

THE BASIC DESIGN STUDY REPORT
ON
THE REHABILITATION PROJECT
FOR
RADIO AND TELEVISION BROADCASTING SYSTEM
IN
THE REPUBLIC OF GHANA

DECEMBER 1984

JAPAN INTERNATIONAL COOPERATION AGENCY

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PREFACE

In response to the request of the Government of the Republic of Ghana, the Government of Japan decided to conduct a basic design study on the Rehabilitation Project for Radio and Television Broadcasting System and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Ghana a study team headed by Mr. Ryoji ADACHI, Deputy Director, Cablecast Division, Broadcasting Administration Bureau, Ministry of Posts and Telecommunications, from July 28 to August 30, 1984. The team had discussions on the project with the officials concerned of the Government of Ghana and conducted a field survey in the project sites. After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of the Republic of Ghana for their close cooperation extended to the team.

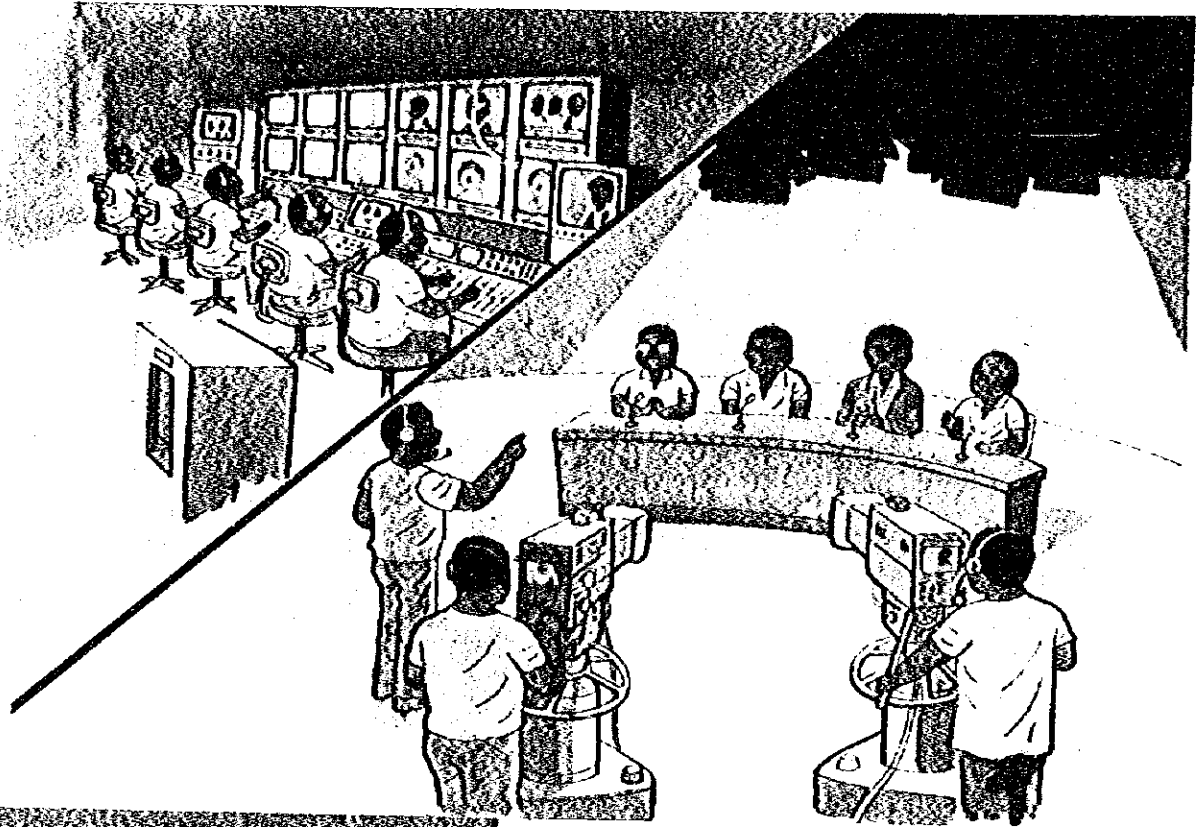
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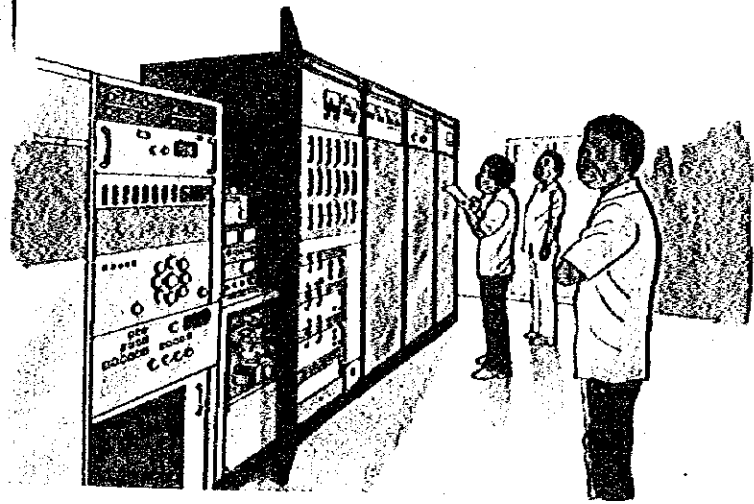
Keisuke ARITA

