No. 1

BASIC DESIGN STUDY REPORT ON THE PROJECT FOR THE CONSTRUCTION OF STUDIO AND REPLACEMENT OF EQUIPMENT FOR LAO NATIONAL TV STATION IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

OCTOBER, 1991

JAPAN INTERNATIONAL COOPERATION AGENCY

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PREFACE

In response to a request from the Government of the Lao People's Democratic Republic (the Lao PDR), the Government of Japan decided to conduct a basic design study on the Project for the Construction of Studio and Replacement of Equipment for Lao National TV Station in the Lao PDR and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Lao PDR a study team headed by Mr. Koichi Sazanami, Deputy Director, Monitoring and Examination Division, Radio Department, Telecommunications Bureau, Ministry of Posts and Telecommunications, from April 16 to May 9, 1991.

The team held discussions with the officials concerned of the Government of the Lao PDR, and conducted a field survey at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to the Lao PDR in order to discuss a draft report and the present report was prepared.

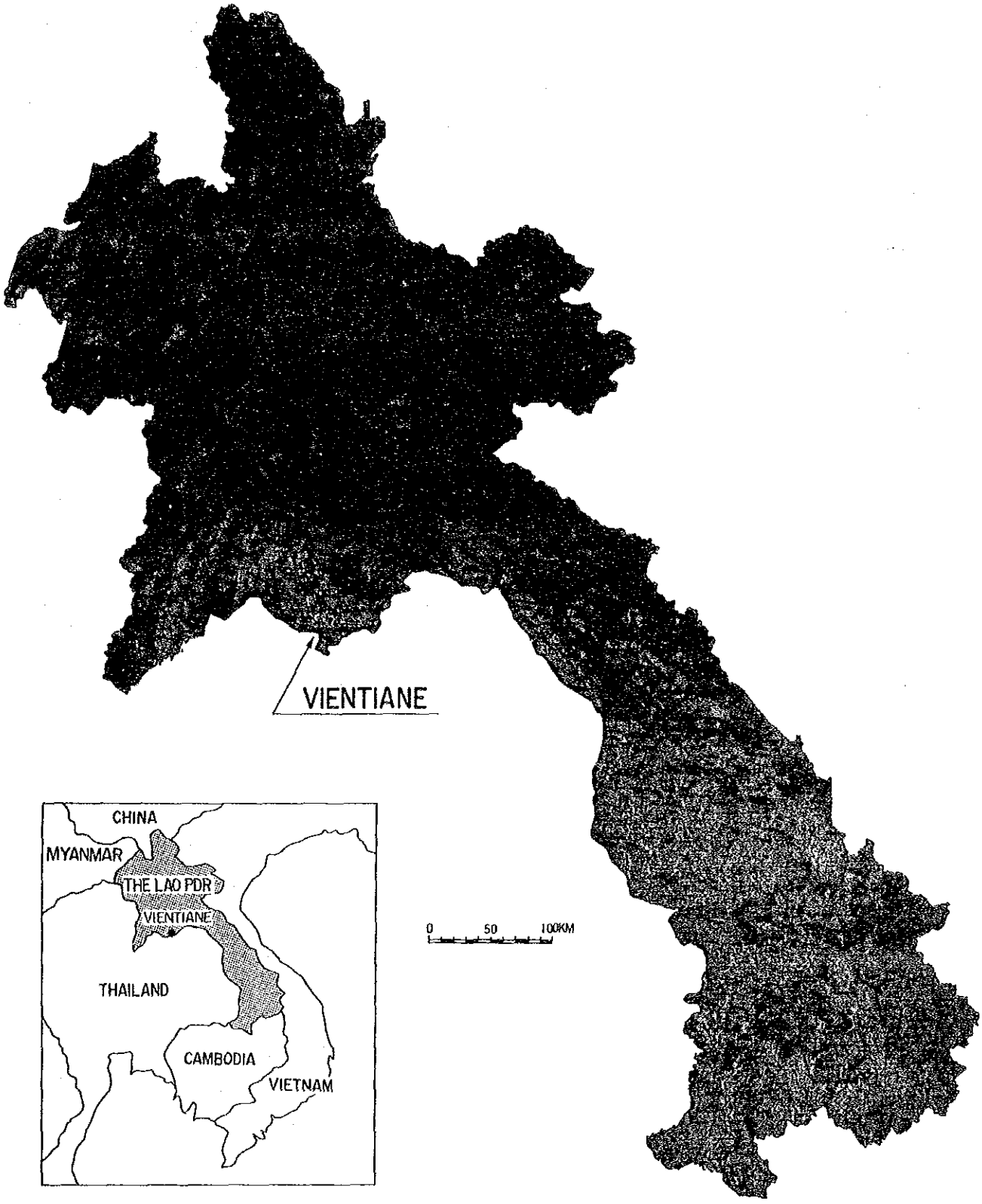
I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Lao People's Democratic Republic for their close cooperation extended to the teams.

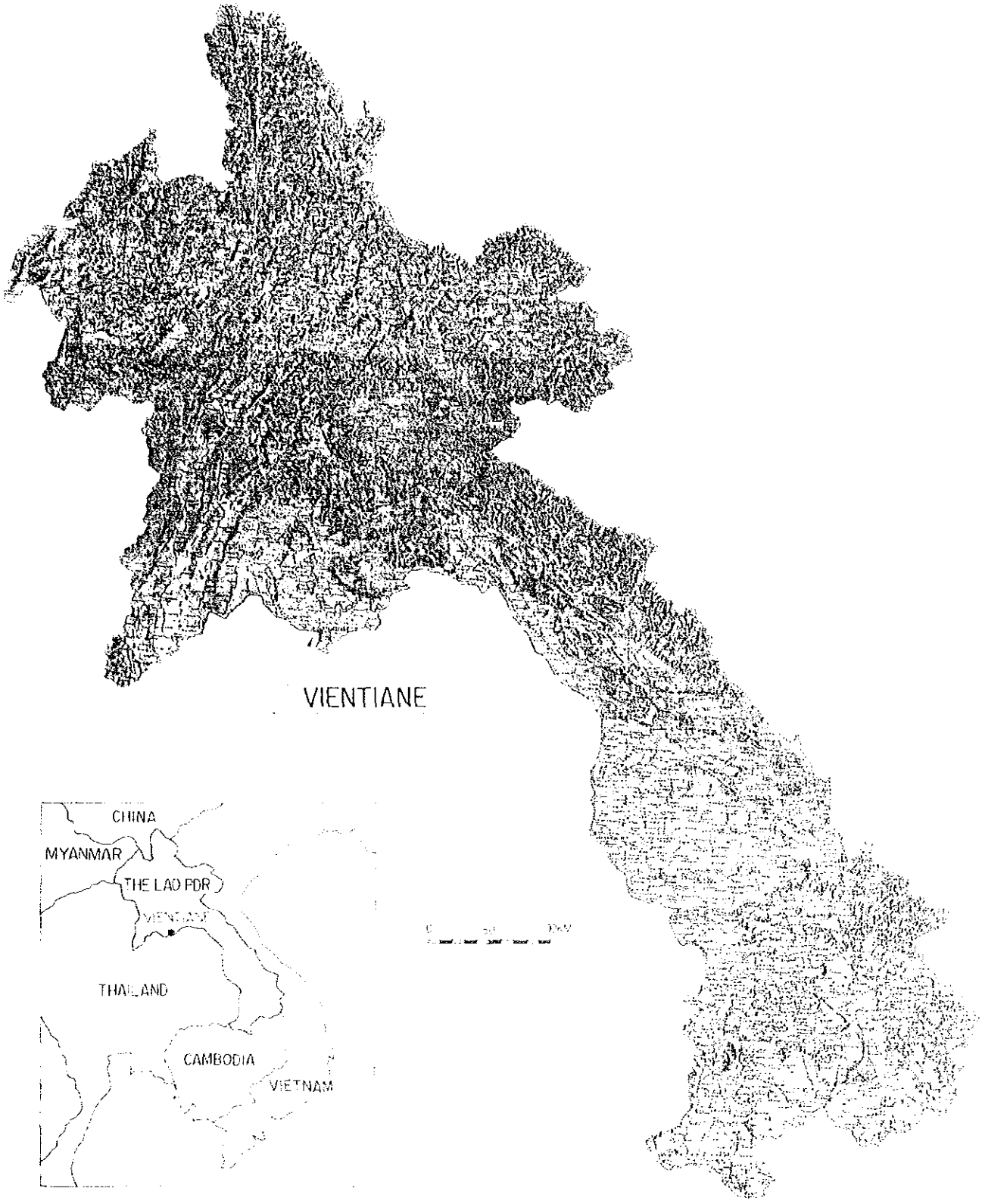
October, 1991

Kensuke Yanagiya

Kensuke Yanagiya
President
Japan International Cooperation Agency



THE LAO PEOPLE'S DEMOCRATIC REPUBLIC



THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

Perspective of Lao National TV New Studio Building

SUMMARY

SUMMARY

The Lao People's Democratic Republic (hereinafter called "the Lao PDR") is located in the inland area of the Indochinese Peninsula. Its total land area is 237,000km^2 and its population is 4.17 million. The greater part of its territory, with the exception of the flatlands in the Mekong basin, consists of an extremely mountainous region. The capital of the nation is the city of Vientiane on the Mekong River, with a population of about 400,000.

Lao National Television started in December 1983 in Vientiane, the capital city of the Lao PDR, to conduct broadcasting service to the Lao people. The various units of programme production equipment currently in use are mostly those for non-professional use and, both in quality and quantity, are insufficient for use by a broadcasting station. The period of broadcasting, too, is only about three hours a day. The output of the TV transmitter is small at 1kW and the service area is also small.

The Government of the Lao PDR planned, as a part of its national development plans, to expand and improve the nation's TV broadcasting service and has requested the Government of Japan to provide Grant Aid assistance to enable the carrying out of such plans as the renewal of transmitters and programme production equipment and reinforcement of facilities including the installation of air-conditioners to improve function of the production studio. In response to this request, the Government of Japan sent a preliminary survey team in January 1991 to the Lao PDR.

At first, the request from the Government of the Lao PDR concerned the provision of broadcasting equipment only. However, as a result of the preliminary survey team's consultations with the officials concerned in the Lao PDR and the on-site surveys conducted by means of field inspections, it was found that the studio buildings had become so superannuated that, if the broadcasting equipment were to be rehabilitated without first improving the present conditions of the studio buildings, it would not be possible to obtain adequate results. A strong desire to solve this problem was also expressed by the Lao side and, consequently it was decided that the construction of a studio building should also be included in the objects of this Study.

Based on the outcome of the above-mentioned preliminary survey, the Government of Japan decided to carry out a Basic Design Study and,

following this decision, the Basic Design Study Team conducted the field survey for a total of 24 days from April 16 to May 9, 1991.

Incidentally, this project also included a plan to improve the TV transmission waves in Vientiane which is located near the national border with Thailand. Consequently, this Study Team, on its way to and from the Lao PDR, paid a visit to the Thai Authority in charge of radiowave control and explained to them those portions of this project that are related to TV waves.

Furthermore, the explanations in the Lao PDR on the Draft Basic Design Study Report concerning this project were conducted for 14 days from September 4th to September 17th, 1991.

In the Lao PDR, this Study Team conferred mainly with the officials of Lao National Television as the implementing body of the project and, at the same time, did its utmost to get a grasp of the actual conditions prevailing in the Lao PDR by visiting local consultants as well as such government ministries and agencies concerned as the Ministry of Information and Culture, the Ministry of Economy, Planning and Finance, and the Ministry of Agriculture, Forestry and Water Supply Cooperatives. The Study Team also conducted, in Vientiane and its neighbouring areas, measurement of TV waves of Lao National Television and those coming in from the Thai side.

The outline of the project is as follows:

(1) Facilities

• Scale of the Studio Building	:	Total floor area Approx. 980m^2.
• Structure of the Studio Building	:	Ferro-concrete, 3 stories above the ground.
• Contents of the Studio Building	:	Basic purpose of this building is to house functional rooms relating to the production and sending out of programmes, such as a production studio as the main facility.
• Additional functions of the Studio Building	:	Installation of a steel tower (to set up the antennas for microwave circuits linking the studio and the transmitting station)

(2) Equipment

- Transmitting Equipment (Transmitting station) :
  1) Changing of the transmitting channel (8CH → 9CH)
  2) Increase of transmitter output (1kW → 5kW)
  3) Improvement of transmitting antenna (omnidirectional → directional)

- Programme Production and Sending-out Equipment (Studio) :
  1) TV studio facilities ($150m^2$)
  2) Master control installations, with an announcer booth ($30m^2$) made up of the existing equipment attached
  3) ENG equipment

The term of the execution of the Project will be divided into two phases.

In the first phase (facilities), it will take 4 months for a detailed design, 2 months for tender and a contract procedure and 12 months for construction to be completed. In the second phase (equipment), it will take 4 months for a detailed design, 2 months for a tender and a contract procedure, 9 months for manufacture and transportation of the equipment, and 3 months for its installation and adjustment to be completed. The total term including the first and second phases will be about 24 months.

The estimated project expenses are about 26.8 million kips (about 5 million yen) for the Lao side.

As a result of execution of this project, the population within the service area of Lao National Television will increase from the present number of about 400,000 to about 600,000. As to the quality of the TV pictures received on home TV sets, too, there will be improvement as a result of elimination of interference.

Efficiency in the production of TV programmes will be enhanced and it will become possible to increase the number of self-produced programmes by approximately two-fold. Further expansion of broadcasting hours will also

become feasible, thus enabling Lao National Television to develop itself into the centre of the nationwide TV broadcasting network of the Lao PDR.

Through the implementation of this project, it will become possible to enhance the spread of education and information by the TV medium in the Lao PDR and thereby to reinforce the information infrastructure in carrying out the national development of the Lao PDR.

ABBREVIATION LIST

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AC	:	Alternating Current
ACMR	:	Air-conditioning Machine Room
AM	:	Amplitude Modulation
AV	:	Audio Visual
BB	:	Black Burst
BC	:	Back Colour
CCD	:	Charge-Coupled Device
CCIR	:	International Radio Consultative Committee
CIN DIPLEXER	:	Constant Impedance Notch Diplexer
D/U	:	Desirable Signal to Undesirable Signal Ratio
E	:	East
EFP	:	Electronic Field Production
ENG	:	Electronic News Gathering
*f*a	:	Aural Frequency
FPU	:	Field Pickup
*f*v	:	Visual Frequency
N	:	North
NE	:	Northeast
NW	:	Northwest
OB VAN	:	Outside Broadcast Van
PAL	:	Phase Alternate by Line
PD	:	Programme Director
SE	:	Southeast
STL	:	Studio-to-Transmitter Link
SW	:	Southwest
UHF	:	Ultrahigh Frequency
VCR	:	Video Cassette Tape Recorder
VHF	:	Very High Frequency
VTR	:	Video Tape Recorder

CONTENTS

CHAPTER 1 INTRODUCTION

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For the purpose of enhancing the living standard of the people of Laos by filling their basic needs in such areas as food, housing, health and hygiene and education, the Government of the Lao PDR established its 2nd National Development Plan for the period from 1986 to 1990 to follow its 1st National Development Plan, and has been implementing various measures under the Plans. As a part of this National Development Plan, the Government of the Lao PDR had drawn up plans concerning broadcasting services as well, such as, extension of broadcasting hours (from 2.5 hours to 4-5 hours daily), expansion of the service area (by increasing the transmitter output from 1kW to 5kW) and the establishment of a Programme Production Centre.

With a view to attaining the objectives mentioned above, the Government of the Lao PDR has requested the Government of Japan to provide Grant Aid assistance with regard to its plans to improve and expand broadcasting equipment, including the renewal of the TV transmitter, renewal of studio equipment and installation of air-conditioners required in remodelling the studio facilities.

In response to this request, the Government of Japan decided to conduct a preliminary survey and, accordingly, JICA sent a preliminary survey team for this project to the Lao PDR from January 19 to February 1, 1991.

The contents of the request were at first confined to the above-mentioned improvement and expansion of equipment. However, at the time of the field survey by the preliminary survey team, it was found that the existing studio building had become so superannuated that the point was raised that no adequate results would be obtained if the rehabilitation of only the equipment were conducted while leaving the existing condition of the studio building as it is. The Lao side, too, strongly hoped to see a new studio building constructed.

Consequently, the preliminary survey team reached a conclusion that it was appropriate that the studio building should also be included in the objects of its survey.

