ways of installing the cables: air stringing and underground ducting. Cable-related accidents can be roughly classified into natural disasters and accidents caused by people.

Air stringing involves a high possibility of both types of accident, while underground ducting involves a higher possibility of accidents caused by people than natural disasters. In general, underground ducting involves fewer accidents, but costs more for installation than air stringing.

As transmission system accidents are unacceptable, important transmission systems normally should have two routes for main and backup.

3. Examination of Alternatives

3.1 Constructing a digital microwave connection between the earth station and the central office

This alternative has been abandoned because the height of the antenna needs to be more than 38 m to secure first Fresnel Zone clearance, but neither of the two existing towers at the central office have sufficient height or strength to meet this requirement and the site does not have sufficient space for a new tower.

3.2 Construction of an optical fiber cable transmission connection between the earth station and the central office

This alternative has been judged unacceptable for an international approach link, because only one route can be constructed, besides neither air stringing nor underground ducting are sufficiently reliable for the mountainous section of the route where is crowded with trees along the roads and some places of which need repairs.

3.3 Construction of a connection relaying through the TV broadcasting tower

The TV broadcasting tower was once controlled by EPTL but is now controlled by the Ministry of Information and Culture, due to last year's transfer of the Intersputnik earth station and microwave facilities. EPTL, with the permission of the Ministry of Information and Culture, has installed an antenna for mobile telephone service on the tower and a shelter on the site, but the permission is temporary. As the Ministry of Information and Culture is planning to use this tower, EPTL is against this alternative, considering that it would be difficult for another organization to use the tower for a long period.

Judging from the economic policy and restructuring of government organizations in Laos, the use of resources under another ministry's control is difficult and risky, therefore this method has been abandoned.

3.4 Construction of a connection relaying through the repeater station

This station is located at a suitable place in Vientiane where a microwave transmission connection to the earth station can be constructed without any difficulties.
The repeater station is owned by EPTL and includes sufficient space for a microwave tower.

4. Conclusion

The approach link shall be established, relaying via the repeater station. The tower shall be designed to provide sufficient height and strength for long term use so EPTL can use it as a microwave connection center in the future. The optical fiber cable system shall be a reliable main transmission line, and shall be expandable. The repeater station shall be designed for unattended operation for efficient assignment of personnel.

JICA