President

Japan International Cooperation Agency



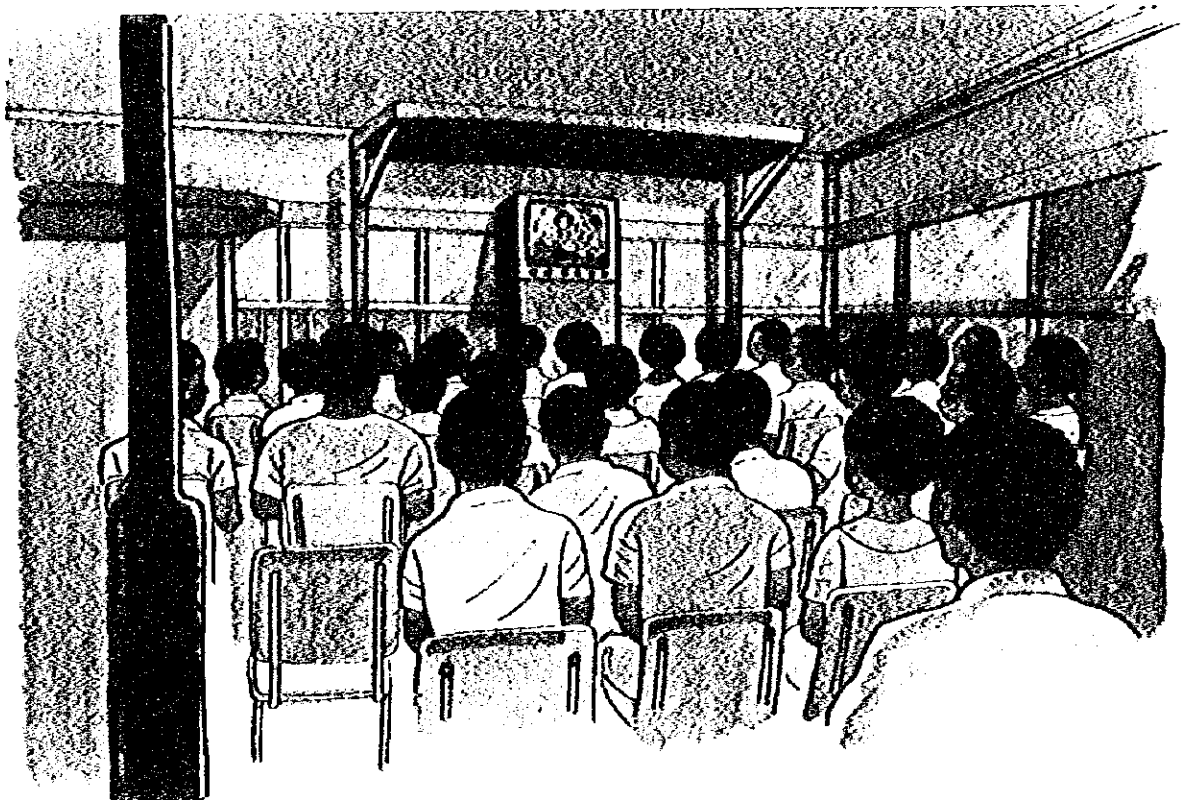
Television Studio



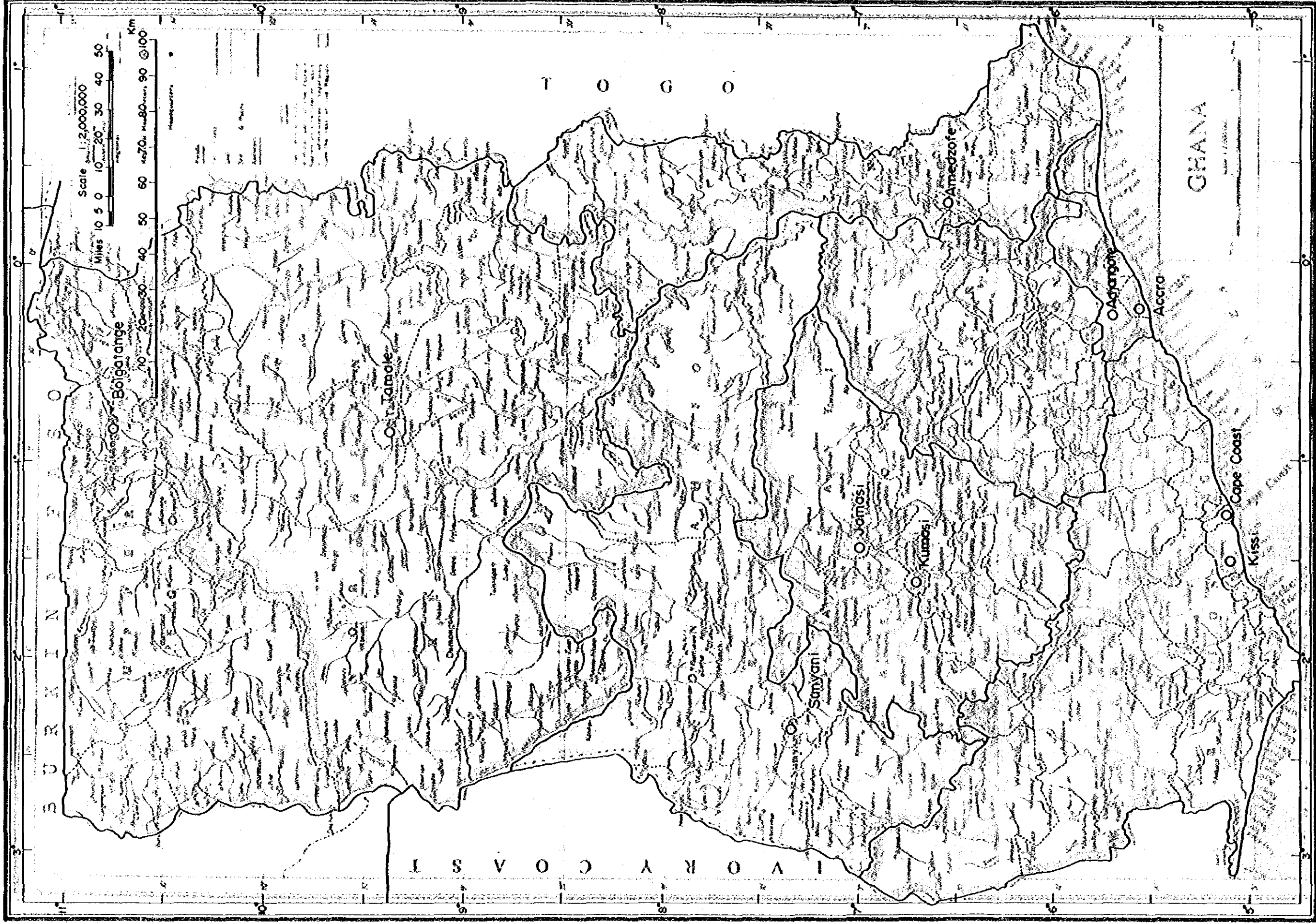
Television Transmitting Station



Radio OB Van



Public Television Receiver



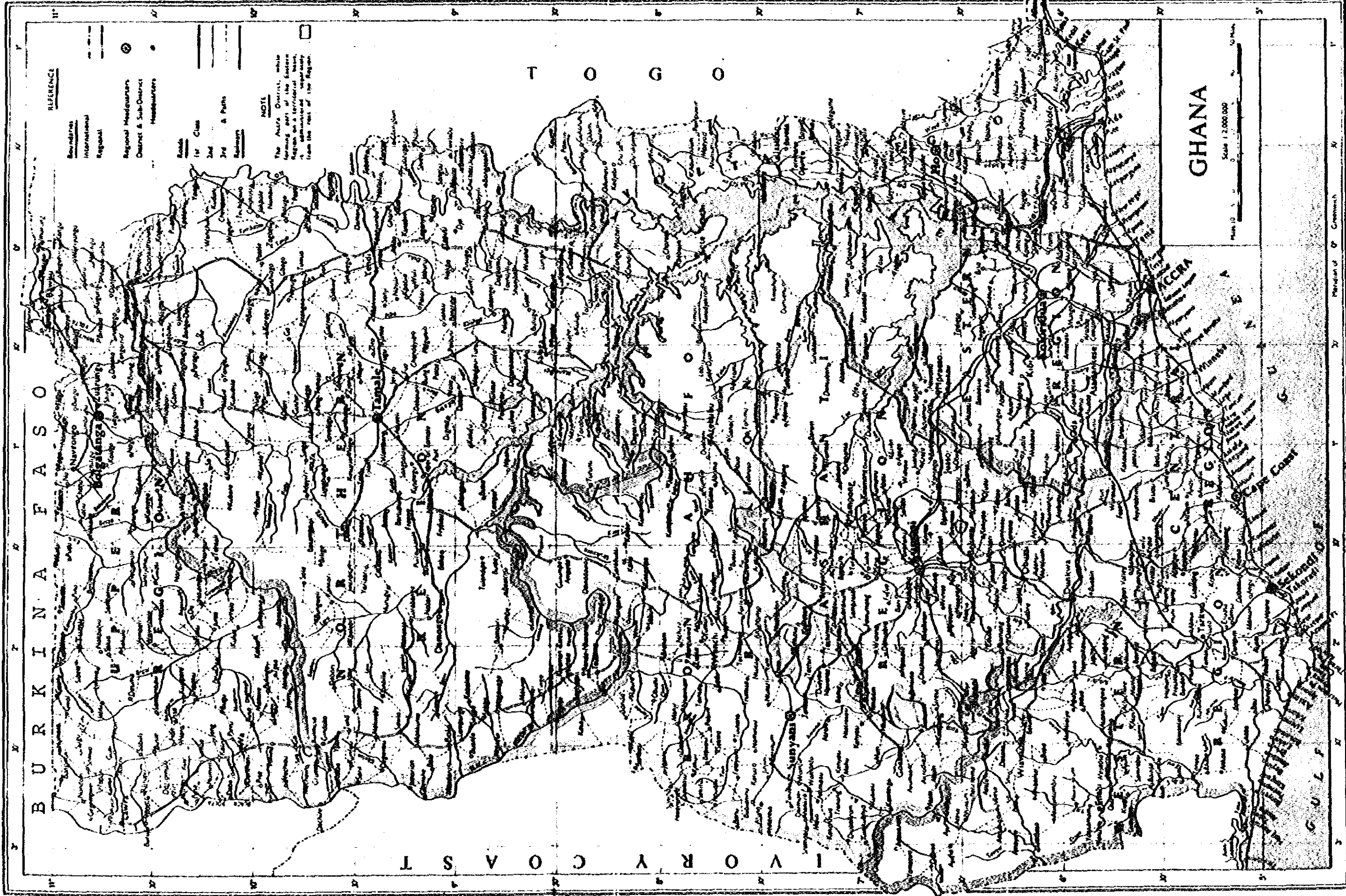


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SUMMARY

SUMMARY

The Republic of Ghana is known to have an advanced educational system among all African countries. This is because the Ghanaian Government has given high priority to education since the country gained its independence, making consistent efforts to consolidate the school system and develop the radio and television broadcasting service to elevate the educational standard of the people.

The Ghanaian people comprise more than seventy tribes speaking nearly ten different languages. For this reason, English is adopted as the official language which is now understood by more than 50% of total population, though no yet functioning as a common means of communication through the country. The Government has a plan to make efficient use of broadcasting service to diffuse English as a means of closer inter-tribal communication, to lower the illiteracy rate, and to improve the people's level of education.

Owing to economic difficulties encountered in the past, Ghana's socio-economic structure is degraded in many aspects at present. This is notable especially in the area of radio and television broadcasting where the superannuation of facilities is in rapid progress. No improvements in broadcasting facilities have been made since the radio studios were constructed in 1965 and the television facilities in 1975, all for economic reasons.