Based on the results of the survey by the above-mentioned preliminary survey team, the Government of Japan decided to conduct the Basic Design Study and, accordingly, JICA sent to the Lao PDR for 24 days from April 16 to May 9 the Basic Design Study Team headed by Mr.Koichi Sazanami, Deputy

Director, Monitoring and Examination Division, Radio Department, Telecommunications Bureau, the Ministry of Posts and Telecommunications.

This Study Team, while conducting extensive consultations regarding this project with all the officials concerned in Vientiane, carried out surveys on such aspects as the current conditions of the studio building and the transmitting station building and their facilities at Lao National Television, the present status of the projected site of construction for a new studio building and the actual condition of broadcast programming.

Furthermore, in Vientiane and its neighbouring areas, the Basic Design Study Team also carried out a survey on the current condition of TV reception by actually receiving, monitoring and measuring the TV waves from Lao National Television and also from the neighbouring country, Thailand.

Meanwhile, the Basic Design Study Team compiled the matters on which basic agreements had been reached with the Lao side into the Minutes of Discussions, which were signed by the two sides.

Incidentally, in view of the fact that this project included the plan to improve the TV waves from the TV Transmitting Station in Vientiane which is located near the border with Thailand, the Basic Design Study Team, on its way to and from the Lao PDR, gave explanations about TV waves in the Lao PDR to the Thai Authority in charge of radiowave control.

After its return from the Lao PDR to Japan, the Basic Design Study Team analyzed the results of the survey. As a result, the Team reaffirmed the appropriateness of this project as one to be carried out under the Japanese government's Grant Aid and, at the same time, compiled the details of the basic designs, estimated construction expenses, construction plan, the effects of the project and other findings into a Draft Final Report. Then, from September 4th to September 17th, 1991 the Basic Design Study Team once again visited the Lao PDR with Mr. Kiyoshi Noritake as the leader. While discussing the Report with its counterpart in the Lao PDR, the Team compiled the Minutes of Discussions held on basic matters and had the minutes signed by the two parties.

This Report has been compiled on the basis of the procedures taken as outlined above.

The composition of the Basic Design Study Team, its survey schedule in the Lao PDR and the Minutes of Discussions are attached to this Report as Appendices.

CHAPTER 2 BACKGROUND OF THE PROJECT

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2-1 General Conditions of the Lao PDR

The Lao PDR is an inland country, located almost at the centre of the Indochinese Peninsula and stretching for a long distance from north to south. Bordered by Vietnam in the east and Thailand in the west, the Lao PDR also borders with China and Myanmar in the north and with Cambodia in the south.

Except for the flatland portion in the basin of the Mekong River, the territory of the Lao PDR consists mostly of mountain areas with many undulations.

Although located in the tropical monsoon zone, the Lao PDR suffers little from typhoons, thanks to the Luang Mountains along the Vietnamese border that shut the typhoons off. From May to September is the rainy season in the Lao PDR and from October to April is the dry season.

The total land area is 237,000km^2, which is just about the same as that of Japan's Honshu.

As of fiscal 1990, the total population was 4,170,000 and the population density 18 persons/km^2 which is one of the smallest in the world. The rate of population increase is quite large, at 2.9% per annum.

As to the residents, the Lao people (of Thai ancestry) account for a little more than 60% and live in the flatland region. They are mainly engaged in rice-growing. The remainder of the population is said to consist of some 68 to 100 different races including the Kha, Hmong, Musoh, Yao, Bunoi, Black Thai and White Thai tribesmen. Ninety-five percent of the entire population are Buddhists.

Although Lao is used as the official language, the residents of Thai, Chinese or Vietnamese ancestry and the large number of minority races living in the mountain regions communicate with one another in their respective languages. Since 1976, the Government of the Lao PDR has been devoting much effort to anti-illiteracy campaigns and, according to the statistics from 10 of the 16 provinces in 1989, the number of illiterate people was about 110,000 as of that year.

Around the middle of the 14th century, the Ansang Dynasty was established as the first unified Lao nation. However, at the beginning of the 18th century, this was divided into three dynasties which were placed

under the control of Thailand in the latter half of the 18th century. And in 1899, the country was incorporated into French Indochina.

In 1949, Laos became independent within the framework of the French Union and on October 20, 1953, the Kingdom of Laos attained complete independence in accordance with the French-Lao Treaty.

After that, civil wars were fought repeatedly among various domestic factions until February 1973 when the Laos Peace Treaty was signed between the ruling Phouma government and the Pathet Lao. Then, based on this Peace Treaty, an interim people's alliance government was established in April 1974. After that, the Pathet Lao gradually expanded its force and, following the abdication of the king in November 1975, the Lao People's Democratic Republic was born on December 2, 1975.

The present form of government of Laos is a people's democratic republic. The head of state is the President, and the parliament consists of the Supreme People's Conference with a membership of 79. As an administrative body, the government has a cabinet comprising the Prime Minister and other ministers. As for political parties, the Laotian People's Revolution Party (LPRP) is the only leadership party in the Lao PDR.

Regional administration is conducted through 16 provinces and one autonomous city (Vientiane). The sub-structure consists of wards and villages, and a People's Council and an Administrative Committee are established on each level.

In the Lao PDR, 80% of the entire population are engaged in agriculture, accounting for nearly 60% of the GDP. The output of rice, which is the main crop, was 1,400,000 tons in 1989 and 1,500,000 tons in 1990, thus reaching a self-sufficiency level. Main products other than rice include corn, tobacco, coffee, cotton, lacquer and timber.

As much as 42% of the land is covered with forest areas. Importance, therefore, is attached to forestry along with agriculture and Laos's export of timber accounts for nearly 40% of the nation's entire exports.

The finances of the Lao PDR consist of a current-expenditure budget and a capital-expenditure budget. In 1990, the two budgets were 65.9 billion kips and 66.1 billion kips, respectively. Meanwhile, the annual income is around 64.1 kips, a level insufficient to cover the current expenditure. In 1990 and thereafter, some improvements in this financial situation can be expected owing to such factors as the effect of the drastic cut in the number of government employees in 1989 and growth in

tax revenue. Capital expenditures are basically met by financial aid from foreign countries and such foreign aid is expected to increase further, in view of the positive attitudes taken by international agencies and the developed nations toward the provision of financial aid to the developing nations.

The Lao PDR is suffering from chronic trade deficits. While its annual imports reach some 190 million US dollars, its exports total only 60 million dollars which is less than a third of its imports.

The main item of export, besides timber and electricity, is coffee and these three items alone account for about 80% of Laos's exports. It is considered most essential for the Lao PDR to further increase its exports through continued efforts, such as, fostering export industries and reducing export taxes.

The nation's total annual output is 710 million US dollars (1988), or 180 dollars per capita.

2-2 Present Status of TV Broadcasting and Mass Media

2-2-1 Status of TV Broadcasting in the Lao PDR

(1) Process of Development

The history of TV broadcasting in the Lao PDR can be traced back to the time when small-scale TV broadcasting was started at the beginning of the 1980s, using the Intersputnik satellite to transmit programmes for reception by the Soviet residents in Vientiane.

The TV broadcasting service for the people of the Lao PDR was started in December 1983 and has continued to the present.

(2) Organization

At present, TV broadcasting in the capital city of Vientiane is operated by the Lao National Television Station which is a division of Lao National Radio and Television, an organization under the direct control of the Ministry of Information and Culture.

The Ministry of Information and Culture has about 1,000 staff members, from three Deputy Ministers down, and, within this Ministry, Lao National Radio and Television is a big organization having a staff of about 300 persons. Lao National Radio and Television consists of six departments including a TV broadcasting station, a radio broadcasting station, a department that takes charge of public relations activities using on-the-street loudspeakers and a department in charge of the distribution of videotape programmes. (See Fig. 2-2-1)

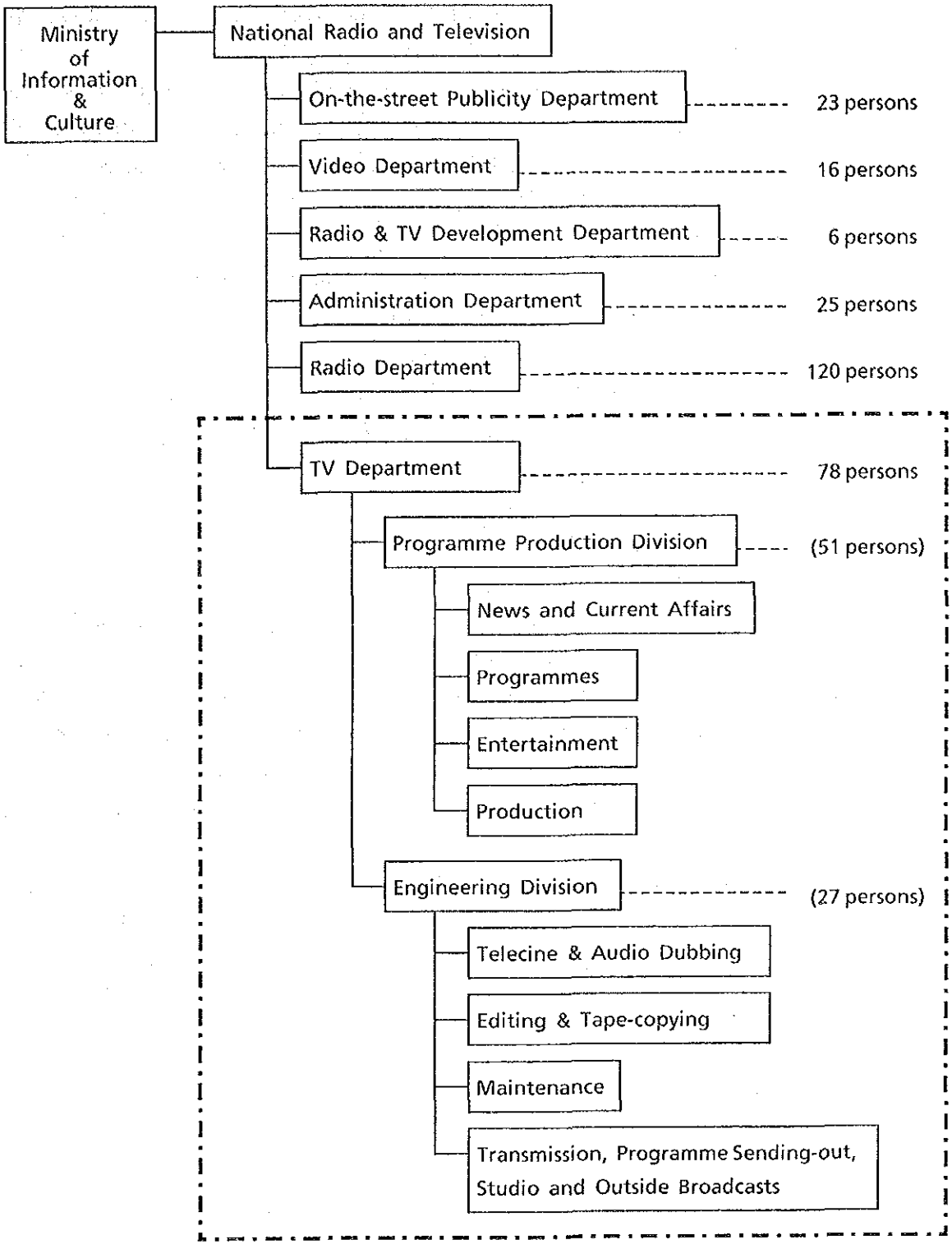


Fig. 2-2-1 Organization Chart Showing Lao National Television and Its Related Departments

(3) Operation

Lao National Television is currently operated with a staff of 78 members from the Director General down.

Hitherto, the operational expenses have been paid in full from the national budget. However, since 1991, trial broadcasts of commercials have been conducted in an effort to increase income.

The 1991 Operational Budget is as follows:

1) National Budget

- Domestic Currency 55,000,000 kips (approx. US$78,500)
- Foreign Currency 70,000 US dollars

2) Advertisement Revenue

Estimate 3,000,000 kips (approx. US$4,500)

In both domestic and foreign currencies, the budget amount since 1988 has been increasing at the rate of over 10% a year. The foreign-currency portion of the budget is allocated directly from the Ministry of Economy, Planning & Finance as the funds with which to purchase such items as spare parts, videotapes and necessary units of equipment. The measures taken currently to reserve a certain budget amount in advance in foreign currency for the purchase of imported products within the limit of the allocated operational budget are quite wise and appropriate, even though the amount itself may not be sufficient.

The income and expenditure of Lao National Television during the last three years are shown in Table 2-2-1 and Table 2-2-2, respectively.

Table 2-2-1 Income of Lao National Television

D.C. = Domestic Currency F.C. = Foreign Currency

		1988 (actual)	1989 (actual)	1990 (actual)	1991 (estimated)
National Budget	D.C.	in 1,000 kips 39,500	in 1,000 kips 45,500	in 1,000 kips 49,500	in 1,000 kips 55,500
	F.C.	US$ 45,000	US$ 52,000	US$ 60,000	US$ 70,000
Advertise-ment Income	D.C.	——	——	——	in 1,000 kips 3,000
Total	D.C.	in 1,000 kips 39,500	in 1,000 kips 45,500	in 1,000 kips 49,500	in 1,000 kips 58,500
	F.C.	US$ 45,000	US$ 52,000	US$ 60,000	US$ 70,000

Table 2-2-2 Expenditure of Lao National Television

D.C. = Domestic Currency F.C. = Foreign Currency

		1988 (actual)	1989 (actual)	1990 (actual)	1991 (estimated)
Salaries		in 1,000 kips 13,000	in 1,000 kips 14,000	in 1,000 kips 14,500	in 1,000 kips 16,800
Electricity and Water		1,900	2,050	2,168	2,300
Fuel		1,650	1,850	3,276	2,500
Programme Production		6,500	8,500	*Note 1) 19,000	10,400
Others	*Note 2) D.C.	in 1,000 kips 16,450	in 1,000 kips 18,100	in 1,000 kips 10,556	in 1,000 kips 23,000
	*Note 3) F.C.	US$ 45,000	US$ 52,000	US$ 60,000	US$ 70,000
Total		in 1,000 kips 39,500	in 1,000 kips 44,500	in 1,000 kips 49,500	in 1,000 kips 55,000
		US$ 45,000	US$ 52,000	US$ 60,000	US$ 70,000

*Note 1) In 1990, various special events were held and special programmes produced in connection with the 120th anniversary of the birth of Lenin and the centenary of Ho Chi Minh's birth.

*Note 2) Includes costs of maintenance and repairs of the facilities, communication expenses and vehicle maintenance costs.

*Note 3) Expenses for the purchase of spare parts, videotapes, broadcasting equipment, etc.

(4) TV Programmes

Basically, the daily broadcasting hours are 7:00-7:30 and 19:30-22:00/23:30, totalling 3 to 3.5 hours. Including news, all broadcasts are conducted in the form of the playback of videotaped programmes.

Independently-produced programmes account for about 45% of all

broadcasts, the remaining 55% being those procured from outside. The basic transmission schedule of programmes is as follows:

Early-morning Programmes (started on March 22, 1991)

Time	Broadcast Hours	Contents
7:00 - 7:15	15'	Domestic news (repeats)
7:15 - 7:30	15'	Overseas news (repeats)

Night Programmes

Time	Broadcast Hours	Contents
19:30 ~ 19:45	15'	Programmes for children
19:45 ~ 19:50	5'	Publicity and advertisement spots
19:50 ~ 20:05	15'	Domestic news
20:05 ~ 20:20	15'	Overseas news and sports news
20:20 ~ 20:25	5'	Spots (repeats)
20:25 ~ 20:40	15'	Documentary
20:40 ~ 20:45	5'	Spots (repeats)
20:45 ~ 21:00	15'	Information (education/agriculture/politics/health, etc.)
21:00 ~ 22:00/22:30	60/90'	Music/sports/dramas

This schedule, however, is only what is followed in principle. In actuality, operations are conducted very flexibly both in contents and time schedules in such a way as to meet the conditions which may change each day. Hence, no previous announcement is made in newspapers about the daily programming. So, the viewers are placed in a position where they do not know what they can expect to see on TV until the morning of each day.

At present, Lao National Television produces 26 programmes totalling about 450 minutes each week, including news and general programmes, using one TV studio. The length of time the studio is used daily is about 9 hours.

As for the news, seven programmes (for seven days) are produced, taking a total of seven hours (1 hour/day) weekly to produce them. As for general programmes, a total of 19 programmes are produced weekly, taking about 40 hours in all. (See Table 2-2-3.)