The radio and television broadcasting system in Ghana is operated by the Ghana Broadcasting Corporation (GBC), a substructure of the Ministry of Information. In the late 1960s, GBC produced many excellent television programmes which contributed greatly to the improvement of the country's education and culture as well as to the lessening of regional gaps. Despite the fact that GBC has superb capabilities for programme production, the Government's plan to promote the communication to the public and improve their educational level through broadcasting is paralysed owing to the said superannuation of facilities.

Of all 21 radio studios built more than 25 years ago, only nine are operating at present but hardly any of them are sufficiently

capable of producing programmes. As regards television studio facilities which have been in use for more than 20 years, none are operable at present with the exception of a few cameras. The television transmitting facilities are also heavily deteriorated owing to a long period of continued operation without suitable maintenance and replacement service, so that they are barely radiating power.

In view of the severity of the situation, the Ghanaian Government has recently formulated a broadcasting network rehabilitation project and requested Japan's assistance in its early implementation.

Responding to this request, the Japanese Government undertook to conduct a basic design study for the project and entrusted the Japan International Cooperation Agency with its execution. A study team was sent by the Agency to Ghana for this purpose for a period of 34 days from July 28 to August 30, 1984. On the basis of its field surveys and consultations with the competent Ghanaian authorities, the team discovered that the project was quite reasonable, and worked out a basic design for the following items which the team confirmed to be in acute need of Japan's Grant Aid and could produce immense development effects.

- (1) Rehabilitation of Radio Studio Equipment for Accra Broadcasting Station.
- (2) Rehabilitation of Television Studio Equipment for Accra Broadcasting Station.
- (3) Rehabilitation of Television Transmitting Facilities for Adjangote Station (Accra region).
- (4) Rehabilitation of Television Transmitting Facilities for Jamasi Station (Ashanti region, Kumasi).
- (5) Rehabilitation of Television Transmitting Facilities for Kissi Station (Central region, Western region, Cape Coast).
- (6) Installation of Public Television Receiver Sets.

The construction period required for completion of the project is estimated at 20 months after conclusion of the Exchange of Notes.

The rehabilitation of radio studio facilities will cover the four studios, continuity studio and master control room of GBC-1 (National Service) which are the most important of all radio broadcasting facilities in Ghana. This rehabilitation plan, to be carried out in combination with the rehabilitation of shortwave transmitting facilities currently pushed forward by Ghana's own self-help efforts, will restore GBC-1's radio broadcasting network to its highest former scale. In addition, radio OB van will be supplied to strengthen GBC-1's news gathering system.

The rehabilitation of television service network will be carried out for television studio facilities including VTRs as well as for the three main transmitting stations covering the densely populated areas of Accra region (Adjangote), Ashanti region (Jamasi) and Central region (Kissi). Under this plan, all existing superannuated studio and transmitting facilities will be replaced with new ones and a new colourcast system will be put into operation.

When the project is completed, therefore, the country's television service network will cover more than 60% of total population and it will become possible to embark on colour broadcasting service.

The Ghanaian Government is planning to reinforce its educational broadcasting service for adults and women upon completion of the project. As many of those who will be the target audience of educational broadcasting are considered to be in lower-income groups not capable of purchasing television receivers, it is planned that public colour television receiver sets will be installed at community centres, schools, hospitals, etc. to maximize the effects of educational broadcasting and to promote the diffusion of television receivers by offering the attraction of colour television service to the people.

GBC is staffed with many capable members who are operating its facilities skillfully and efficiently with great care.

It also has its own training institute operated to upgrade the overall level of its technical staff. This means that there will arise no problems at all in the operation of broadcasting facilities after the project completion.

As described above, the project is intended to revitalize Ghana's information and education service sector, one of the country's most important infrastructural bases, and there is no doubt that its implementation will contribute greatly to the recovery of Ghana's economy as well as to the improvement of its people's livelihood and educational standard.

There is no specific problem to be considered in executing the project which will produce salient development effects. It can therefore be concluded that the project implementation with the Grand Aid from the Japanese Government is highly meaningful and will be of immense value to Ghana.

CHAPTER 1 INTRODUCTION

CHAPTER 1 INTRODUCTION

The Republic of Ghana is known have maintained a high level of education among all African countries since it gained its independence in 1957. However, owing to sustained period of economic difficulties the country has experienced since the independence, Ghana's infrastructural functions are now degraded in many aspects. This is notable especially in the field of radio and television broadcasting where the superannuation of facilities is proceeding at a rapid pace because no improvements in facilities could have been made since the inauguration of broadcasting service owing to the lack of funds.

The radio broadcasting service in Ghana was initiated during the days of British colonial rule for the purpose of receiving BBC programmes and cablecasting them to the immigrants. In 1957 when the country gained its independence, a studio was built in Accra to embark on a full-scale national broadcasting service.

Ghana's radio broadcasting system was later expanded by introducing shortwave broadcasting service. At present, however, only one transmitting station at Accra is in operation because of the superannuation of facilities mentioned above.

The television broadcasting service was commenced in 1965. In the late 1960s, the golden age of Ghana's television service, many excellent programmes were produced and contributed greatly to the enhancement of education and culture and to the lessening of regional gaps.

However, the oil crisis of 1974 brought about a drastic change in Ghana's broadcasting service as it caused the country's economy pursue a sharp downward trend owing to the decline in agricultural and industrial production and the continued null in export business.

By reason of this aggravating national economy, the Government's plan to utilize broadcasting for promotion of public information and education service is hampered despite the fact that GBC has superb capabilities for programme production. With the 50th anniversary of the inauguration of broadcasting service planned to be

observed in July 1985, the Ghanaian Government has formulated a broadcasting network rehabilitation project and requested Japan's Grand Aid for its implementation.

The request for Grand Aid was made for rehabilitation of the following facilities.

- (1) Television Studio Facilities (Accra).
- (2) Several Radio Studios Facilities.
- (3) Continuity Studio and Master Control Facilities for Radio Broadcasting.
- (4) Adjangote Transmitting Station.
5 kW television transmitting facilities
- (5) Jamasi Transmitting Station.
- do -
- (6) Kissi Transmitting Station.
- - do -
- (7) Tamale Transmitting Station.
- do -
- (8) Amedzofe Transposer Station.
100 W television transposer, including antenna, feeder, tower, shelter, etc.
- (9) Sunyani Transposer Station.
- do -
- (10) Installation of Public Colour Television Receiver Sets at Community Centres, etc.

In response to this request, the Japan International Cooperation Agency sent to Ghana a "Basic Design Study Team on the Rehabilitation Project for the Radio and Television Broadcasting

System" headed by Ryoji ADACHI, Deputy Director, Cablecast Division, Broadcasting Administration Bureau, Ministry of Posts and Telecommunications, for a period 34 days from July 28 to August 30, 1984, to conduct a basic design study for the project.

The study team conducted the following consultations and field surveys to confirm the contents of the basic design for the project.

- (1) Consultations with the competent Ghanaian authorities for confirmation of the contents of the request and for appraisal of the project appropriateness.
- (2) Survey of GBC's organization, staff, facilities, broadcasting programmes, operating condition, and future plans.
- (3) Survey of station buildings and facilities for which rehabilitation is planned.
- (4) Survey of future broadcasting plans, and prospects for utilization of radio and television educational programmes.
- (5) Establishment of an appropriate scale for the project, and determination of the scope of rehabilitation plan.

This report presents the outcomes of the consultations and surveys listed above.

CHAPTER 2 BACKGROUND OF THE PROJECT

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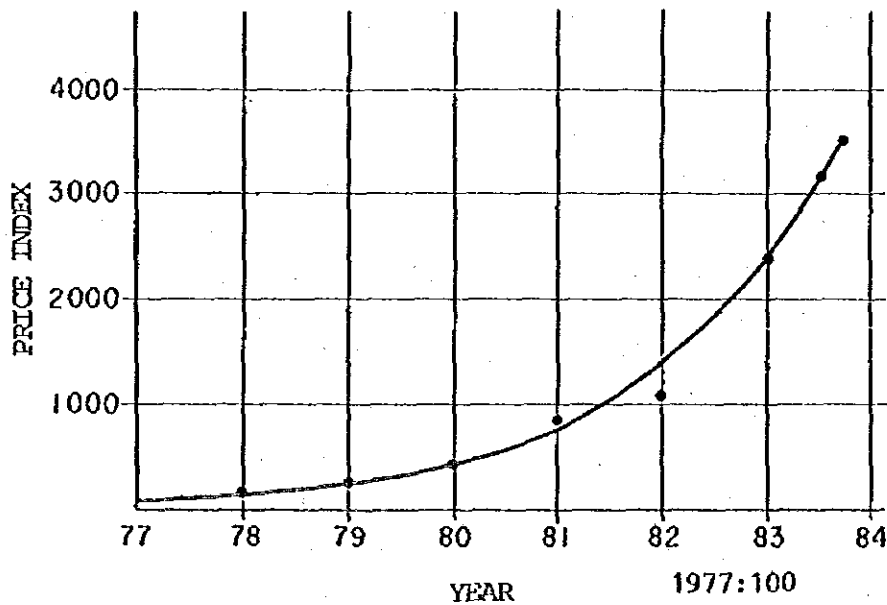
2-1 Present Social and Economic Situation

The characteristic of the Republic of Ghana, which won independence in March 1957 led by President Nkrumah, is that it has a relatively high educational level and manpower among the African countries. In addition, another characteristic is that the monoculture constitution based on agricultural production of cacao beans, peanuts, etc., has supported the society and economy after the independence. In the 1920's, Ghana produced more than half of the total world consumption of cacao beans which occupied 60% of the total export of the nation. Such an economic structure depending on cacao had made Ghana the richest country among the African nations for a time, with the increase of world wide demand for cacao. At the time of independence, the annual national income per person of Ghana reached 170 dollars. This corresponds to two or three times that of India and twice that of Kenya.

With such an economic prosperity as a background, Ghana had progressed to enhance its infrastructures positively from the 1960's to the beginning of the 1970's, and had constructed dams, highways and telecommunication networks, and radio and television broadcasting networks also.

Moreover, the Government of Ghana had also made progress in the important field of education. With regard to the utilization of radio and television broadcasting for education, television broadcasting for middle schools and training colleges began in 1970, thus Ghana was the most advanced country in the field of educational broadcasting among the African countries.

However, in the latter half of the 1960's, according to the world wide stagnation of agricultural prices represented by cacao beans, and the large deficit in the international balance of payments according to the oil crisis, the economy of Ghana had suddenly grown worse. This fact coupled with inflation arriving after the worldwide oil crisis increases the price of commodities in Ghana.



ADVANCE IN PRICE

For this reason, the exchange rate against the U.S. dollar of 1 dollar = 1.15 Cedi in June 1978, dropped to 1 dollar = 35 Cedis in 1984, because of several devaluations, and resulted in increasing the price of imported commodities sharply.

Since Ghana has almost no domestic industries, industrial products as well as equipment and materials related to broadcasting facilities, have to be imported. Because of the sharp rise in price of imported commodities according to the devaluation of exchange rate, and shortage of supply materials due to the lack of foreign currency, it is impossible to maintain even the present condition of most of the infrastructures.

The Lawlings political power, which was established in 1981, has intended to realize the stabilization of the security problems, revival of the economy, rehabilitation of infrastructure and promotion of education in order to regain the past prosperity of Ghana.

Golden Jubilee of GBC will be on the 30th of July 1985. And on July 30, 1984 the Japanese Basic Design Study Team arrived in Ghana. On that day, H.E. Miss Joyce Aryee, Secretary, Ministry of Information made a speech as follows at the anniversary ceremony in which the study team also attended. "1982 and 1983 we are years of a food crisis. The nation of Ghana overcame it by increasing the production of food. The next things which we should do are to elevate the culture and promote education. To realize those aims broadcasting by radio and television is the most effective measure". This means that the government of Ghana has a strong intention to stabilize the nation, revive the economy and enhance the education.

Regarding the social situation of Ghana, the area of the land is approximately 240 thousands km², about two-thirds of that of Japan, and is divided into eight administrative regions.

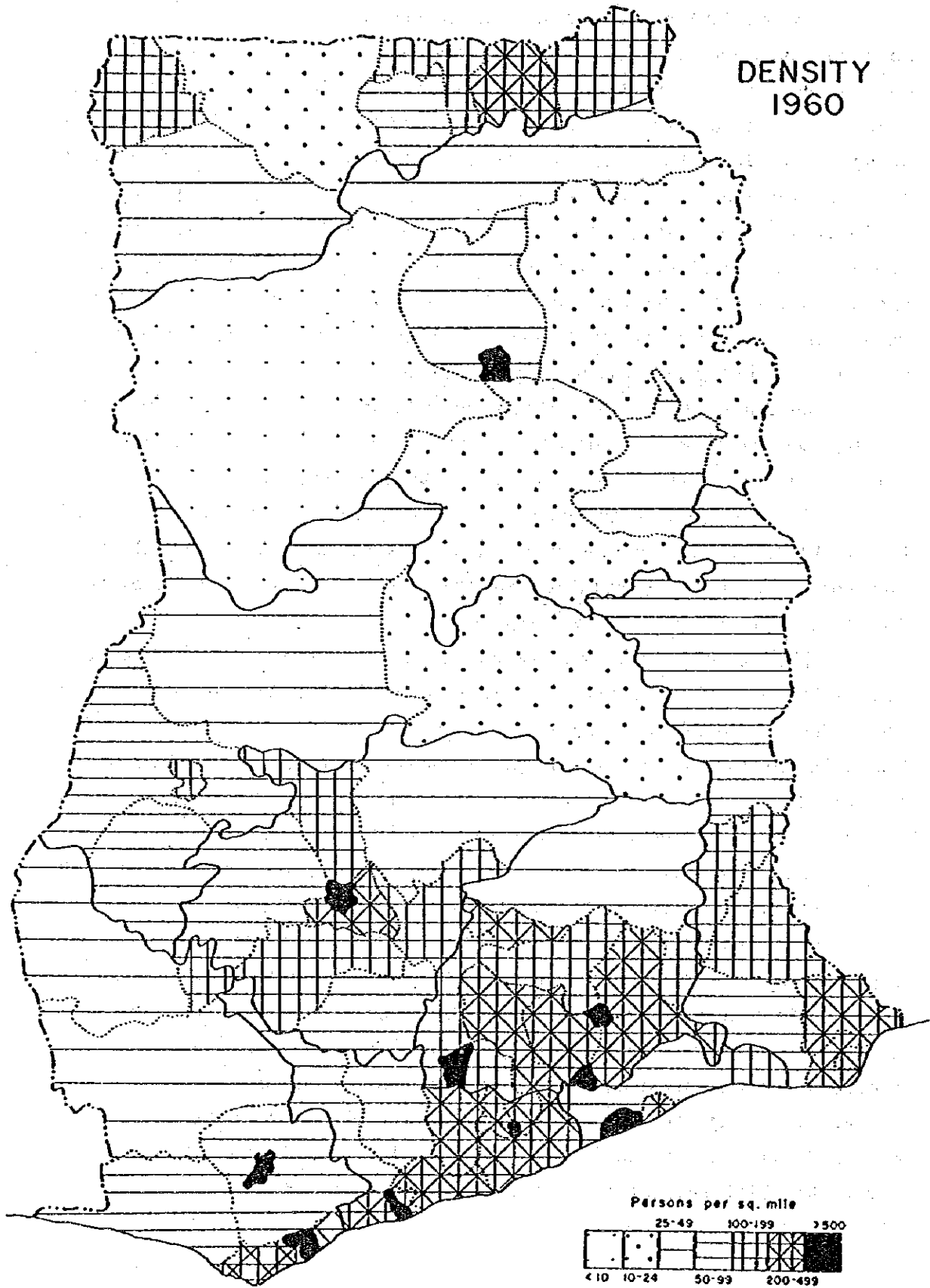
The population is about twelve million as of the census of March, 1984. Greater Accra shares over ten percent of the population, and the rest of the population is distributed among the main cities, Kumasi and Tamale, Cape Coast etc.

The social problem which Ghana is facing is that the population is multiracial. In viewing racially, the population is constituted of approximately 75 tribes.

The main tribes are Ga tribe in the southern area, Ewe tribe in near Burkina Faso, Fanti, Akan and Ashanti tribes in the central south western part, and Manpulsu tribes in the northern part.

The size of tribes of Ghana is small, but as the family constitution is large, close human relationship is maintained.

In the rural areas, communities are scattered and the population of a community ranges from 50 to 1,000. The people of these tribes use their individual languages, and the number of different languages used is as many as 10. For this reason, in broadcasting and newspapers, English is used as the official language. The English language is not yet diffused through out the country as a common language, but as the educational level of Ghana is relatively high, the illiteracy rate seems to be lower than 50%.