Table 2-2-3 Current Status of Production of General Programmes (Weekly)

	Programme Contents	Weekly Programming			Studio Usage Rate *Note 1)	Studio Occupation Time
		Duration	Number	Total		
Mon.	Children	15'	2	30'	10	300' (5:00)
Tue.	Information	15'	4	60'	5	300' (5:00)
Wed.	Music	60'	1	60'	7 (10) *Note 3)	420' (7:00)
Thur.	Music	60'	1	60'	7 (10) *Note 3)	420' (7:00)
Fri.	Music	60'	1	60'	7 (10) *Note 3)	420' (7:00)
Sat.	Information	15'	3	45'	5	225' (3:45)
Sun. *Note 2)	Spots	5'	7	35'	10	300' (5:00)

*Note 1) The ratio of the duration of the programme being produced against the length of time the studio is occupied. It depends on the contents and scale of the programme produced.

*Note 2) Produced at the rate of about once a month. When the studio is not used for production, the maintenance of its equipment will be carried out.

*Note 3) Normally 10, but actually the production work is conducted at the studio usage rate of about 7.

As for the equipment for outside broadcast use, there are four sets of ENG equipment in 3/4-inch tape format and, in addition, there also is outside-broadcast equipment using an OB van built in the 1950s (used 1-2 times a month).

Lao National Television makes it a practice to copy its videotaped programmes after they are broadcast and supply them by air to other provincial TV broadcasting stations in Luang Prabang and Savannakhet. These stations, on their part, offer about 30 minutes a week of news materials to Lao National Television.

(5) Buildings

1) Transmitting Station

The transmitting station, which emits TV waves, is located on the land neighbouring the building of the administration department of Lao National Television, across the road that runs in front of the administration building. There currently stand the transmitter building (Photo 2-2-2) which houses the transmitter, along with the steel tower with the transmitting antenna on top (Photo 2-2-1).

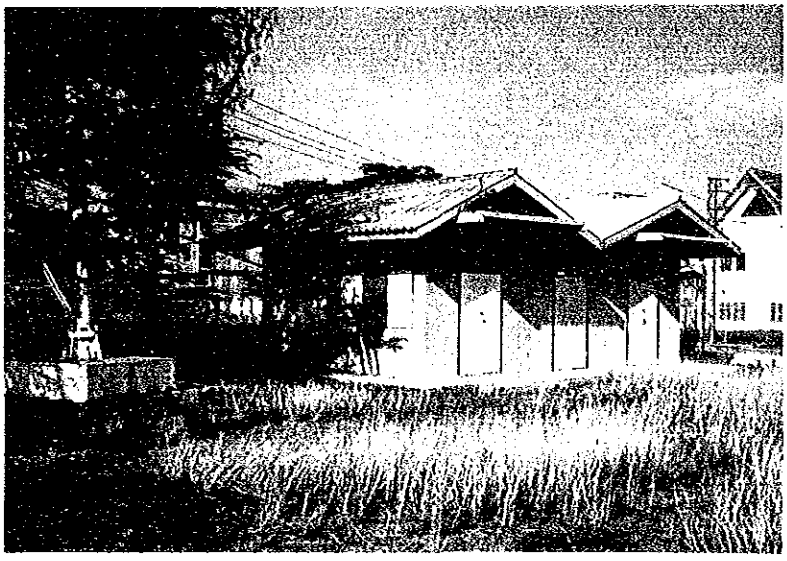


Photo 2-2-2 Transmitter Building

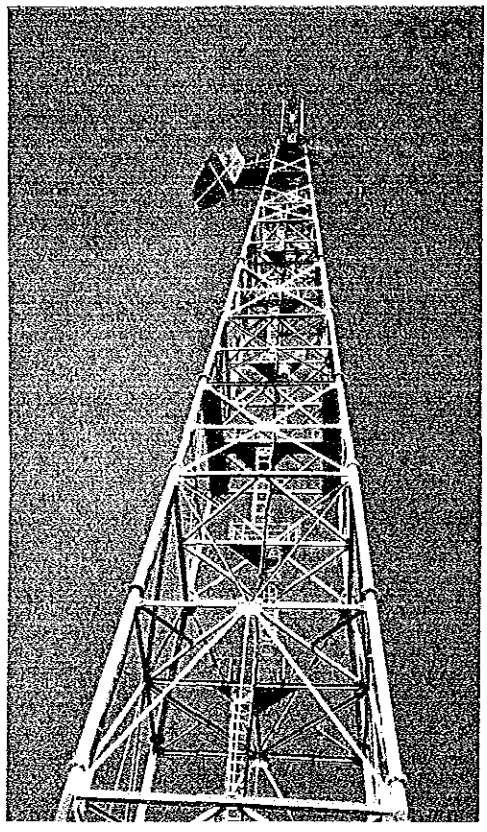


Photo 2-2-1 Transmitting Tower

2) Studio Building

The studio building which houses programme-production equipment is the result of remodelling of the one formerly used for radio broadcasting. For that reason, the studio in this building, which is the station's only TV production studio, has an extremely low ceiling height as compared with its floor space. As a result, the camerawork in this studio has to be restricted.

Moreover, the cooling device installed on the studio floor, because of the loud noise, must be stopped while programme production is in progress. Consequently, it is not possible at present to use the studio continuously for a long time.

Furthermore, because there is only one TV studio, clashes often occur over the use of the studio between the producers of news programmes and those of general programmes.

(6) Broadcasting Facilities

1) Transmitting Facilities

The TV transmitting station is located at a distance of about 700m from the side of the Mekong River which constitutes the national border with Thailand. From there, using an antenna on top of a tower of about 100m in height, radiowaves are emitted to all directions with the transmitter output of 1kW.

The service area *Note 1) which is defined by the strength of the TV waves, is in the range of about 35km in radius with the transmitting station at the centre of the circle.

However, the broadcasts are also received by viewers in some of the areas more than 70km away from the transmitting station, owing to such reasons as the fact that the city noise is generally slight in and around Vientiane and that high-gain receiving antennas are used quite widely in those areas.

As to the transmitter, which is a product of the Thomson Co. of France, only the power-amplifier is installed in the transmitter building, the modulator being installed separately on the studio-building side. The output of the modulator is sent by cable to the transmitter. The commercial power source can be used by switching between the route coming through the studio and that coming directly from power lines.

*Note 1) The CCIR Rec. 417-2 defines the area with a field intensity of 55dB (μV/m) or higher as the 'service area'.

2) Studio Facilities

The video and audio facilities currently in use consist mainly of equipment for general non-professional use made by Sony. Consequently, Lao National Television has been suffering from inadequacies both in functions and in absolute number of units. Even so, the equipment itself, despite the shortage of spare parts and measuring instruments, has been maintained rather well.

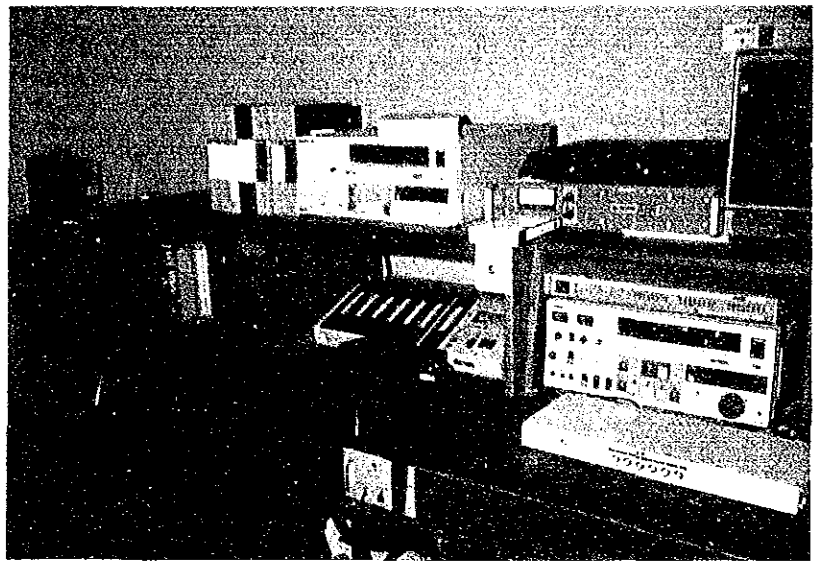


Photo 2-2-3 Master Control Room

In the production studio, one of the main problems is the lack of TV lighting equipment. As the base-light, they are currently using the lighting equipment for outdoor construction work, with the result that the volume of light is too inadequate to enable effective use of the studio floor space. As for the spotlights, too, they have only the stand-type equipment which restricts the lighting positions. And without a dimming device, the lighting staff is barred from using delicate lighting techniques.

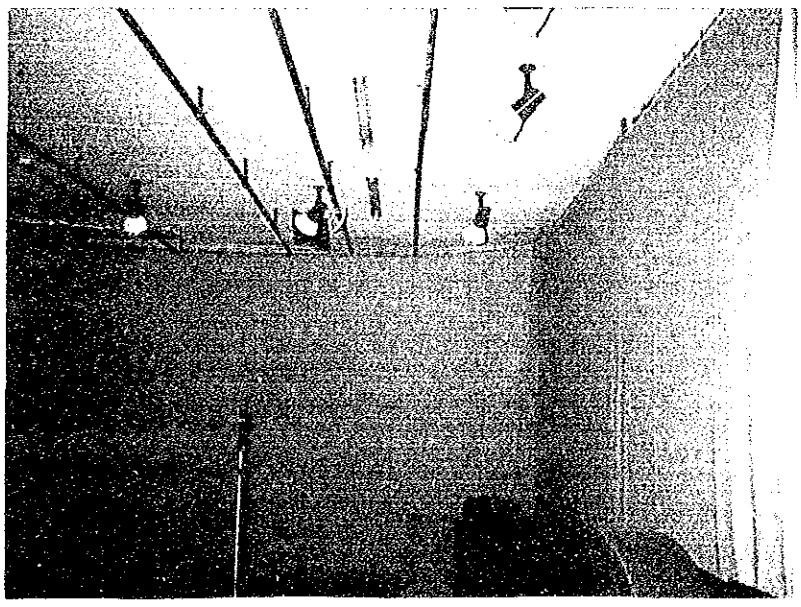


Photo 2-2-4 Studio Lighting

Among the programmes actually broadcast, there were some that gave the impression that, owing to misoperation or incomplete adjusting, the functions possessed by the programme-production equipment had not been made full use of in their production. Also noticed on a few occasions were interruptions of pictures in the switching from one programme to another.

(7) Maintenance of Broadcasting Equipment

At Lao National Television, the maintenance of the entire range of equipment, from microphones to cameras and transmitter, is carried out by a 4-member maintenance group in the engineering department. What deserved special attention is the fact that, in this department, they have all high-caliber personnel including those with experience studying abroad. From this fact alone, one can see the great importance attached to this maintenance group.

On the whole, the maintenance conditions at Lao National Television are very good. For the fact that the broadcasting service has been continued without a break up to now despite the agonizing shortage in absolute number of units of equipment, much credit should be given to the excellent maintenance techniques of the high-caliber personnel.

However, the shortage of facilities and equipment is so serious that the occupation time of equipment is inevitably prolonged. Thus, the time for actual maintenance work cannot easily be secured and, what with the shortage of measuring instruments, the maintenance work at the station has now virtually reached its maximum limit.

(8) Reception Condition of Broadcasts of Lao National Television

What one notices in the city of Vientiane and its neighbouring areas are the forests of high-gain multi-element TV receiving antennas and the fact that the directions of these antennas are not uniform.
This is because, in the Thai-border area along the Mekong River, TV waves on more than one channel come in from the Thai side and consequently, when Lao National Television is off the air, people watch whatever Thai channel they desire by turning their antennas to the direction from which such TV waves come in.
However, the most serious technical problem that arises here is the fact that TV waves considerably stronger than that which are transmitted by Lao National Television are coming in on the same frequency from Thailand, causing interference and resultant serious degradation in the quality of the TV reception.

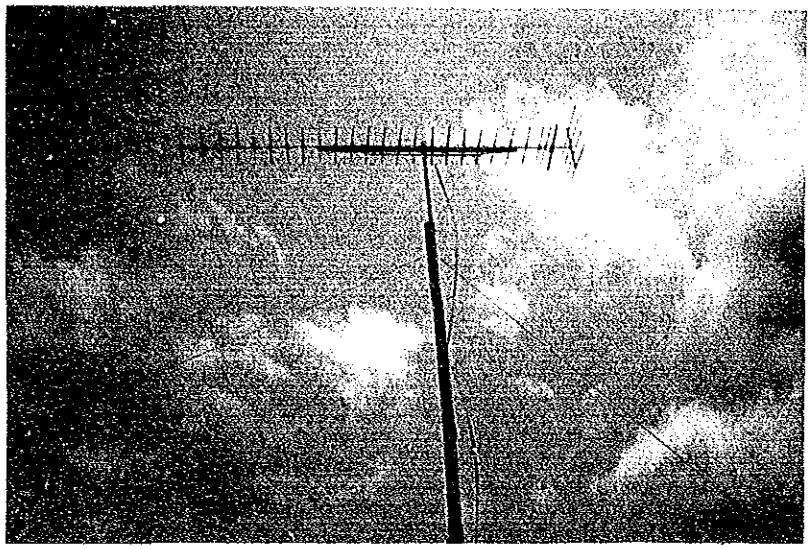


Photo 2-2-5 Multi-element TV Receiviing Antenna

Photo 2-2-6 Forest of Receiving Antennas

(9) Provincial TV Broadcasting Stations

In the Lao PDR, there is, in addition to the national television in Vientiane, a provincial TV broadcasting station operating in each of the following two cities; Luang Prabang (44,000 in population), an ancient city in the north, and Savannakhet (50,000), the second largest city in the south of the Lao PDR. With transmitter outputs of 0.1kW and 1kW respectively, the two stations are conducting broadcasts at the rate of about twice or three times a week.

(10) Spread Rate of Receivers

As to the spread rate of receivers, Lao National Television does not possess accurate data either. However, if such factors were taken into account as the way the receiving antennas are put up, the market prices of TV receivers, the spread of battery-operated receivers in the villages to which commercial power is not supplied, and the existence of video rental shops, it may be estimated that the receivers have now spread at the rate of at least one set to every two households in Vientiane and its neighbouring areas and one to every four households in the Luang Prabang and Savannakhet areas, respectively

Meanwhile, the Video Department of the Ministry of Information and Culture, as a part of its public relations activities, makes it a practice to distribute copies of the videotapes of its broadcasted programmes to the residents outside the service area, and those residents are enjoying such programmes using a receiver and a videotape recorder. According to the "Broadcasting Services of the World," an NHK data-book, the total number of TV receivers in the Lao PDR as of the end of 1988 is 32,000.

2-2-2 Status of Mass Media in the Lao PDR

(1) Radio Broadcasting

The same as in the case of TV broadcasting, radio broadcasting in the Lao PDR is operated by the National Radio Station as a department within Lao National Radio and Television in the Ministry of Information and Culture. The number of personnel at the National Radio Station is about 100.

Radio broadcasting was started in 1962 and the station moved into the new studio building in 1968. At present, the radio broadcasting medium conducts domestic broadcasting (14 hours/day) and foreign-language broadcasting (in five languages, 6 hours/day), using medium-wave and short-wave.

580kHz	150kW	For domestic listeners
640kHz	50kW	For domestic listeners
1030kHz	20kW	In foreign languages

6130kHz	10kW	For domestic listeners
7145kHz	25kW	In foreign languages

The present radio coverage is about 70% of the total population and the total number of radio receivers in the Lao PDR had reached 450,000 as of the end of 1986 (NHK Data-book, "Broadcasting Services of the World").

The radio studio building is located adjacent to the present TV studio building, and contains three continuity studios and one each of large and medium-sized production studios, totalling five studios.

The medium/short-wave transmitting station is located at a distance of about 5km north from the centre of Vientiane, adjacent to the site for the new TV studio building to be constructed. The medium-wave high-power transmitting station (150kW:580kHz) is located at a different place, 49km to the north of Vientiane.

In addition to the above-mentioned National Radio broadcasting service, there are, in Vientiane and other major cities, small radio broadcasting stations run by the respective provinces which are conducting broadcasts for several hours a day, centering on local programmes.

(2) Newspapers

The following are the names of the major newspapers published in the Lao PDR and their respective circulations. Besides these, various types of bulletins and theoretical-study journals are also published but their circulations are unknown.

- PASASON

  The central bulletin of the People's Revolution Party, published daily in Lao.

  Its circulation is 28,000. A digest edition in French is also published once a week.

- VIENTIANE MAI

  The bulletin of the Provincial/Municipal Committee of Vientiane of the People's Revolution Party. Published daily in Lao. Circulation is 2,500.

- MEYING LAO

  Monthly magazine in Lao with a circulation of 6,000.