POPULATION DISTRIBUTION

POPULATION DISTRIBUTION

REGION	1984 ENUMERATED POPULATION			1970 ENUMERATED POPULATION		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMAL
TOTAL COUNTRY	12,205,574	5,994,648	6,210,926	8,559,313	4,247,809	4,311,504
WESTERN	1,116,930	557,520	559,410	770,087	393,902	376,185
CENTRAL	1,145,520	550,593	594,927	890,135	430,720	459,415
GREATER ACCRA	1,420,066	693,695	726,371	903,447	462,453	440,994
EASTERN	1,679,483	831,683	847,800	1,209,828	599,595	610,233
VOLTA	1,201,095	580,930	620,165	947,268	455,095	492,173
ASHANTI	2,089,683	1,028,781	1,060,902	1,481,698	737,570	744,128
BLONG-AHAFO	1,179,407	599,018	580,389	766,509	391,757	374,752
NORTHERN	1,162,645	576,292	586,353	727,618	367,533	360,085
UPPER WEST	439,161	208,366	230,795	319,865	150,790	169,075
UPPER EAST	771,584	367,770	403,384	542,858	258,394	284,464

CENSUS OFFICE, ACCRA
12TH JULY, 1984

2-2 Present Situation of Radio and Television Broadcasting

2-2-1 General Situation of Broadcasting

The history of broadcasting in Ghana started on July 31, 1935, when Sir Arnold Hodson, the English Governor of the Gold Coast in the colonial days, began the first broadcasting station. At that time, the station was called "STATION ZOY" and was located in a small bangalow. It received the overseas broadcasts of BBC of England, and disseminated it to 300 households in Accra city through cablecast.

In 1936, a similar station was located in Cape Coast, and later the service was extended to Kumasi and Sekondie.

In 1940, the colonial government established a broadcasting headquarters in Accra, and constructed an individual studio and started regular broadcasting throughout the country of Ghana and neighboring countries with a transmitting power of 1.3 kW.

This "STATION ZOY" broadcasted until the end of the World War II. During the period between 1946 and 1953, the organization of the broadcasting station was operated by P.R.D. (Public Relations Department), and even at that time, many of the programmes were rebroadcasts of BBC.

In 1954, the Colonial Government established a Gold Coast Broadcasting System (GCBS) aiming at improving the broadcasting system in Ghana, and with the independence of Ghana in 1957, it became Ghana Broadcasting Corporation (G.B.C.). Since then, it has become the organization to operate the entire broadcasting service in Ghana.

In 1958, a broadcasting complex containing a large scale music studio, drama studio, recording channel and continuity studio, etc., was constructed. The studio facilities, which are the object of this project, are still those of that time.

Some of the facilities are still operating but almost majority of them are not operating because the equipment has become obsolete.

With regard to transmitting facilities, broadcasting by shortwave was expanded, but the facilities were unable to be renewed because of the economic difficulty. Accra transmitting station is the only one operating now.

With regard to television, studio facilities were constructed at Accra in 1965, and in addition, four main transmitting stations and nine transposer stations were constructed in the capital Accra and other regions. They respectively commenced broadcasting.

The contribution of radio and television broadcasting at that time, to the educational and mass communication field was great. It could be said that that was the golden age of broadcasting in Ghana, many excellent programmes were produced and have contributed largely to the improvement in education, culture and the regional gap.

In the field of television, this had become obvious from the fact that the educational programmes which GBC produced in 1968 and 1969 won the Japan Prize* successively.

* Japan Prize:

The prize is under the auspices of ABU (Asian-Pacific Broadcasting Union) and supported by NHK. An inquiry meeting is held every year and the prize is awarded to the best programmes chosen from radio and television educational programmes throughout the world.

The programmes "Young Scientist-Engineer" of Ghana had won the Prize both years.

However, because of the decline in the price of agricultural production and stagnation of economic activities due to the oil crisis, the renewal of facilities have not been possible up to the present time. Regardless of GBC having a proficient staff and a good ability to produce programmes, mass communication to the general public and the utilization of broadcasting for the educational fields, which the Government had been carrying out, were unable to be restored.

However, the diffusion of radio and television receiver sets are as follows.

Radio	:	2,500 thousand sets
Television	:	140 thousand sets

Although radio sets are well dispersed, they are mostly the portable type requiring batteries, and the price of batteries presents a problem. Therefore the number of usable radio sets appears to be small, but with the stabilization of the price of commodities, radio is expected to become an effective medium.

Compared with the population size, the distribution of 140 thousand television sets is not so high. The reasons are that the market price of black-and-white sets (24-inch) is 27 thousand Cedis (more than the annual income of an ordinary worker), and that the present contents of programmes, picture quality, sound quality, etc., are not satisfactory condition because of the obsolescence of broadcasting facilities.

With regard to the domestic production of radio and television sets, radio sets for exclusive reception of GBC programmes are produced by Ghana Sanyo Electric Manufacturing Corp., Ltd.

(A joint enterprise of Japan and Ghana). At present, 2 thousand sets (as of 1984) are produced a year, but it is expected to be increased to 60 thousand sets a year in 1985.

As for black-and-white television sets, Ghana Sanyo to date has produced 50 thousand sets (for 20 years). Another television set manufacturer, related to Phillips Company, has also manufactured about the same number as Ghana Sanyo, and in addition, about 100 thousand sets are estimated to be brought in from foreign countries by travellers, etc.

With the completion of this rehabilitation project, if programmes as attractive as those which have been broadcast in the past, are presented in colour, diffusion of television sets will be promoted. Ghana Sanyo intends to start producing colour television sets, if colourcast is commenced.

2-2-2 Present Situation of Educational Broadcasting

GBC paid attention to the effect of educational broadcasting in the fields of school broadcasting and children's and adults' programmes at an early stage. The first educational broadcasting using radio which started in Ghana in the year of independence, was conducted experimentally for six elementary schools. By the year of 1960, the number of schools introducing radio educational broadcasting increased to 180, and it further increased to 4,900 by the year of 1975. Educational programmes were broadcast in accordance with the curriculum of public schools. In the educational programmes, four languages (Twi, Ga, Ewe and Fanti) were also included.

Thus, the educational radio broadcasting in Ghana, since independence, has contributed greatly to the improvements of the educational level, the regional gap and the using of English as a standard language of the country.

In recent years, the educational broadcasting has been substantially suspended because of the antiquated radio broadcasting facilities and reduction of transmitting power. However, restoration of radio broadcasting facilities is being expected to be effected very soon.

BROADCASTING PROGRAMMES USED FOR EDUCATIONAL PURPOSE IN 1975 (RADIO)

PURPOSE	PROGRAMME NAME
Primary Schools	Say and Sing (P2) Let's Speak English (P3) Once Upon a Time (P5 & P6) Listen and do (P4) Music for you Grade I (P4) Music for you Grade II (P5) Music for you Grade III (P6)
Secondary Technical Schools	Pronunciation Economics First Steps in French English Language Book Review 'Twi' Book Review 'Ga' School Agric Science English Literature I First Year French Book Review 'Ewe' Book Review 'Fante' Government English Literature II Second Year French
Teacher Training Colleges	Pronunciation Economics English Language Book Review 'Twi' Book Review 'Ga' School Agric Science English Literature I Talking About Teaching Book Review 'Ewe' Book Review 'Fante' Government English Literature II
General	1. Adult Education in Akan, Ewe, Ga, Dagbani 2. Agrimag

With regard to television educational broadcasting, GBC in cooperation with the Ministry of Education, started broadcasting for secondary schools, training colleges and technical universities in October, 1965. The contents of programmes were established as follows, in consideration of the supplementary effect of education by the pictures.

- * Science for secondary schools and training colleges.
- * Teaching methods for training colleges.
- * Our World (Geography programme for secondary schools and training colleges).
- * Auto Mechanics for technical institutes.

In October 1969, educational television broadcasting was expanded to primary and middle schools. Each school was equipped with a television receiver, which was donated by the Friedrich-Ebert Foundation of West Germany. The total number of television receivers donated was 220. In 1963, a television technical training institute was established in GBC, and started the training of television engineers.

GBC-TELEVISION MORNING PROGRAMMES FOR SECONDARY SCHOOLS AND TRAINING COLLEGES

WEEKLY TIME TABLE
1969/70

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
9.30 a.m.	2ND YEAR GENERAL SCIENCE	GEOGRAPHY (1st repeat)	1ST YEAR GENERAL SCIENCE (2nd repeat)	TEACHING METHODS (1st repeat)	ENGLISH LITERATURE (2nd repeat)
10.10 a.m.	GEOGRAPHY (From 3)	ENGLISH LITERATURE (Secondary school only Forms 4 & 5)	TEACHING METHODS (Training Colleges Only)	MATHEMATICS (1st repeat)	2ND YEAR GENERAL SCIENCE (2nd repeat)
10.50 a.m.	*HISTORY (Forms 4 & 5)	1ST YEAR GENERAL SCIENCE (1st repeat)	GEOGRAPHY (2nd repeat)	ENGLISH LITERATURE	TEACHING METHODS (2nd repeat)
11.30 a.m.	1ST YEAR GENERAL SCIENCE	MATHEMATICS (Form 2)	2ND YEAR GENERAL SCIENCE (1st repeat)	*HISTORY (1st repeat)	MATHEMATICS (2nd repeat)

THE TIME FOR EACH TELECAST IS APPROXIMATELY 28 MINS.

1st Term Programme Dates : Monday, 6th October, 1969 to Friday, 5th
December, 1969 (9 weeks)

2nd Term Programme Dates : Monday, 19th January, 1970 to Friday, 20th
March, 1970 (9 weeks)

3rd Term Programme Dates : Monday, 27th April, 1970 to Friday, 29th May,
1970 (5 weeks)

2-2-3 The Present Condition of Broadcasting as Mass Communication

In the developing countries, the role of mass communication is to disseminate the most accurate information necessary for the nation, especially for the inhabitants in regional communities, as soon as possible.

The infrastructure of the mass communication field of Ghana has not progressed for ten years because of economic difficulties.

The circulation of newspapers and periodicals is not very large. Delivery in the southern coastal regions of Accra and Cape Coast etc., is good diffused, but in the northern and western regions particularly, it is difficult to deliver the newspapers, periodicals because of poor transportation.

Many of the micro-wave routes and the telephones connecting cities are not operating because of antiquated facilities.

In view of this condition, radio broadcasting is being conducted by shortwave throughout the country, and it is playing an important role as a measure for dissemination of information to the nation. Cablecast receives the above mentioned shortwave signal and cablecasts it to villages. It has been in effect since the commencement of broadcasting in 1935, and is playing an important part in mass communication.

The effect of visual information of television and video tape on mass communication is greater than that of sound broadcasting, however the distribution of television sets is still limited because of the low income of the nation.

In public halls and community centres in some of the regions, the group-viewing-system, which is based on video taped programmes, has been adopted.

Under such a condition, it is anticipated that the role of broadcasting as mass communication will be to inform the people of the rural areas the policies of the Government for the people's livelihood to carry out educational broadcasting to assist in the increase in agricultural products, or broadcast programmes for the youth and women etc.

2-3 Organization and Present Condition of GBC

(1) Organization

GBC was incorporated on March 1, 1968, under the Decree 226 (N.L.C.D. 226: National Liberation Council Decree, proclaimed in Gazette No.11 dated February 28, 1966). The present organization is a substructure of the Ministry of Information, under control of PNDC (Provisional National Defense Council). It is composed of a Chairman, and a Director-General, two Deputy-Director Generals (one for programming and the other for engineering) and five Managers (finance, administration, training, procurement and public relations).

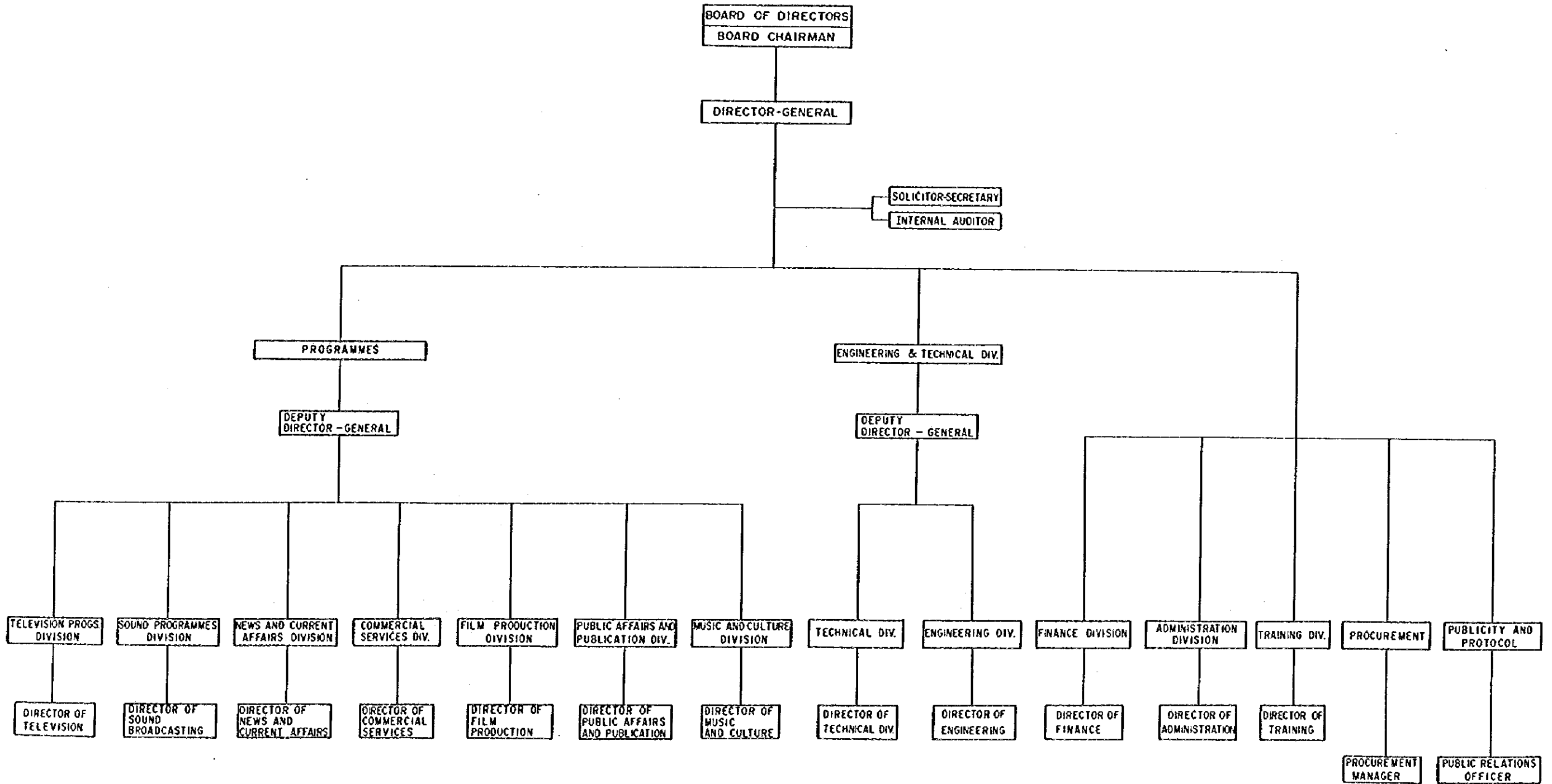
In each area, regional stations are engaged in the operation of radio and television broadcasting, and the staff throughout the country numbers 3,168 in total.

(2) Network

1) Radio

As for the radio network, a shortwave transmitting station was built in Accra with the completion of the GBC broadcasting complex and commenced a nation-wide service. After that, broadcasting was commenced at Ejura in 1965 and at Tema in 1962. However, because of the obsolescence of facilities and shortage of the parts, only Accra station is barely continuing broadcasting.

In addition to the above, there are relay stations which receive the shortwave signals and cablecast them by the base band. The maintenance of the relay stations is performed relatively well by the GBC staffs of regional stations. The relay system, using cable, can be heard by the installation of only a loud speaker in each home. It seems that this method will be used continuously for a reception system in Ghana from now on. There are 60 thousand sets at present.



G. B. C. PRESENT ORGANISATION

2) Television

Regarding for the television network, in 1965 the main stations were constructed in Accra, Jamasi, Kissi and Tamale, and at the same time, transposer stations were built at nine places and the television broadcasting started.

However, among the stations, Tamale station has not been operating because the facilities are already antiquated. The other three stations are still broadcasting, but the picture quality is poor, the pictures can barely be distinguished from the noise because the facilities have been used for over 20 years and are worn out regardless of the maintenance performed by GBC staff. The pictures are unstable and the broadcasting is repeatedly suspended now and again because of facility trouble.

The television transposer stations are not operating because of superannuation of facilities.

(3) Programme Production Facilities

1) Radio

The programme production facilities were installed in each studio of GBC headquarters in Accra, and each regional station studio.

At the studios of Accra, nationwide programmes are mainly produced, and at each regional station, local programmes are produced. There are 21 studios in Accra. During the Golden Age, all studios were operating but at present, only a few of them are operating because of superannuation of facilities.

For the production of radio programmes, the GBC-2 studio (Commercial Service) which is barely operating is used as a substitute for programme production of GBC-1 (National Service).