- NOUM LAO

  Fortnightly bulletin, in Lao, of the Union of the Laotian Youths in People's Revolution, with a circulation of 6,000.

- LAO DONG

  Fortnightly bulletin, in Lao, of the Federation of the Lao Labour Unions, with a circulation of 46,000.

(3) News Agency

The national news agency, PATHET LAO News Service, publishes daily bulletins in Lao, French and English.

2-3 Outline of the National Development Plans

2-3-1 National Development Plans

Since the establishment of the Lao People's Democratic Republic, the Government of the Lao PDR has been carrying out successive national development plans. The Government first implemented the 1978-80 National Development Plan as a long-range national plan and followed this up with the 1st and the 2nd Five-Year Economic and Social Development Plans, from 1981 and from 1986, respectively. At present, the Government is drawing up the 3rd Five-Year plan for 1991 and onwards.

During the period of the 1st Five-Year Plan, the nation achieved an average growth of 7.6%, surpassing the original plan (7%). However, in the case of the 2nd Five-Year Plan, the actual records of growth achieved during the four years from 1986 to 89 remained an average of 4.6% as against the projected growth rate of 10.3%.

That was due to a number of reasons, such as, that some managerial problems arose at the state-run companies as a result of the decision made to abruptly switch the national economy from a centrally-controlled economy to a market-type economy, a shift that took place at the start of the Five-Year Plan. Another factor was that the country was hit by a long drought, which caused the growth in the industry, construction and agriculture sector to drop substantially below the level originally planned.

The main targets of the 2nd Five-Year Plan include:

1. Securing of self-sufficiency in food supply and food security.
2. Development and protection of forestry resources, and control of the slash-and-burn method of agriculture.
3. Expansion of processing industry for agricultural and forestry products.
4. Improvement of transportation and communication systems.
5. Qualitative improvement of human resources.

This project may be considered as a part of the plans to improve the transportation and communication systems mentioned in item 4 above.

2-3-2 Future Plans for Lao National Television

(1) Extension of Broadcasting Hours

Lao National Television is thinking of extending its daily broadcasting hours in the following stages:

1991-1994 2 hours → 4 hours (Extended to 3 hours from March 1991)

1994-1997 4 hours → 6 hours

1997-2000 6 hours → 8 hours

(2) Development of New Programmes

Regarding the extension of broadcasting hours, Lao National Television is thinking of carrying out the extension in two ways; first, to achieve an extension of the broadcasting hours within the framework of the contents of the present programmes, and second, to newly develop programmes totalling about an hour a week, such as those designed for different age groups or people in different occupations.

1) Programmes for young people
2) Programmes for women
3) Programmes for workers
4) Programmes concerning environmental protection
5) Programmes in foreign languages
6) Other programmes with new contents

(3) Long-range Plans for Broadcasting Facilities

1) Television Centre

The construction of a television centre is being planned in the capital city of Vientiane, a centre that contains both the studio building and the transmitting station of Lao National Television. The studio building should be one that accommodates the above-mentioned extension in the broadcasting hours and should house a total of five TV studios of varying scales including one for exclusive use in producing news programmes. As for the transmitting station, there is a plan to construct one with a steel tower in the height of 150m-class for installation of a transmitting antenna.

2) Nationwide TV Broadcasting Network

At present there are, besides Lao National Television in the capital city of Vientiane, a provincial TV broadcasting station in each of the two other major cities (Luang Prabang and Savannakhet). In addition to these, two more TV broadcasting stations, one each in the two regional cities of Xieng Khouang and Champasak, are planned by the Ministry of Information and Culture.

2-4 Background and Contents of the Request

TV broadcasting in the Lao PDR was first started in 1981 for reception by the Soviet residents in Vientiane. It was in December 1983 that Lao National Television officially started TV broadcasting service for the people of Laos.

The broadcasting facilities and equipment in current use are those which Lao National Television purchased from 1984 onwards and maintained for day-to-day operation. They consist mostly of equipment for non-professional use and so the picture quality of the broadcasts is not quite adequate. The output of the TV transmitter is small at only 1kW and the service area is also small. The total daily broadcasting time is three to three and a half hours; 7:00-7:30 in the morning and 19:30-22:00(22:30) in the evening.

The Government of the Lao PDR in its 2nd Five-Year Socio-economic Development Plan (1986-1990) points out the need of improving the transportation and communication systems and, as a part of its efforts towards attainment of its objectives, plans various improvements and expansions in the field of TV broadcasting, such as the extension of the broadcasting hours, expansion of the service area and construction of a programme production centre.

With a view to achieving such objectives as outlined above, the Government of the Lao PDR has requested the Japanese government to provide Grant Aid cooperation for the improvement and expansion of equipment, for example, renewal of the transmitter, renewal of programme-production equipment and provision of air-conditioners required in the improvement of the studio.

At first, the request was made primarily for improvement and expansion of the broadcasting equipment and the Japanese Government, in response to this request, sent a preliminary survey team in January 1991 to the Lao PDR.

As a result of the survey conducted by the preliminary survey team through its activities such as discussions held with those concerned on the Lao side and field inspections, it was found that not only the broadcasting equipment but also the studio building itself —— because of its being a remodelled version of a building used for radio broadcasting —— had become extremely superannuated. So much so that it was considered that the renewal and improvement of the equipment alone would not be

sufficiently effective if the condition of the studio building was left as it is. Construction of a new studio building was strongly requested by the Lao side, too, and thus a decision has been made to include the construction of the facilities in the list of objects to be studied.

[Contents of the Request]

(1) Construction of Facilities

① Office ② Studio ③ Master and Sub-control rooms ④ Editing rooms ⑤ Telecine room ⑥ Maintenance room ⑦ Storeroom ⑧ Air-conditioning equipment, etc.

(2) Upgrading of Equipment

① Transmitting equipment ② Studio equipment ③ Measuring instruments ④ Equipment for the editing room ⑤ ENG equipment ⑥ Equipment for VTR room ⑦ Equipment for programme sending-out ⑧ Equipment for dubbing room ⑨ OB van ⑩ Spare parts ⑪ Tools for installation work, and other items

CHAPTER 3 OUTLINE OF THE PROJECT

CHAPTER 3 OUTLINE OF THE PROJECT

3-1 Objectives of the Project

The Government of the Lao PDR plans to make effective use of TV broadcasting in the following areas as a medium of communication indispensable for national development and enhancement of the people's living standard:

(1) Spreading of techniques and know-how for the increase of food production.
(2) Education of the people about the importance of protection of forests.
(3) Offering of various social and daily-life information such as domestic and foreign news and documentary programmes.
(4) Spreading of knowledge about health, medical care and sanitation.
(5) Offering of educational and cultural programmes designed for the young people and workers.
(6) Spreading of traditional culture and arts.
(7) Government's public-relations activities.

However, the existing TV broadcasting facilities have not been playing their roles in full owing to inadequate functions, shortage in absolute number, superannuation and TV wave interference from the neighbouring country.

The objectives of this project are to improve and expand the studio building and equipment of Lao National Television and, at the same time, to improve the transmission conditions of TV waves, so that the TV broadcasting services may become able to play the above-mentioned roles in full.

3-2 Examination of the Contents of the Project

3-2-1 Appropriateness and Necessity of the Project

(1) Targets of Lao National Television

Based on the idea of the Government of the Lao PDR concerning TV broadcasting as mentioned in 3-1 above, Lao National Television has established the following targets:

1) To offer various information and appropriate entertainment mentioned in 3-1 above which are required in ful filling the basic needs of the people of Laos and in enhancing their living standard.
2) To improve and expand the programme-production facilities in order to achieve qualitative and quantitative improvement of programmes for the purpose of attaining the target mentioned above.
3) To improve transmission conditions in order to expand the service area and to enhance the reception quality.

Next, let us examine the appropriateness of the contents of each target that Lao National Television strives to attain.

1) Since TV broadcasting was started in the Lao PDR in 1983, the people, despite economic hardships, have somehow managed to buy a TV receiver, giving top priority to the ownership of a TV receiver over any other daily necessities. As a result, in Vientiane, TV receivers have spread today at the rate of at least one to every two households, and it is estimated that more than 30,000 sets have already spread throughout the country. Even the residents in areas where the TV waves do not reach are actually obtaining various types of information by means of videotapes, using a cassette video recorder which they possess. Hereafter, it is expected that the spreading of TV receivers will proceed at an accelerated pace if the economic conditions improve. This shows that TV as the main medium of information is, in fact, the major source of information required by the people in their daily lives and that its importance will continue to grow from now on.

2) In actual fact, the residents of Vientiane and its neighbouring areas are strongly interested in and are viewing the TV

programmes broadcast from Thailand, broadcasts that are considered better than those of Lao National Television in broadcasting hours and programme contents.

So, in order to cope with this situation, there is the need for Lao National Television to expand its programming and improve the quality of its programmes by improving and expanding the studio building and its facilities, so that the people may tune more often into the broadcasts of Lao National Television.

3) In order for TV broadcasting to be able to play the essential role as the provider of information required by the people, it is necessary to ensure delivery of high-quality TV waves to a maximum number of people. At present, the transmitting output is small at 1kW and the service area is limited.

Moreover, as a result of the interference from the TV waves coming in from the neighbouring country, the reception quality has been substantially degraded. So, the improvement of transmitting conditions is considered as being most imperative.

From the foregoing, it is judged that the targets of Lao National Television as mentioned in (1) 1) - 3) are appropriate.

(2) Present Status and Problems

1) Production of Programmes that Meet the Requirements of the Audience

At present, many of the Lao people are greatly interested in the broadcasts from Thailand.*Note 1) Although Lao National Television has been endeavouring to produce and offer to the people programmes that excel the broadcasts from Thailand, it finds it next to impossible to do so for the following reasons if things were left as they are at present:

*Note 1) In Bangkok, Thailand, TV broadcasting is conducted on five channels, 3, 5, 7, 9 and 11. As a result, in Vientiane and its vicinity, too, more than three channels of Thai TV waves fly over, providing programmes for as long as 7-8 hours a day. This inevitably results in the Lao residents tuning into the Thai programmes.

a) Since the present TV studio uses the facility of the former radio studio, the ceiling height is extremely low as compared with the floor space, with the result that the floor space cannot be used effectively, because long shots, in which the camera is pulled back in full, are inevitably restricted. Furthermore, the air-cooling device, for use in holding down the rise of temperature resulting from the emission of heat from studio lighting and other machines, is set up in the studio and needs to be stopped during the actual shooting of the programme because of the loud noise it emits. For that reason, production of programmes for a long period without a break is impossible.

b) Because both the video and audio equipment consist mainly of general equipment for non-professional use, the programmes produced are of inadequate quality from a technical viewpoint. The equipment also lack the functions required for producing programmes attractive to the Lao people.

c) As for the lighting for the TV studio, too, the instruments are inadequate and are lacking in the dimming function. As a result, effective use cannot be made of the studio floor space and it is extremely difficult to shoot pictures with natural gradation.

2) Expansion of the Programmes Produced

Lao National Television has only one production studio, and owing to the fact that news and general programmes are pre-recorded daily almost at the same time, the total length of programmes that can be produced in this studio is limited to nine hours a week. At present, three hours a day, 21 hours a week, of broadcasts are conducted, but 55% of the programmes are those imported from abroad and only 45%, or less than a half of the programmes broadcast, are those produced by Lao National Television. With the existing facilities, it is not possible for Lao National Television to increase the types of programmes that are more closely related to the people's lives and thereby to further expand the broadcasting hours.

3) Service Area and Interference

At present, Lao National Television is covering a population of only abut 400,000, of which 150,000 people are suffering from the poor reception condition because of the interference by radiowaves from the neighbouring country. It is not possible to improve the reception quality without improving the transmission conditions, such as the transmitter output, the transmitting channel and the directional characteristic of the transmitting antenna.

(3) Appropriateness of the Project

In view of the circumstances outlined above and for the reasons mentioned below, this project is one that is both appropriate and necessary through minor modifications made to the contents of the request.

- An announcer booth will be attached to the new master control room.
- For outside broadcasts, the existing OB Van system will be used.
- As to the tape-copying room, the existing facilities will be used as they are.
- As to the office, the existing rooms will be used as many as possible; a minimum of new room will be provided.

1) In Lao National Television, the news programmes are pre-recorded each day. So, with only one production studio, the production of other programmes is greatly obstructed by this daily pre-recording of news programmes. In order to avoid this situation, an announcer booth should be attached to the master control room so that the daily videotaping of news programmes may be conducted with the existing equipment transferred from the present studio and the equipment of the master control room, thus enabling the production of various information programmes at the same time.

2) At present, the operation rate of the OB Van is 1 or 2 times a month (mainly for transmissions of sports and national events). Considering this fact, the existing OB Van is used as it is.

3) Since the existing facilities in the tape-copying room are still in usable condition, they shall be transferred and used as they are.

4) In the existing TV studio building, only the engineering staff members always stay and most of the time participate in activities of programme-production and programme sending-out in the respective workplaces. The programme-production staff members have their work spaces in the building for the programme-production department, and stay there unless programme-production is conducted in the TV studio building. The per-person rate of space occupation exceeds $20m^2$ and moreover, the rate of each person remaining in his (her) seat is less than 50%. Thus, the same as in the case of staff members working in the Radio/TV Administration building ($19m^2$/person), an ample space is secured for each staff member. So, no room will be considered in particular for use by the programme-production staff.
The engineering staff also need no such an office space as to accommodate all of them in the TV studio building, because of the reason mentioned above.

3-2-2 Implementation Plans

As already mentioned, Lao National Television at present conducts 3 to 3 and a half hours of TV broadcasting a day. Under the Director General, it has a total of 78 staff members; 50 in the broadcasting department and 27 in the engineering department.

Its operational expenses are covered entirely within the national budget. For 1991, expenditure from the national treasury is scheduled to consist of 55,000,000 kips in domestic currency and 70,000 US dollars in foreign currency. In addition to these, starting this year, advertisement revenue (from department stores, beer breweries, soft-drink companies, etc.) of 3,000,000 kips is estimated to be earned.

At the time this project will have been completed, it will be necessary to extend the daily broadcasting hours to more than 4 hours and, in order to cope with the increase in the amount of programme-production and other work, to increase the number of personnel by 20. This increase in the number of personnel will require an increase of 4,800,000 kips in personnel expenses.

After the completion of the project, there will be an inevitable need to increase the expenses relating to the new studio building, in addition to the above-mentioned increase in personnel expenses.

As shown in Table 2-2-1, the amount of the national budget allocated to Lao National Television has been increasing every year since 1988 at an annual rate of more than 10%. In this respect, assurance has been given by an official responsible for finance at the Ministry of Information and Culture that every responsible effort will be made to ensure the securing of necessary funds to cover the operational expenses after the completion of the project.

Furthermore, with the completion of this project, the resultant expansion of the service area and the qualitative improvement of the programmes to be produced will attract the interest of advertisers and so a further increase in the income from advertisements may be expected.

For the education and training of the new recruits at Lao National Television, a period of three months is scheduled and the training is conducted normally in the following three stages. The training is conducted mainly in the form of on-the-job training, and the new recruits are usually assigned to their respective workplaces after having completed this training course.

1st stage: Observation of activities at the workplace 3 weeks
All the trainees, regardless of their job classification, are taken around all the workplaces.

2nd stage: On-site training 6 weeks
Practical training at each workplace will be given, according to the job classification to which each person belongs.

3rd stage: Lectures 3 weeks
In order for the trainees to clarify various questions they may have encountered during the training at their respective workplaces, a series of lectures will be given by the specialists in different fields.

Lao National Television is already considering the possibility of increasing its personnel in the next fiscal year and onwards and, therefore, it is considered that there will be no problem about the plan to increase the personnel by 20 at the time of completion of this project.

3-2-3 Relation to Similar Projects and Other Assistance Projects

(1) Reception-only Chinese Station for Satellite Broadcasts

On the same site as the one on which the studio building under this project is to be constructed, a plan is in progress to construct a reception-only Chinese Station for Satellite Broadcasts.

At the stage where our Basic Design Study Team was conducting its field survey, the construction of the Chinese station had already begun with September 1991 set as the scheduled time of completion. On the site with an area of 900m^2 (30m×30m), a large parabolic antenna and a station building of about 10m×10m in scale are planned to be constructed.

Using this reception-only station, Lao National Television plans to receive, and use in overseas news and other programmes, the TV programmes transmitted from China through the ASIASAT I satellite.

(2) Cooperation from the Soviet Union

The assistance given in communications and broadcasting by the Soviet Union with which the Lao PDR has been in close cooperation are as follows:

1) Construction of an Earth Station for the Intersputnik Satellite Communications —— completed in 1981

As a result of completion of this station, it became possible for Soviet TV programmes to be delivered to Vientiane via the Intersputnik satellite and, using the programmes thus received, a TV broadcasting service for the Soviet residents in Vientiane was conducted. (This service is currently suspended.)

2) Construction of a Medium-wave Radio Transmitting Station —— completed in 1985

With a transmitting output of 150kW and transmitting frequency of 580kHz, this station is located 49km north of Vientiane and is currently used by Lao National Radio in transmitting its domestic programmes.

3-2-4 Component Factors of the Project

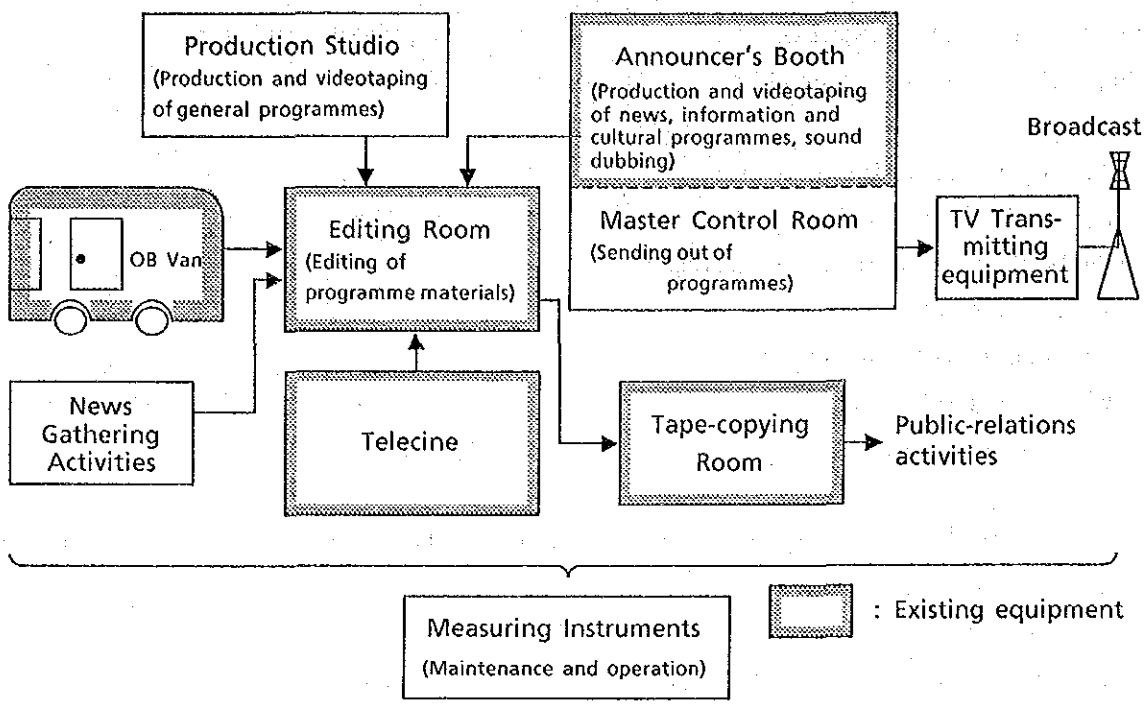
This project concerns the construction of a studio building and provision and installation of equipment required in line with the objectives of the project. It consists of the following component factors:

(1) TV transmitting equipment	1 set
(2) Production Studio equipment	1 set
(3) Master Control Room equipment	1 set
(4) ENG equipment	1 set
(5) Measuring instruments	1 set
(6) Spare parts, etc.	1 set
(7) Studio Building	Approx. 980m^2

In addition to the above new equipment, the existing equipment below will be transferred and used.

(1) Announcer booth equipment	1 set
(2) Programme-editing equipment	3 sets
(3) Tape-copying Room equipment	1 set
(4) Telecine equipment	1 set
(5) OB Van equipment	1 set

As shown in the following diagram (where shaded components are the existing ones), these component factors are indispensable for the TV broadcasting system, from the production of programmes to the transmission of the programmes on TV waves.



Main units of equipment used in each component factor are shown in Fig. 3-2-1.

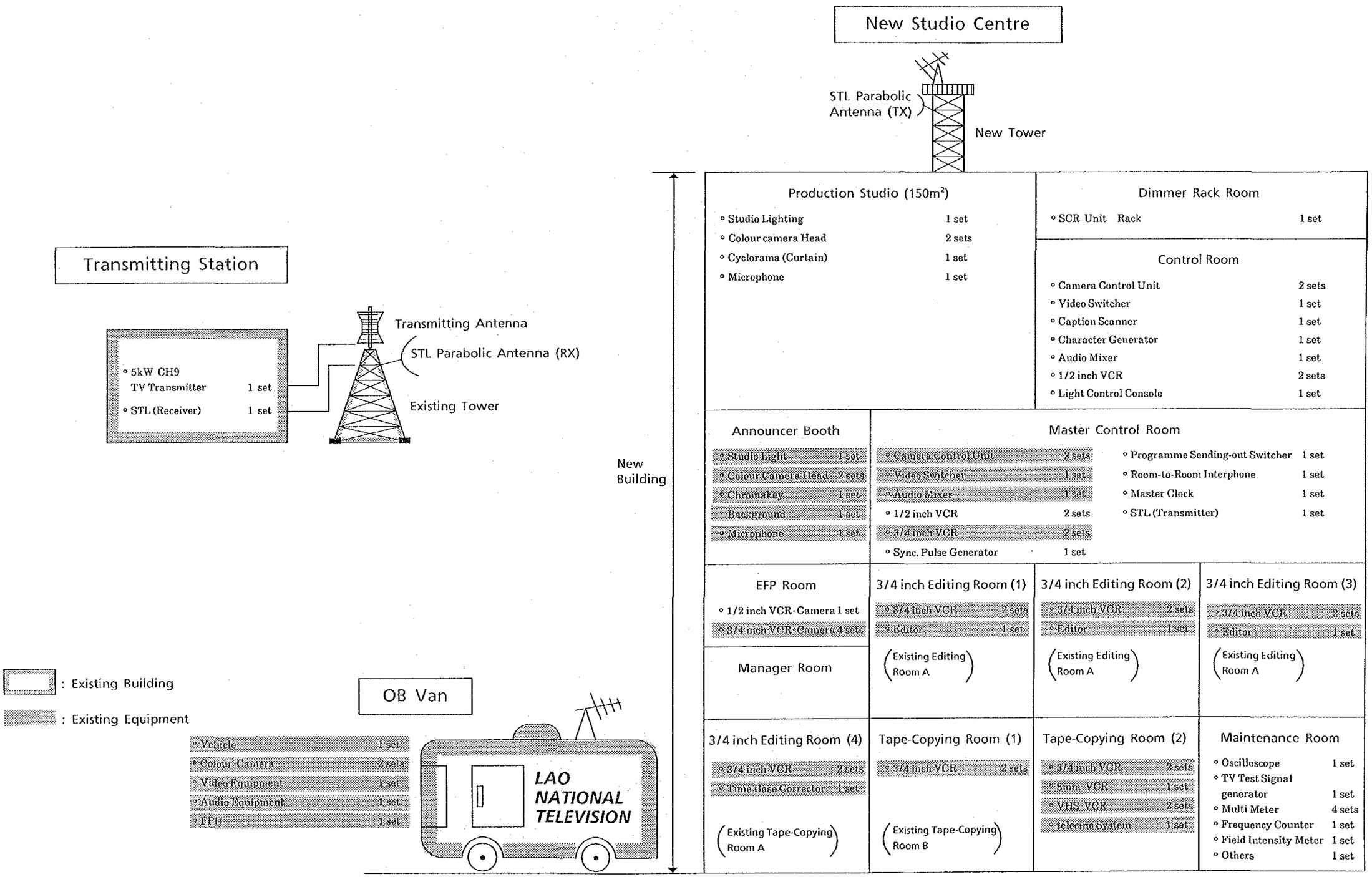


Fig. 3 – 2 – 1 Equipment Components Making up the Project

3-2-5 Contents of the Facilities and Equipment Requested

The Government of the Lao PDR plans not only to offer daily-life information to the people but also to make positive use of TV broadcasting in enhancing the people's educational and cultural levels. Regarding the upgrading of the facilities and equipment that will best match the purposes mentioned above, examination of the contents will now be made according to the items requested by the Lao PDR.

(1) Contents of the Request

1) Construction of Facilities

① Office ② Studio ③ Master and Sub-control rooms ④ Editing room ⑤ Telecine room ⑥ Maintenance room ⑦ Storeroom ⑧ Air-conditioning equipment, etc.

2) Upgrading of Equipment

① Transmitting equipment ② Studio equipment ③ Measuring instruments ④ Equipment for the editing room ⑤ ENG equipment ⑥ Equipment for the VTR room ⑦ Equipment for programme sending-out ⑧ Equipment for dubbing room ⑨ OB van ⑩ Spare parts ⑪ Tools for installation work, and other items

(2) Examination of the Contents

1) Outline of the Existing Facilities

As shown in Fig. 3-2-2, there are at present six facilities on the site of Lao National Television. Of these six facilities, the TV studio building, for which a request has been made for new construction, is a building constructed more than 30 years ago and had been used until 1983 as radio broadcasting facilities. Simultaneously with the completion of the construction of the present radio broadcasting facilities under financial assistance given by Britain, the old radio facilities were remodelled as TV broadcasting facilities. It was in that same year that Lao National Television started its operations. With a total floor space of about 350m^2 and of a single-story structure, this building houses a studio of about 110m^2 in floor area, a sub-control room, a transmission operation room, tape-editing rooms, a dubbing room, a telecine room, a maintenance room, a storeroom for outside coverage equipment, offices, etc. (See Fig. 3-2-3)

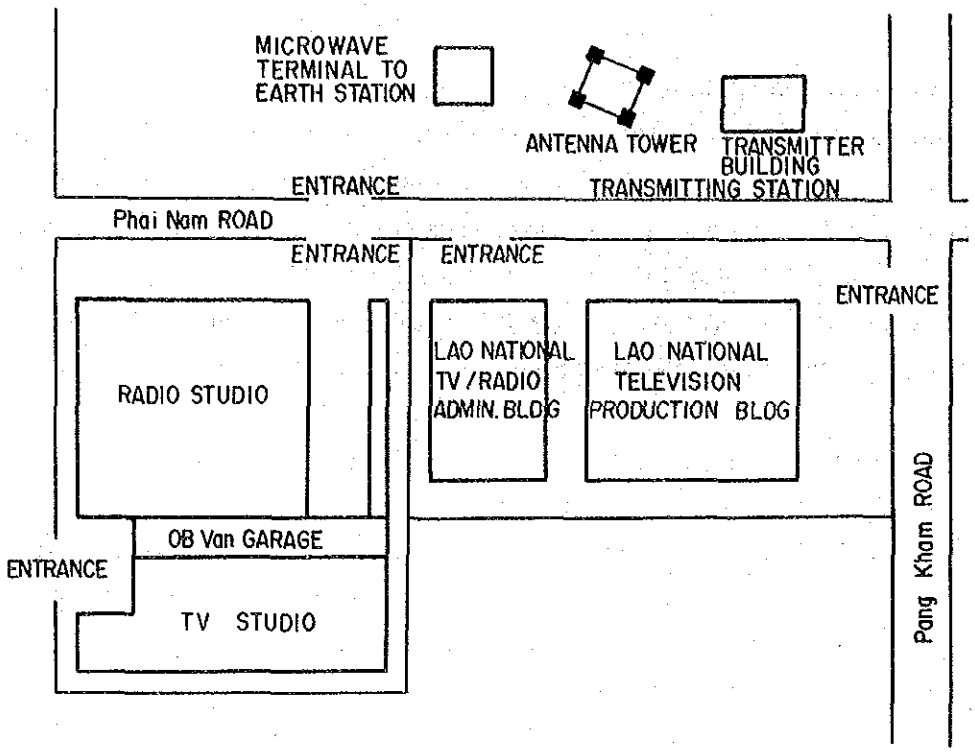


Fig. 3-2-2 Layout on the Site of the Lao National Television

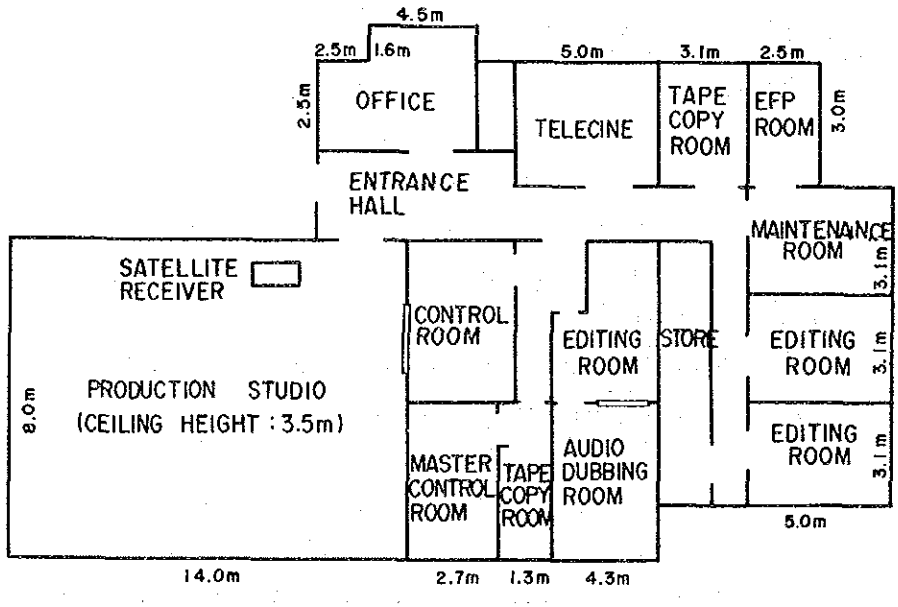


Fig. 3-2-3 Plan of the Existing Studio Building of the Lao National Television

An outline of architecture and building equipment of the existing facilities is as follows:

Structure : Columns and beams — reinforced concrete

Roof : Wooden roof-truss covered with corrugated asbestos-cement sheets

Walls : Brick masonry finished with mortar and paint
(Only the interior of the studio is given a simple sound-absorption finish.)

Floor : Mortar, steel troweled finish

Ceiling : Wooden fiberboards

Doors and Windows : Wood (in general)

Building Equipment : The spotlight for construction work is used for studio lighting.
General lighting fixtures are of direct mounted type. The air-conditioners are all of window-type in every room and are without a silencer.

2) Examination of Appropriateness of the Request

Though the existing TV studio building has the minimum functions of a TV broadcasting station, it is unsuitable as a facility to house the equipment to be provided. Therefore, the request on the construction of the new facilities is an appropriate one. The following are the reasons why the request has been considered as appropriate:

① With over 30 years having passed since the building was constructed, it has become greatly superannuated. Its durability as a building has almost reached the limit.

② In the light of the programme-production plans, the floor area of the existing building is considered much too inadequate to install the various items of equipment to be provided. Actually, three times as much floor area will be required.

③ In view of the structure of the present studio building and its position on the site, it is impossible to re-use the same building by remodelling.

3) Contents of the Requested Facilities

The TV studio building for which a request has been made by the Lao side includes the following rooms which are contained in the existing one.

① Offices
② Studio
③ Master Control room
④ Sub-control room
⑤ Editing rooms
⑥ Tape-copying rooms
⑦ Telecine room
⑧ Storeroom for field production equipment
⑨ Maintenance room
⑩ Building equipment rooms such as air-conditioning equipment rooms, etc.

As a result of examination of the necessity and consultations conducted with different parties concerned on the Lao side regarding the rooms requested, it has been decided that some additions should be made, as follows:

① Announcer Booth

At present, Lao National Television makes it a practice to pre-record on videotape the news to be broadcasted each day. As a result, the sole production studio is used every day exclusively for the videotaping of news, thus preventing production of programmes that are closely related to the daily lives of the people.

So, in the new studio building, an announcer's booth will be provided so that it may be used for such purposes as the videotaping of news, production of small-scaled programmes and insertions of announcements into intervals between programmes.

② Scenery Area

Since the present studio was originally for a radio broadcasting, there is no such area and, as a result, inconveniences are currently being experienced because of

there being no alternative but to use the space available in the studio to store the stage settings and props.

③ Conference Room

Although no room will be reserved in the new facility specially for the producers, a conference room will be indispensable for use in holding discussions with the producers about programme production.