The facilities comprise two sets of tape recorders, two sets of disk players and a console for 6 to 8 channels. More than 20 years have elapsed since all facilities were constructed.

2) Television

There are two television production studios in Accra. Studio No.1 was completely unusable because of the obsolescence of the facilities, and at present, rehabilitation is being carried out by their own financial efforts.

Concerning studio No.2, the rate of obsolescence is the same as studio No.1, the operating facilities have only two black-and-white cameras and some lighting equipment. The sound has much noise and the quality is poor. In regard to the studios, the air-conditioning facilities were also not operating because of obsolescence. Programme production had been carried out by using studio No.2 on a small scale.

RADIO TRANSMITTING STATIONS IN 1972

ITEM	STATION NAME	ACCRA (National Service)	EJURA (National Service)	TEMA (External Service)
Start of Operation		1957	1964	1961
Location		N. 5°35' W. 0 10'	N. 7°25', W. 1 20'	N. 5°40' W. E 0°00'
Structure of Building		Reinforced Concrete	Reinforced Concrete	Reinforced Concrete
Transmitting Antenna (Phase)		Doublet Type (1) Rhombic Type (1) Quadrant Type (4)	Doublet Type (6) Type (12)	Doublet Curtain Type(3) Quadrant Type (4)
Transmission Feeder		Paralell 2-Wire	Paralell 2-Wire	Paralell 2-Wire
Transmitter	Frequency	4915 kHz, 3326 kHz 3366 kHz, 7295 kHz	3350 kHz, 5990 kHz 3296 kHz, 4980 kHz	21545 kHz, 6130 kHz 9545 kHz, 6070 kHz
	Out Put (Number of Transmitter)	20 kW (2), 5 KW (1) 10 kW (2)	10 kW (6) 250 kW (2)	100 kW (4)
Engine Generator	Cooling System	Compulsory air-cooling	Compulsory Air-cooling	Compulsory Air-cooling
	Manufactory	Marconi	Marconi	Marconi
Relay line		Commercial	890 kVA (3), 250 kVA (2), 60 kVA (2)	Commercial, Stand-by 250 kVA (2)
Staff (Engineer)		58 (20)	70 (20)	47 (17)

CABLECAST STATIONS IN 1972

STATE	STATION	SUB SCRIBER	STATE	STATION	SUB SCRIBER	STATE	STATION	SUB SCRIBER	STATE	STATION	SUB SCRIBER	STATE	STATION	SUB SCRIBER
Great Accra	Accra Central	4923	Brong Ahafo Region	Sunyani	1272	Eastern Region	Koforidua	1985	Northern Region	Tamale	1532			
	Kaneshi	1135		Berekum	493		Mampong/AKW	1280		Yendi	380			
	Osu	1340		Nkwanta	288		Akim Oda	1424		Salaga	201			
	Mamprobi	751	Atebubu	200	Akwatia	852	Damongo	178						
	Rer.off.BH.3	671												
	Teshie	843	Western Region	Sekondi	2540	Upper Region	Apedwa	768	Upper Region	Bole				
	Nsawam	1065		Takoradi	1710		Mpraeso	1514		Bimbila				
	Pokoase	157		Axim	497		New Tafs	949		Gambaga				
	Tema	1508		Tarkwa	2071		Nkawkaw	639						
	Adeiso	172	Prestea	737	Kpong	347								
Ashanti Region	Kumasi	6630	Bibiiani	579	Asamankese									
	Bekwai	602	Wlawso		Ho	900								
	Konongo	885	Central Region	Cape Coast	1934	Keta	1196							
	Obuasi	1402		Saltpond	660	Hohoe	467							
	Mampong	488		Agona Swedru	2729	Kpandu	543							
				Winneba	607	Jasikan	396							
			Dunkwa	851										

MAIN TELEVISION TRANSMITTING STATIONS IN 1972

ITEM	STATION NAME	ADJANGOTE	JAMASI	KISSI	TAMALE
Start of Operation	1965	1965	1965	1965	1965
Location	N 5 40', W. 0 15', SL. 397 m	N. 7 00', W. 1 25', SL. 646 m	N. 5 10', W. 1 30', SL 50 m	N. 9 25', W. 0 50'	
Structure of Building	Reinforced Concrete	Reinforced Concrete	Reinforced Concrete	Reinforced Concrete	Reinforced Concrete
Tower	Type Self Supporting Tower Height 130 m. GL	Type Self Supporting Tower Height 93 m. GL	Type Self Supporting Tower Height 130 m. GL	Type Self Supporting Tower Height 50 m. GL	Type Self Supporting Tower Height 50 m. GL
Transmitting Antenna	Type 3 ST Directivity Omni	Type 4 ST Directivity Omni	Type 3 ST Directivity Omni	Type 8 Quadrant Dipole Directivity Omni	Type 8 Quadrant Dipole Directivity Omni
Transmitter	Channel E-4 Video Output 5 kW Audio Output 1 kW Manufactory BD-372 A(V) Marconi BD-324 A(A)	Channel E-3 Video Output 5 kW Audio Output 1 kW Manufactory BD-372 A(V) Marconi BD-324 A(A)	Channel E-2 Video Output 5 kW Audio Output 1 kW Manufactory BD-372 A(V) Marconi BD-324 A(A)	Channel E-5 Video Output 0.5 kW Audio Output 0.1 kW Manufactory BD-372 A(V) Marconi BD-377 A	Channel E-5 Video Output 0.5 kW Audio Output 0.1 kW Manufactory BD-372 A(V) Marconi BD-377 A
Power	Voltage 240 V Capacity 40 kVA x 3	Voltage 240 V Capacity 40 kVA x 3	Voltage 240 V Capacity 40 kVA x 3	Voltage 240 V Capacity 40 kVA x 3	Voltage 230 V Capacity 40 kVA x 1
Relay Line	Accra Adjangote	Accra Adjangote Koforidua Mpraeso Konongo Patasi Jamasi	Accra Weiza Swedre Cape Coast Kissi	Film. VTR	
Staff (Engineer)	24 (11)	17 (9)	20 (9)	23 (11)	

TRANSPOSER STATIONS IN 1972

STATION	MATHER STATION	CHANNEL	RECEIVING ANTENA	TRANSMITTING ANNTENA
Akosombo	Adjangote	E-8	Log Periodic Antenna	Yagi Aerial
Akim Oda	Adjangote	E-8	Yagi Acrial	Log Periodic
Dunkwa	Jamasi	E-6	Log Periodic	Log Periodic
HO	Adjangote	E-6	Yagi	Yagi
Mpraeso	Jamasi	E-7	Log Periodic	Log Periodic
Prestea	Kissi	E-6	Log Periodic	Log Periodic
Obuasi	Jamasi	E-5	Log Periodic	Log Periodic
Sunyani	Jamasi	E-5	Yagi	Yagi
TarkwaK	Kissi	E-5	Yagi	Yagi

PRESENT SITUATION OF GBC RADIO STUDIO

STUDIO NO.		SERVICE	PURPOSE AND WORKING CONDITION
1			
2	ST - 1	GBC - 1 (National Service)	Super annuated not working
3	ST - 2		
4	ST - 4		
5	ST - 5		Working
6	ST - 6	Training Studio	Super annuated not working
7	ST - 7		
8	ST - 8		Narrowly working
9	ST - 9		
10	ST - 10	GBC - 1 (Extended National)	Recording for Ghanaian language
11	ST - 11		
12	ST - 12		Super annuated not working
13	ST - 13		
14	ST - 14	GBC - 2 (Commercial Service)	Music and Recording
15	ST - A		Working
16	ST - B		Super annuated not working
17	ST - C		Super annuated not working
18	ST - D	External (Forien Language)	Recording for Charnian language
19	ST - E		
20	ST - F		Working
21	Voicecast Studio		Stand-by for GBC-1
			Super annuated not working
			Narrowly Condition