4) Upgrading of Equipment

a) Transmitting Equipment

① Transmitter

The request made is based on the desire of Lao National Television to increase the output of the transmitter from 1kW to 5kW in order to expand the service area. The effective radiation power of the existing transmitter and antenna system is 8.3kW maximum and the radius of service area is approximately 35km.

On the other hand, the targeted radius of new service area is 55km.

A 5kW transmitter and directional antenna system will be able to provide the maximum effective radiation power of 83kW, where the calculated radius of service area is about 54km.

The distance is nearly equal to the targeted radius of 55km and therefore the transmitter output of 5kW is considered appropriate.

② Antenna

The antenna in current use is omnidirectional. However, it has been decided that a directional antenna will be used instead, because the measures taken to hold down the emission of the TV waves as much as possible toward the Thai side will directly lead to the obtaining of a wider service area in the Lao territory with the same transmitter output.

③ Steel Tower and Transmitter House

It would be much desirable to construct a new tower and a transmitter house adjacent to the studio building in the new site, however, the existing tower (100m high) is

still in good conditions and capable for setting a new directional antenna system.

Also, there is a space for accommodation of a new transmitting equipment next to the existing transmitter room.

In view of the facts mentioned above, the existing tower and transmitter house will be used as they are.

④ Transmission Channel

For reasons to be given later in this report (See 4-2-2), the transmission channel will be changed from the present Channel 8 to Channel 9.

⑤ Programme Transmission Link

The new studio building is going to be about 5km away in a straight-line distance from the existing transmitting station. So, the need will arise for a programme transmission link to send programmes from the new studio building to the transmitting station.

b) Production Studio Facilities

The types of programmes that can be considered for production in the new production studio for the time being include those mainly consisting of speeches, such as dialogues, discussions, commentaries and lectures, and those that involve demonstrations, such as cooking, handicrafts and science experiments.

There also is the need for enabling production, in this studio, of such other types of programmes as small and medium-scale music, dance, audience participation programmes (including quiz programmes for children) and dramas (including skits for insertion in educational programmes) as well. For that purpose, it often becomes necessary to take all kinds of shots, from close-up shots of the hands of performers to the long shots taking a wide scene in a single shot by drawing the camera back in full. It, therefore, is necessary to make sure that the floor area of the new production studio will be at least $150m^2$ and that the height of the cyclorama, which constitutes the backdrops of the pictures shot, will be about 4m.

For the videotaping of a large-scale drama or musical, a studio floor of at least 300-500m^2 will be required. So, in order to enable construction of such a studio in the future on the same site, due consideration will be given in designing the layout of the buildings to be constructed on the site.

c) Master Control Room Facilities

An announcer booth will be provided in the master control room for use not only in inserting various notices into intervals between programmes but also in pre-recording the news, as mentioned below, and the production of small-scale programmes.

Lao National Television makes it a practice to pre-record on videotape every day the news to be broadcast the same evening or the following morning. Hence, the production studio is used daily for the videotaping of news, with the result that the production of other programmes, such as educational programmes, public-relations programmes and music programmes is restricted. In order to avoid such a situation arising in the new studio building, the master control room shall have an announcer booth attached to it so that the videotaping of news may be done during the hours when programme transmission is not being conducted, by using the existing equipment and the equipment to be newly installed in the master control room.

Furthermore, in the new studio building, 1/2-inch videotapes will be used, although 3/4-inch tapes are in current use. Consequently, during the transition period, there inevitably will be a certain degree of mixed use of the two types of tapes. In order to cope with this situation, the existing two VCRs will be moved into the master control room so that programmes may be sent out on 3/4-inch tapes as well.

d) Editing Facilities

Four editing rooms will be planned. Existing 3/4-inch VCRs will be installed and used.

For use in handling the editing work resulting from the four

sets of the existing ENG equipment (using 3/4-inch tapes), three rooms will be provided and the existing editing equipment will be moved into these rooms and one room will accommodate the existing tape-copying facilities mentioned below.

e) Tape-copying Facilities

These are the facilities for use in such work as mutual conversions of VTR tapes of different formats, such as 8mm, VHS or 3/4-inch, and in producing their copies. The existing facilities will be used as they are. Telecine will also be moved into this room.

f) OB Van

Considering the fact that the operation rate of the existing OB van is 1-2 times a month (mainly for sports coverage and transmission of national events), the existing van will continue to be used as it is.

g) ENG Equipment

For news-gathering and outside coverage work, one set of ENG equipment will be newly provided. The ENG set consists of a portable camera and a 1/2-inch tape-format VCR with such accessories as battery, battery-charger, audio equipment and lighting equipment.

h) Measuring Instruments

The only existing measuring instrument being an oscilloscope, Lao National Television is unable to conduct its maintenance work properly. In order that the conditions of the equipment for routine use may be grasped accurately so as to ensure their proper operation, measuring instruments that are easy to use, reliable and sturdy will be provided in accordance with the types of maintenance items.

i) Spare Parts

Provision will be considered of spare parts which will be

required in the operation of the various units of equipment during the period of about one year after installation.

j) Materials for Installation Work
Various types of connection cables, wire rods, connectors, insulation tapes, etc., for use in the installation of equipment, will be supplied.

3-2-6 Necessity of Technical Cooperation

At present (May 1991), at Lao National Television, a total of 78 staff members are working and the composition of the personnel is as shown in Fig. 2-2-1.

In order to cope with the increase in broadcasting hours, expansion of programming, increase in facilities and equipment and the management of the new studio building, all of which will occur after the completion of this project, there is the need of newly adding about 20 staff members. Of these, three will need to be trained in the techniques to operate the new production studio and one in editing techniques. As for the training of such new engineering personnel, measures shall be taken to enable them to learn the methods of handling the newly introduced equipment at the time such equipment is installed.

The training of new personnel may be conducted by means of on-site practical training and also under the guidance of Lao National Television's own engineers.

As outlined above, the implementation of this project can actually be conducted even without technical assistance.

However, the Government of the Lao PDR earnestly desires the sending from Japan of experts and the training in Japan of Lao personnel in both the engineering and the programme-production aspects. It is, therefore, strongly hoped that technical cooperation be carried out by all means, in order to enhance the overall technological level of Lao National Television and also to achieve qualitative improvement of its programmes.

3-2-7 Basic Policy for Implementation of Cooperation

As regards the implementation of this project, as examined in the previous sections such as 3-2-1 and 3-2-2, it has been confirmed that the project will be effective and realistic and that the country concerned possesses ample ability to implement it. It has also been confirmed that

the effects of this project are perfectly in conformity with the Japanese system of Grant Aid cooperation. Consequently, it has been judged that it is most appropriate to implement this project through Japan's Grant Aid assistance.

So, on the premise that this project will be implemented by means of Japan's Grant Aid assistance, the outline of the project will be examined in the following pages and the basic designing will be carried out. However, as already mentioned in the course of examination of the project's component factors and the contents of the facilities and equipment requested, it is appropriate to change a part of the request made.

3-3 Outline of the Project

3-3-1 Executing Organization and the Operational Structure

The executing organization for this project is Lao National Television which is under the Ministry of Information and Culture. The project will be implemented with close cooperation given by the Ministry of Information and Culture as the higher level organ and the operation of the facilities after their completion will be taken charge of, as hitherto, by Lao National Television.

Even though the history of Lao National Television is relatively short, only eight years having passed since its establishment, it is judged that the organization is fully qualified as the executing body of this project, in view of the various advantages it has, such as, the excellent managerial ability and executive power, its determined attitude toward qualitative improvement of its programmes and the way the existing units of equipment are being maintained.

3-3-2 Project Plans

As shown in Fig. 3-3-1, at the time of completion of this project, continuous use of the studio for long periods will become feasible as a result of the provision of one production studio and one announcer booth and installation of an air-conditioning system in the studio.

As a result, the number of hours of programmes that can be produced will be increased to about 17 hours, including news and about six new programmes. Thus, the number of total broadcasting hours, too, can be extended to about 4 hours a day, which is the interim target of Lao National Television. The basic daily programmes are shown in Table 3-3-1.

As to the production of news, it has hitherto been the practice to broadcast, in the early morning hours, a repeat of what was broadcast the previous day. However, when the project is implemented, it will become possible to newly produce news for the next day and to transmit more up-to-date information.

Thus, independently produced programmes will come to account for 60% of all broadcasts, with the result that more programmes which are more closely related to the people's lives in the Lao PDR will come to be produced and broadcast, bringing the programmes of Lao National Television closer to the hearts of the people of Laos. The programme production

schedule using the production studio and the announcer booth is as shown in Table 3-3-2.

An staff increase of eight persons will become necessary to be directly concerned with the in-studio production of programmes. In addition, personnel in charge of VTR editing (2 persons) and new programmes (4 persons) will be required to be engaged in the programme production work, making the total additional requirement of staff personnel, 14 persons.

Besides those mentioned above, it is necessary to consider assigning at least two persons as maintenance staff for the technical facilities.

If all the factors mentioned in the foregoing data were taken into account, the required number of additional staff members would be 16. However, if the actual working conditions, such as holidays and leaves, were taken into consideration, the required number of additional workers would be 20, which is 1.25 times *Note 1) the above-mentioned figure of 16.

*Note 1)

$$\frac{365 \text{ days}}{365 \text{ days} - \underline{52} \text{ days (holidays)} - \underline{7} \text{ days (national holidays)} - \underline{15} \text{ days (paid leaves)}} = 1.25$$

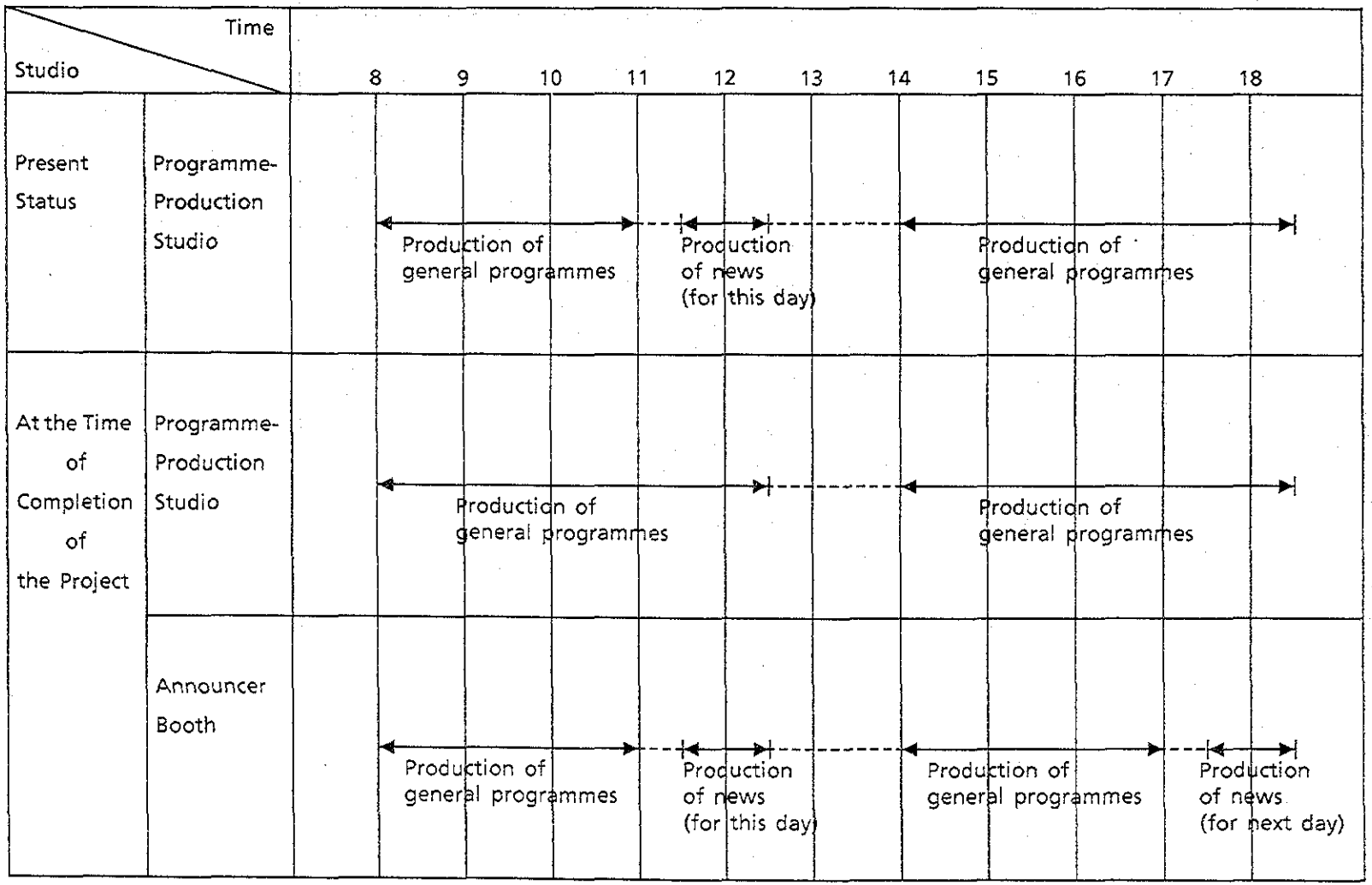


Fig. 3-3-1 Studio Usage Time Allocation

Table 3-3-1 Table of Basic Programmes at the Time of Completion of the Project

(1) Early-morning Programmes

Time	Broadcast Time	Contents
7:00 ~ 7:15	15'	News (domestic)
7:15 ~ 7:30	15'	News (overseas)
7:30 ~ 7:35	5'	Spots/public relations
7:35 ~ 7:50	15'	For women, young people, school broadcasts, etc.

(2) Night Programmes

Time	Broadcast Time	Contents
19:00 ~ 19:30	30'	For children
19:30 ~ 19:35	5'	Spots/public relations
19:35 ~ 19:50	15'	News (domestic)
19:50 ~ 20:05	15'	News (overseas)
20:05 ~ 20:10	5'	Spots/public relations
20:10 ~ 20:40	30'	Documentary
20:40 ~ 20:45	5'	Spots/public relations
20:45 ~ 21:15	30'	Information
21:15 ~ 22:15/22:45	60/90'	Classical entertainment arts/traditional music/sports/drama/viewer's participation programmes

Table 3-3-2 Production Schedule for General Programmes at the Time of Completion of the Project (Weekly)

Studio	Day of Week	Programme Contents	Weekly Programming			Studio Usage Rate *Note 1)	Studio Occupation Time
			Duration	No. of Programmes	Total		
Production Studio	Mon	For children	30'	3	90'	7	630' (10:30)
	Tue	Documentary	30'	3	90'	7	630' (10:30)
	Wed	Classical entertainment arts/ traditional music/open-studio programmes	60'	1	60'	10	600' (10:00)
	Thu	Classical entertainment arts/ traditional music/open-studio programmes	60'	1	60'	10	600' (10:00)
	Fri	Classical entertainment arts/ traditional music/open-studio programmes	60'	1	60'	10	600' (10:00)
	Sat	Spots	5'	4	20'	10	200' (3:20)
	Sun *Note 2)	——	—	—	—	—	——
Announcer Booth	Mon	New information	15'	4	60'	5	300' (5:00)
	Tue	New information	15'	2	30'	5	150' (2:30)
	Wed	Information	30'	2	60'	5	300' (5:00)
	Thu	Information	30'	2	60'	5	300' (5:00)
	Fri	Information	30'	2	60'	5	300' (5:00)
	Sat	Information	30'	1	30'	5	150' (2:50)
	Sun *Note 2)	——	—	—	—	—	——

*Note 1) Duration of the programme being produced as against the studio occupation time. Depends on the contents and scale of the programme.

*Note 2) During the hours outside the time when the studio is used for news production, the time will be devoted to the maintenance of equipment.

3-3-3 Location and Condition of the Project Site

The project site of construction is located about 5km to the north of the existing studio in the centre of Vientiane and about 1.4km to the west of National Highway No. 13 (See Fig. 3-3-2). The site is of a rectangular shape extending about 200m from north to south but with its southeastern corner broken off. The total land area is about 7.8ha. The site is surrounded by a temporary fence and is also girded by a road 6-7m in width. Across the road on the neighbouring plot of land to the east stands a government-related facility known as KM6 and to the west is the radio transmitting station. From the northwest to the southeast of the site, the land slopes down gradually. Still, the site is located on the highest level (180-185m above sea level) of ground in the vicinity of Vientiane. There is no object in particular that needs to be removed, and the ground is nice and firm. Along the road on the southwestern side runs a 22kV power line, while a 150mm-diameter main pipe line for city water is laid underground near the border of the site. So, the site can be considered as one that ideally fulfills all the conditions required as a construction site (See Photo 3-3-1). Lao National Television has already obtained a permit from the Government of the Lao PDR for the proposed use of this plot of land as the construction site. Thus, it has been confirmed that there will be no problem regarding the construction of the new facility, as long as it is constructed on the site within the existing fence.

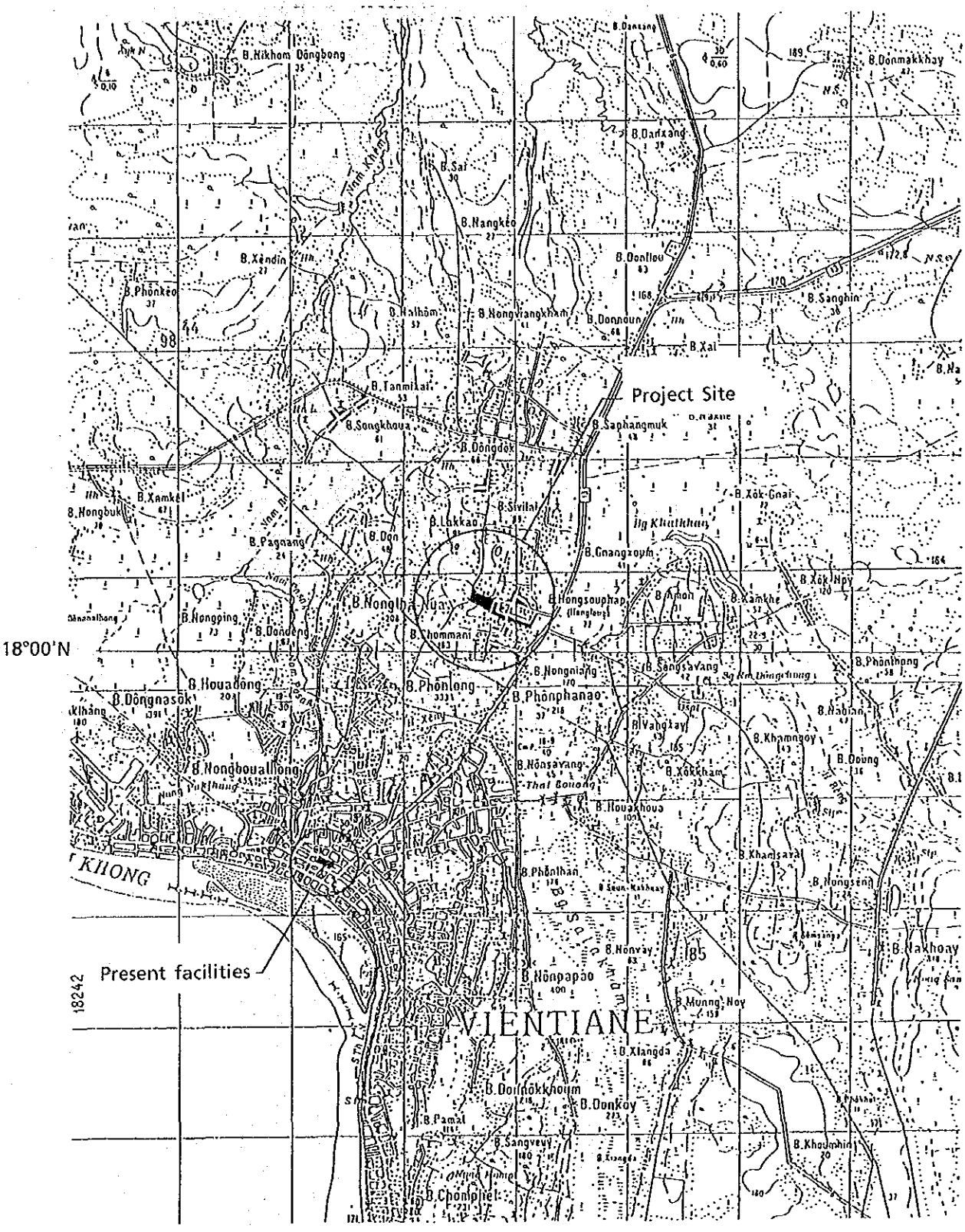


Fig. 3-3-2 Map Showing the Location of the Project Site

(Scale: 1/100,000)

Photo 3-3-1 Full View of the Project Site

(Photographed from the existing radio transmitting station)

3-3-4 Outline of the Facilities and Equipment

The following is an outline of the facilities and equipment to be constructed or provided in the course of implementation of this project which is being carried out with the Japanese government's Grant Aid assistance.

(1) Outline of the Facilities

- New TV Studio Building of Lao National Television : One (1) building
- Functions of the Building : TV studio building
- Structure and Scale : Ferro-concrete, 3 stories above the ground
  Construction area: approx. 790m^2
  Total floor area: approx. 980m^2
- Main Rooms : Studio (approx. 150m^2)
  Sub-control room (50m^2)
  Master control room (70m^2)
  Announcer booth (30m^2)
  Editing rooms-4 (35m^2)
  Tape-copying rooms-2 (45m^2)
  Scenery area (60m^2)
  EFP room (20m^2)
  Maintenance room (20m^2)

(2) Outline of Broadcasting Equipment

1) Outline of the Transmitting Facilities

Provision of a 5kW full solid-state VHF TV transmitter will be planned.

The exciter shall be an automatic change-over type, so that when the exciter in use is in trouble, it may automatically be switched to the standby unit. As to the power-amplifying stage, it shall consist of more than one power amplifier so as to give it ample redundancy, thereby securing high reliability of the equipment as the transmitter system.

As the ancillary devices attached to the transmitter, the following units will be provided; CIN diplexer, U-link, dummy load, power supply board and lightning-resistant transformer. The CIN diplexer is used for the purpose of supplying power to

the antenna in the form of TV transmitter output which the diplexer produces by combining the transmitter's visual and aural outputs.

The U-link is a switcher to connect the above-mentioned diplexer output to either the transmitting antenna or the dummy load. Normally, the transmitter output is connected to the antenna and is emitted as radiowaves. When the transmitter is tested or adjusted, the transmitter output is connected to the dummy load. By doing so, one can conduct a performance test of a transmitter without allowing the transmitter to emit unnecessary radiowaves. The power supply board is used for supplying the necessary power to the transmitter.

The lightning-resistant transformer is installed at the power receiving equipment of the transmitter building so that the entry of abnormal voltage into the power source for the transmitter may be prevented.

Furthermore, a programme input device and a monitoring device will be provided so that video and audio signals may be supplied to the transmitter and so that the signals from various stages of the transmitter may be monitored and the overall performance of the transmitter may be grasped. These devices consist of such units as the video distributor, audio limiting amplifier, colour-bar generator, video/audio demodulator, video monitor and audio monitor.

As for the transmitting antenna system, a 4-dipole panel antenna *Note1), 4 stacks, will be installed for each of the northeastern and the northwestern directions, and a 2-dipole panel antenna *Note1), single stack, for the southeastern direction. And each of these transmitting antennas and the transmitter will be connected with a main feeder of 1-5/8-inch in diameter. The panel antennas will be installed on the existing steel tower (about 100m high).

The transmitting station and the new studio building are located about 5km away from each other. In order to transmit the programmes from the studio building to the transmitter, a

*Note1) A 4-dipole panel antenna has four dipole antennas attached to each panel, while a 2-dipole panel antenna has two.

microwave link (STL) on a 7GHz band will be installed. Also for communication use between the two points, a radio telephone on a 400MHz band will be provided.

2) Outline of the Production Studio Facilities

One medium-size production studio with a floor area of about 150m^2 will be provided. This studio will be used for the production of such programmes as educational programmes including lectures and discussions by intellectuals, cultural programmes such as skits, music, dances, handicrafts and science experiments, and audience-participation programmes that help develop the people's feeling of familiarity with the TV broadcasting station.

The main items of equipment to be provided will consist of two colour cameras, one video switcher, one audio mixer, 2 sets of 1/2-inch VCRs, one set of studio lighting equipment, and one set of video/audio monitoring equipment. The composition of the equipment to be provided shall be that which is suited to the production of such programmes as mentioned above.

3) Master Control Room Facilities

In the master control room, an announcer booth will be provided so as to enable pre-recording of news, production of small-scale programmes and insertion of announcements into the intervals between programmes. In this booth, two cameras will be installed so that two newscasters may be shot alternately in an appropriate way. The existing equipment to be transferred to the announcer booth and the new equipment to be installed in the master control room will be so allocated to enable their being made common use of as much as possible, taking into account the need to enhance efficiency in the use of various items of equipment and to streamline the work. In the master control room will be provided such items of equipment as a video and audio sending-out switcher, two 1/2-inch VCRs, synchronizing signal generators to synchronize all the video signals within the station and an accurate master-clock device. With this master clock, a slave clock installed in the master control room directly related to

programme sending-out will be driven to set the standard time for the operation of the TV broadcasting station.

4) ENG Equipment

One set of ENG equipment will be provided for use by a coverage team working outside the station. A set of equipment will consist of a set of transportable camera-VCR with which a CCD camera and a 1/2-inch VCR are combined, wireless microphone and a transportable lighting equipment unit.

5) Measuring Instruments

Various types of measuring instruments which are considered necessary for routine maintenance and checking of equipment will be provided. They include an oscilloscope, test-signal generator, avometer, audio measuring instrument, frequency counter and field-intensity measuring instrument, etc.

6) Spare Parts

Enough spare parts will be provided to enable operation of the facilities and equipment without an additional supply of spare parts for about a year after their installation. During that period, Lao National Television will determine the estimated consumption of such spare parts and will take necessary steps to ensure prompt budgeting for the expenses required.

7) Construction Materials for Installation Work

For connection between different facilities and installations, various items of materials, such as video cable, audio cable, power cable, various types of connectors and insulation tapes, are used. So, these will be supplied in quantities sufficient to meet the requirements.

3-3-5 Maintenance and Management Plans

Regarding the maintenance and management of the facilities, materials and equipment to be provided under this project, the methods of uses and those of maintenance and inspection, necessary explanations and guidance will be given at the time of the completion of construction and handing over the facilities and equipment.

All the maintenance, management and operation expenses required after completion of this project will be covered by the national budget.

The annual maintenance and management expenses, calculated on the basis of the results of the surveys conducted in the Lao PDR and various data obtained, are roughly as follows:

• Utility expenses required in operating the facilities	5,100,000 kips
• Materials, equipment and consumables	45,000,000 kips
• Maintenance and management	29,000,000 kips
Total:	79,100,000 kips

The utility expenses required to be paid in operating the facilities consist of such charges as those for electricity, city water and telephones.

As to the expenses for supplies and consumables, a rough estimate will be given here concerning the main items (VTR tapes, electric bulbs for the lighting of the TV studio) for which an increase in budget will become necessary following the expansion of programmes and facilities after completion of this project.

With regard to the expenses required for maintenance and management of supplies and equipment, an indication will be given as to how the maintenance should be conducted and how the expenses should be dealt with.

(1) Utility Expenses Required in Operating the Facilities

1) Calculation of Electricity Charges

Consumption : Estimated at 1,430kWh/day
35,750 kips/month (= 1,430 × 25 days)
Rate : 10 kips/kWh
Monthly charge : 357,500 kips/month (= 35,750 × 10)
Annual charge : 4,290,000 kips/year (= 357,500 × 12)

2) Calculation of Water Charges

Consumption : Estimated at $8m^3$/day
$200m^3$/month (= 8 × 25 days)
Rate : 60 kips/m^3
Monthly charge : 12,000 kips/month (= 60 × 200)
Annual charge : 144,000 kips/year (= 12,000 × 12)

3) Calculation of Telephone Charges

Number of calls : Estimated at 40 calls/day
1,000 calls/month (= 40 × 25 days)

Rates : Less than 30 calls/month 4,000 kips
Over 30 calls/month 50 kips/call

Monthly charge : 52,500 kips/month (= 4,000 + 50 (1,000 − 30))

Annual charge : 630,000 kips/year (= 52,500 × 12)

The total of the estimated amounts of utility expenses required in operating the facilities as outlined above will be 5,064,000 kips (about 5,100,000 kips).

(2) Expenses for Supplies and Consumables

1) Calculation of Expenses for Purchase of Videotapes

a) Tapes for Programme Production

The total number of programmes broadcast during one week is 83. The total number of tapes required in transmitting these 83 programmes is 83 rolls.

Each roll of videotape is used in a sequence of recording - editing - broadcast - short-term preservation and is used repeatedly by rewinding. Assuming that this cycle of use is repeated every four weeks, each videotape will have exceeded its limit of usage after one year and will have to be discarded.

Consequently, the number of videotapes required each year would be 83 rolls × 4 weeks = 332 rolls. If cases where some programmes are preserved for a long period or the need for some spare tapes were also taken into account, a total of 400 rolls of videotapes would be required each year. And assuming that a roll of videotape (long type) costs 27,400 kips (5,200 yen), the amount required would be 10,960,000 kips a year.

(27,400 × 400 = 10,960,000 kips)

b) Tapes for ENG

Assuming that one set of the ENG system to be newly provided were to be operated every day, making repeated use of tapes at a cycle of 2 weeks, a total of 28 rolls of tapes will be

required each year as follows:

2 rolls/day × 7 days × 2 weeks = 28 rolls

However, these videotapes need to be supplied twice a year. Therefore;

28 rolls × 2 times = 56 rolls

However, in view of the fact that, generally speaking, programme materials recorded on ENG tapes are in many cases preserved for a long period, a total of 70 rolls would be required a year. Assuming that a roll of videotape (short type) costs 13,400 kips (2,550 yen), the amount of expense required annually would be 938,000 kips.

(13,400 × 70 = 938,000 kips)

c) Calculation of the Cost of Light Bulbs for Studio Lighting

- Operation hours for studio
  Monday-Saturday Total 9 hours
  Annual operation hours:
  9 hours × 6 days × 52 weeks ≒ 2,800 hours
- Assuming that 60% of all the lights installed are used during the operation hours mentioned above;
  120kW × 60% × 2,800 hours = 201,600kWh
- Since the average rated life of an electric bulb used for TV studio lighting is about 300 hours;
  201,600kW ÷ 300 ≒ 672kW
  This would be the amount of bulbs consumed.

Assuming that the price of a bulb is 49,000 kips (9,300 yen) per 1kW, the annual expense for the bulbs would be 32,928,000 kips.

(49,000 × 672 = 32,928,000 kips)

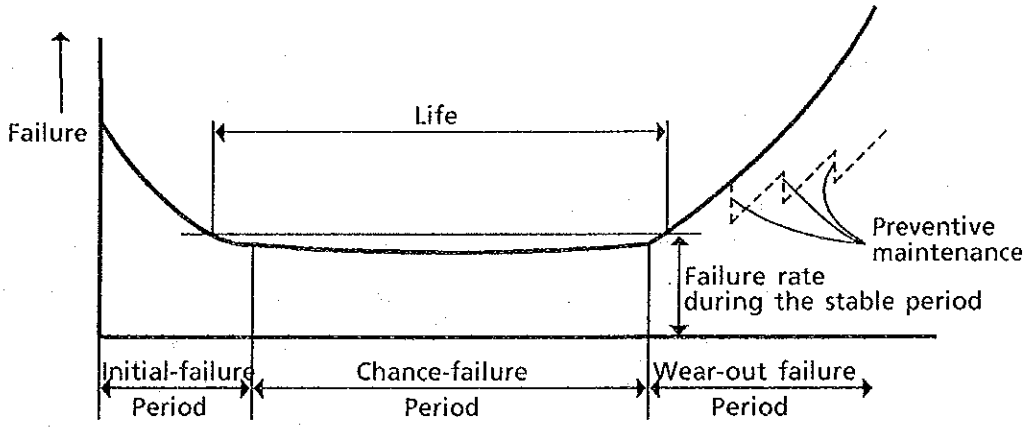
So, as outlined above, the total expenses for the supplies and consumables would be 44,826,000 kips (about 45,000,000 kips) per annum.

(3) Maintenance and Management Expenses

1) Broadcasting Equipment

All the units of equipment to be provided under this project will be those using semiconductors and therefore, unlike the vacuum-tube types, they have no element requiring periodical replacements. However, in the case of video tape recorders and audio tape recorders, there is the need for periodical changing of their heads because of wearing out. Also indispensable are the supplies of such consumables as fuses and lamps.

Generally speaking, failures of broadcasting equipment occur at the following rate with the passage of time:



① Initial Failure Period

The failures occurring during this period are initial failures caused by shortcomings in designing or manufacture. So, during this period, it is important to ensure speedy exchanging of information between the user and the supplier so that necessary measures may be taken quickly by detecting the cause of the failure.

② Chance-failure Period

After improvements are made during the above-mentioned initial-failure period, the failure rate thereafter will be kept at a certain low level. The life of a unit of equipment is the period when the failure rate is maintained below the

prescribed level, prior to entering the next period, that is, the wear-out failure period.

③ Wear-out Failure Period

After the chance-failure period in the life of the parts, unit devices or systems is over, the failure rate will again go up.

The failures occurring during this period are caused by the wear and deterioration of the parts constituting the device or the system. By taking appropriate preventive maintenance measures, it is possible to reduce failures and thereby extend, to some degree, the life of the device or the system.

The failures during the chance-failure period, which constitutes the greater part of the life of a device or a system being used, occur any time at random. The failure rate is constant in terms of duration and is of relatively low value. Yet, the conditions of the failures are extremely wide-ranging. These failures are affected heavily by the stresses from such environmental conditions as the conditions of use, temperature and humidity. Hence, the probability is high for a failure occurring any time in the course of routine operation and so it is necessary to always earmark a certain amount of budget for maintenance and repairs.

An amount of 29,000,000 kips is estimated to be reserved to cover the maintenance and management expenses for equipment.

CHAPTER 4 BASIC DESIGN

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4-1 Design Policy

In conducting concrete designing for this project, the below mentioned basic policies will be followed, taking into full consideration the characteristics of this project as well the natural conditions on the project site and procurement conditions. More specific examinations will be made in the later sections.

1) The scale of the facilities shall be in line with the contents of the project. Even though there is the need of sufficiently fulfilling the requirements of the project, the scale should not be excessively large.
2) The plans for the facilities shall ensure construction of facilities that are rational, easy-to-use and well-balanced in such aspects as their layout on the site, flow planning and area distribution. Full consideration shall also be given to the feasibility of constructing additional facilities in the future and to the future uses of the site.
3) The facilities should be those that can function fully under the natural environment of the site and the conditions of use. They should also match the local cultural conditions including customs and manners and religion.
4) In determining the design level for the facilities, those in general use in the Lao PDR will be referred to. The facilities to be constructed shall be those possessing adequate strength and durability. However, attention will also be paid to economy, and every care will be taken to avoid adoption of excessive specifications.
5) In deciding on the types and levels of the building equipment and broadcasting equipment, importance shall be attached to such points as ease and economy of maintenance and management, simplicity of structure and high durability, and ease in the procurement of spare parts and consumables.
6) As to the contents and quantities of broadcasting equipment, they shall be restricted to those that are in line with the contents

of the project and shall be those that are suited to the work environment and work methods in the Lao PDR.

7) Full consideration shall be given to the construction period which is restricted under the conditions of Grant Aid assistance projects. The designing shall be conducted on the premise that the procurement of supplies and labour shall be done locally as far as feasible from both technical and construction-term points of view.

4-2 Examination of Design Conditions

4-2-1 Examination of the Design Conditions for the Facilities

(1) Functions of the New Facilities and the Staffs to be Accommodated

Among the various facilities built on the existing site of Lao National Television, there are four facilities related to TV broadcasting; TV studio building, TV programme-production department building, administration building (including radio) and the transmitting station. The scale of each facility and the category and number of staff members accommodated by each are as follows:

Facilities	Scale	Staff Accommodated and Their Numbers
TV Studio Building	Single-story approx. 350m²	Engineering staff 27
TV Programme-production Department Building	3-stories approx. 1,160m²	Programme-production staff 51
Radio/TV Administration Building	2-stories approx. 500m²	Radio/TV administration staff 26
Transmitting Station	Single-story approx. 32m²	Engineering staff (2~3, depending on needs)

The functions of different facilities are clearly separated. In the TV studio building, only the engineering staff members are working routinely and they have no office of their own. The producers, cameramen, announcers and other members of the programme-production staff are normally working in the programme-production department building and they have no workroom of their own in the TV studio building. All the facilities have already become superannuated, but the TV programme-production department building and the radio/TV administration building, both of which are office buildings, are still usable. In the programme-production department building, the floor occupancy per staff member exceeds 20m²/person and the ratio of each person working at his desk is less than 50%. So, the same as in the case of the radio/TV administration building (floor occupancy 19m²/person), plenty of space is secured for the staff in the programme-production department building. Therefore, the new facilities shall be so designed as to be able to accommodate

routinely an engineering staff of 27. No particular consideration shall be given to the possibility of securing an exclusive working space for the programme-production staff and administration staff. As to the inconvenience of the scattering of functions resulting from moving only the TV studio building to the new site, no importance shall be attached to this fact, since the existing facilities are much the same in that respect and, moreover, the scheduled daily broadcasting hours for the present are relatively short at 4 hours/day. Therefore, the situation shall be coped with by reserving in the new facility one office for the engineering staff and one conference room for common use by the programme-production and the engineering staffs.

(2) Scale of the Programme-production Studio

The programme-production schedules at the time of completion of this project were shown in Fig. 3-3-1 and Table 3-3-2, and the programmes in Table 3-3-1.

For the present, in the production studio, the videotaping will be conducted of such programmes as dialogues, discussions and other programmes composed mainly of speeches, programmes involving demonstrations, such as cooking and handicrafts, and music and audience-participation programmes of large and medium scales. In order to produce these programmes, it is necessary to take all kinds of shots, from close-ups to long-shots taken with a camera pulled far back from the object. For that reason, the floor area of the new production studio will need to be at least 150m^2 and the height of the cyclorama, which provides the backdrop to the pictures, will have to be about 4m.

For the videotaping of large-scale dramas and musical shows, a studio with a floor space of at least 300-500m^2 will be required. The construction of such a large studio will be kept in mind as a future plan and due consideration will be given to it when the layout of the site is studied.

Incidentally, the 150m^2 studio being planned is 30% larger than the existing studio in floor area (112m^2).

(3) Special Functions Required of the New Facilities

- Installation of a Steel Tower for Programme Transmission Link
  (See Fig. 3-2-1, page 41)

  The result of the field survey of the project site shows that the parabolic antenna for programme transmission link from the new studio site to the transmitting station needs to be installed at a height of about 20m above the ground. Taking economy into consideration, the steel tower on which to install the said antenna will be constructed on the roof of the building structure, upon a foundation laid there. As is clear from the sectional plan described later in this report, the highest portion of the building structure will be 12m above the design ground. Therefore, the height of the tower will be 20m – 12m + 2m (the minimum necessary distance from the position of the antenna installed to the top of the tower) = 10m.

4-2-2 Examination of the Design Conditions for the Equipment

(1) New Transmission Conditions

The "transmission conditions" consist of ① position of the antenna, ② height of the antenna, ③ transmission channel, ④ transmitter output and ⑤ antenna characteristics.

Since this project is premised on the use of the existing steel tower as a transmitting antenna tower (which is located 5km away from the new studio site), ① and ② are both the same as the present conditions. So, the conditions to be examined will be ③ to ⑤.

(2) Examination of the Transmission Channels

1) Current Condition of Arrival of Thai TV Waves

The city of Vientiane faces the northern side of the Mekong River which constitutes the national border of the Lao PDR with Thailand. As a result, into the service area of Lao National Television in Vientiane arrive TV waves from more than one TV station in Thailand. The TV waves from the Loei station in Thailand, in particular, are transmitted on the same channel (Ch-8) as that of the Vientiane station, with the result that a considerable range of districts within the service area are suffering from interference from that Thai broadcast. Thai TV waves with considerable strength are also arriving from

Thailand's Nong Khai (Ch-6) and Udon Thani (Ch-10, Ch-12) stations.

(See Tables 6-1-1 and 6-1-2, Measurement Results of Field Intensity of Vientiane Station, in Appendices.)

2) Selection of Transmission Channels

There is no alternative but to change the channels, because, with the present channel (Ch-8), there are many areas that are suffering from heavy interference from waves transmitted on the same channel. So, in selecting the new channels, the first thing that needs to be taken into account is that the channels selected are ones on which broadcasts can be received properly without having to make any change in the receivers or receiving antennas of the viewers. This means that the selection needs to be made within the range from Ch-5 to Ch-12.

a) Possible Channels

A channel with little cochannel interference can be selected from among the following three: Ch-7, Ch-9 and Ch-11.

b) Selected Channel

The conditions to be taken into account when selecting one channel from among the possible channels are:

① The smaller the channel number, the more advantage there is in transmission distance.

② As to the neighbouring channels, the interference received from the higher channel is smaller than that which is received from the lower channel.

If the three possible channels were to be arranged in the order of preference according to conditions ① and ②, the list would be as follows:

	① Transmission Distance	② Interference from the Neighbouring Channels
Ch-7	1	3 (Ch-6 is very strong.)
Ch-9	2	1 (Ch-8 is not so strong.)
Ch-11	3	2 (Ch-10 is fairly strong.)

As a result of an overall judgment made on the outcome of the examination as outlined above, Ch-9 has been selected.

(3) Examination of Transmitter Output

In accordance with the request, it has been decided that the transmitter output should be 5kW. The targeted service area is surrounded on three sides by mountainous districts and, therefore, this service area can be covered almost entirely under the transmission conditions examined. However, as for the north (directions of 330°-360°), the service area would be increased slightly if the transmitter output were further increased. Even so, "5kW" will be an appropriate transmitter output if economy were taken into consideration.

(4) Examination of Antenna Characteristics

The transmitting antenna currently used by Lao National Television is an omnidirectional antenna which emits its output evenly to four directions. In this project, however, it has been planned that directivity shall be given to the antenna so that the greater part of the transmitter output may be emitted to the directions of northwest-north-northeast and that, to the southern direction, emission power may be restricted to the necessary minimum, just enough to cover Lao territory. Furthermore, no antenna panel is installed to the direction of the southwest so that emissions to Thai territory is restricted to the minimum possible. With this radiation pattern, the effective emissions power in the direction of northwest-northeast would become 8 to 10 times that of the present, even though the transmitter output is only 5 times as high. Thus, it will become possible to secure the desired service area.

As to the antenna systems, no specific mention has been made in the request, but it has been decided that the transmitting antenna should be renewed completely in view of the need to increase output and to give directivity and also in order to secure the reliability of the new system.

(5) Examination of the Existing Steel Tower

The existing steel tower was constructed in 1983. Even though the Basic Design Study Team was unable to obtain the structure drawing or

structure calculation data, it has been judged from visual inspection that both the framework members used and the structure of the tower itself have adequate strength. The Study Team learned that the tower had never been repainted since its construction but, even so, noticed that it still was in good condition with almost no rust, probably due to such environmental conditions as there being little briny air or air pollution. At present, the dipole antennas with reflectors are installed for four directions, 16 stacks each, totalling 64 stacks. This project calls for installation of transmitting antennas for two directions, 16 stacks each (no more can be installed because of the size of the tower) and for one direction, two stacks, totalling 34. As a result, the load of the antenna would be about 34/64 of the present load. So, there is no problem in terms of the strength of the tower.

(6) Specifications of Equipment

1) All the units of equipment shall be suited to the technical level of the engineers of Lao National Television and shall be easy to operate and maintain.
2) The specifications of the equipment shall in principle be in conformity with the CCIR technical standards, and the colour TV system shall be the same as that of the present, viz., B, PAL.
3) In selecting the units of equipment, full consideration shall be given to their matching with the existing facilities, so that they may be operated without any trouble as a total system.
4) In connecting the new equipment with the existing installations or in switching from one to the other or vice versa, every care shall be taken to ensure that no obstruction is caused to the routine operation of the facilities.

4-3 Basic Plans

4-3-1 Site Layout Plan of the Studio Building

An outline of the project site on which the facilities are planned to be constructed is shown in Fig. 4-3-1: Survey Map (Proposal B). At the outset of the discussions, a plot of land around the northwestern corner of the site, the highest in ground level, was proposed by Lao National Television as the possible project site (Proposal A). However, this Proposal A was, after all, not adopted because the proposed site happened to be near the existing radio transmitting station and so it was feared that the effect of radiowave interference from it could be heavy. Thus, Proposal B was adopted as one that has the following advantages because of its location.

[Advantages of Proposal B]

- Since the area is located nearer to National Highway No. 13, ease of the access to the site is provided.
- Since the commercial power line and the city-water pipeline run along the road in front of the area, easy and economical availability of both electricity and water will be ensured.
- Since the area is rather far away from the existing radio transmitting station, there is less radiowave interference on TV equipment.

Incidentally, on the same site, a satellite receiving station is to be constructed with assistance from China. However, the site is sufficiently wide and, in view of the scale of the facility being constructed under this project, the total range of construction areas required will be not more than about 90m × 90m. Besides, the construction ground required by the Chinese side is not big at about $30m^2$. Therefore, from the point of view of layout, there is plenty of room and no particular problem is envisioned. The Study Team has been told that Lao National Television intends to build a fence to encircle both the above-mentioned earth station and the new studio building.

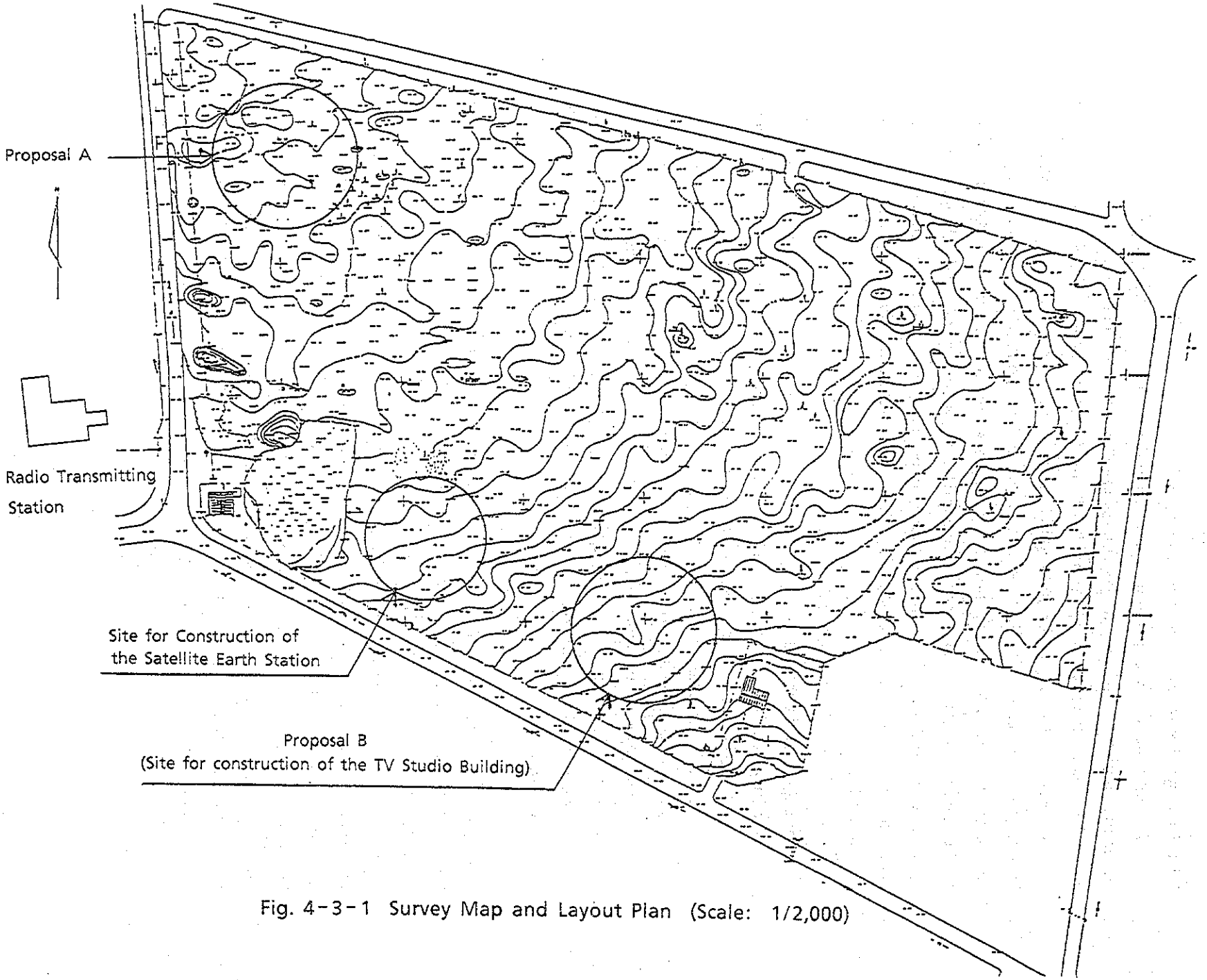

Fig. 4-3-1 Survey Map and Layout Plan (Scale: 1/2,000)