OPERATIONAL SCHEDULE OF GBC TELEVISION STUDIO

Day	Remarks	Programme	Prog. No.	Studio	Producer	Designer	Recording Time	Transmission	Air Time
MONDAY	Recording	Children's Own	CH/CO	2	Gladays Kwafo		10.00-13.00	Monday	18.10-18.30
	"	Agrimag	AE/AC	2	Oti Sarpong		14.00-17.00	Tuesday	19.30-20.00
	Live TX	Adult Ed. in Akan	AE/AK	2	Bridget Abadji		17.00-19.00	Monday	18.30-19.00
	"	Sports Highlights	SP/SH	2	Henry Akko		19.30-20.00	Monday	19.30-20.00
TUESDAY	Recording	Obras.	DA/OB	2	Mana Boshomprah		10.00-13.00	Sunday	18.10-19.00
	"	The Web	CH/WB	2	Edward Treku		14.00-16.00	Wednesday	18.10-18.30
	Live TX	Adult Ed. in Dag./ Hay.	AE/Ha	2	Veronica Dudjoe		17.00-19.00	Tuesday	18.30-19.00
TUESDAY	Live TX	Culture Today	PA/CT	2	Nee Nai Adjel		19.00-21.00	Tuesday	20.00-20.45
WEDNESDAY	Recording	Our Concern/ Face to face	PA/OC	2	Thomas Agbeve		10.00-12.00	Wednesday	19.30-20.00
	"	Showcase	DA/SC	2	Nsia Ababio		13.00-17.00	Wednesday	20.00-29.45
	Live TX	Adult Ed. in Ga	AE/GA	2	Dinah Dzana		17.00-19.00	Wednesday	18.00-19.00
	Live TX	Headlines	TVL/HL	2	John Sowah		19.15-19.30	Wednesday	19.15-19.30
	Recording	Look Out	DA/LO	2	Frank Yeboah		10.00-11.00	Monday	19.15-19.30
THURSDAY	"	Best Brain	AE/BB	2	Richard Akwei		11.00-15.00	Saturday	19.15-20.00
	Live TX	Adult Ed in Ewe	AE/EW	2	Joezer Abo		17.00-19.00	Thursday	18.00-19.00
	"	Woman's Digest	CH/WD	2	Alberta Adjeidoo		19.00-20.00	Thursday	19.15-19.45
	Recording	Builders of Today	AE/BT	2	Victor Appeah		10.00-11.00	Monday	20.00-20.30
	"	Talking Point	TVN/TP	2	Kwaku Nkrumah		11.00-15.00	Sunday	19.30-20.00
FRIDAY	Recording	Hall of Fame	SP/HF	2	Erio Brakohiabah		15.00-18.00		
	Live TX	Sports Digest	SP/SD	2	Henry Akko		19.30-20.00	Friday	19.30-20.00
	Recording	Mike Eghan Show	EW/ME	2	John Owusu		10.00-14.00	Saturday	20.00-20.45
SATURDAY	"	Voices in Rytkm/ Music our Way		2	Moses Gyapong/ Slim Odoom		14.00-17.00	Wednesday	20.00-20.45
	Recording	Drama/Cet involved	PA/CS	2	Frank Yeboah		10.00-16.00	Thursday	19.45-20.45
SUNDAY	Live TV	Church Service		2	Nee Nai Adjel		17.00-20.45	Sunday	20.00-20.45

(4) Broadcasting Programmes

1) Radio

The radio broadcasting in Ghana consists of GBC-1 (National Service), GBC-2 (Commercial Service) and GBC-3.

a) GBC-1 (National Service)

As GBC-1 broadcasts to the whole it is regarded as the most important.

The programmes are broadcast in the six languages of the main tribes (Akan, Ga, Ewe, Hausa, Dagbani and Nzema). English is used in some of the programmes. This is a shortwave broadcasting service and in rural areas, the signals are received, amplified, and then cablecast by land line for the people in the area.

The contents of the broadcasting programmes are news, news commentaries, entertainment programmes, educational programmes and other important information. Sometimes the government officials of Ghana make speeches through the radio.

Air time during the golden age was from 5 a.m. to 9 a.m., and from noon to 11:05 p.m. The broadcasting hours a week were 108 hours in total. (24 hours on weekend)

However, according to the increase in the number of unusable studios and failure of transmitting power, the recent broadcasting time is decreasing. The present broadcasting hours per week have decreased to 30 hours and 10 minutes.

b) GBC-2 (Commercial Service)

This is a commercial service which started in 1967. Most of the programmes are composed of disc jockey and light music, religious and sports programmes. All programmes are presented in English. The broadcasting hours through Monday to Friday are 15 a day and 18 hours on Saturday and Sunday.

GBC-1 NATIONAL RADIO SERVICE SCHEDULE IN 1984

	AIR TIME	BROADCASTING HOURS
Sunday	16:00 - 22:30	6 hours 30 minutes
Monday	17:50 - 21:30	3 " 40 "
Tuesday	17:50 - 21:30	3 " 40 "
Wednesday	17:50 - 21:45	3 " 55 "
Thursday	17:50 - 21:30	3 " 40 "
Friday	17:50 - 21:45	3 " 55 "
Saturday	17:50 - 23:00	5 " 10 "
Total		30 hours 10 minutes

PROGRAMME CONTENT OF GBC-1 IN 1984

PROGRAMME	BROADCASTING HOURS	PERCENTAGE
Entertainment	12 hours 30 minutes	41%
Information	10 " 40 "	35%
Education	7 "	24%
Total	30 " 10 "	100%

c) GBC-3

This service in English was for particular listeners. The broadcasting programmes were composed of music, drama, literary arts and the development of science. The programmes were also broadcast with an intention to encourage these fields. At present, the broadcasting is suspended because of the obsolescence of transmitting facilities.

2) Television

Broadcasting is aired everyday from 6:00 p.m. to 9:00 p.m.. The programmes are composed of news, children's hour, and sports relay, etc.

During 1970 the educational programmes for secondary schools and training colleges were also broadcast in the morning (9:30 to 12:00), however, at present, it is suspended according to the obsolescence of the studio facilities.

This rehabilitation project is planned to extend broadcasting hours, and re-establish broadcasting for school educations.

The television transmission schedule for a week is as follows at present.

PRESENT TELEVISION TRANSMISSIONS SCHEDULE - 1984

SUNDAY

5.45	Test Pattern & Music
5.55	Prome & Announcements
6.00	Obra
7.00	News
7.15	Week-End Movie (90.00) if no power to record T. Point
8.45	News
9.00	Close Down

MONDAY

5.45 Test Pattern & Music
5.65 Proms & Announcements
6.00 Children Own
6.30 Adult Education in Akan
7.00 News
7.15 Look Out
7.30 Sport Highlights
8.00 Builders of Today
8.30 (FILLER) (15.00) MONTHLY Candid Opinion-fortnightly/focus/E.
Corman Japan
8.45 New
9.00 Close Down

TUESDAY

5.45 Test Pattern & Music
5.55 Proms & Announcements
6.00 Human Body - New & Why?
6.30 Adult Education In Dagbani/Hausa
7.00 News
7.15 Hall of Fame
7.30 Agrimag
8.00 Culture Today
8.45 News
9.00 Close Down

WEDNESDAY

5.45 Test Pattern & Music
5.55 Promo & Announcements
6.00 The Web
6.30 Adult Education In Ga
7.00 News
7.15 Headlines

7.30 Our Concern/Topic
8.00 Showcase
8.45 News
9.00 Close Down

THURSDAY

5.45 Test Pattern & Music
5.55 Promo & Announcements
6.00 Programme Exchange
6.30 Adult Education In Ewe
7.00 News
7.15 Women Digest
7.45 Drama/Thursday Theatre
8.45 News
9.00 Close Down

FRIDAY

5.45 Test Pattern & Music
5.55 Promo & Announcements
6.00 Best Brain
7.00 News
7.15 Look Out
7.30 Sports Digest
8.00 Music Our Way/Voices in Hythm
8.45 News
9.00 Close Down

SATURDAY

- 6.00 Test Pattern & Music
- 6.05 Promo & Announcements
- Saturday Soccer
- 7.00 News
- 7.15 "Let's Think"
- 8.00 The Mike Eghan Show
- 8.45 News
- 9.00 Close Down

(5) Staff Training

In GBC, training of staff is performed positively to advance their nature, professional knowledge and skill and the ability to execute their work.

GBC remodeled radio studio No.5 into a television and radio training studio, to improve the programme production techniques of the staff.

Moreover, GBC is participating positively in the training courses of the following organizations.

- 1) Japan International Cooperation Agency (JICA)
- 2) Canadian Broadcasting Corporation
- 3) Egypt
- 4) Radio Netherlands
- 5) Australia
- 6) Thomson Foundation

Especially many engineering staffs have been participating in the training courses carried out by the Japan International Cooperation Agency, which have contributed to advance their skills.

2-4 Rehabilitation Plan for Radio and Television Networks
(The Rehabilitation and Expansion Plan which Ghana is
planning)

Objectives

GBC, having a bright history of broadcasting, will celebrate its Golden Jubilee of the commencement of broadcasting on July 31, 1985. The Government of Ghana, at this opportunity, intends to expand its broadcasting system, extending the service area and conducting broadcasting of high quality along with the rehabilitation of obsolete broadcasting facilities, for the enhancement of public communication and the enrichment of the educational broadcasting for the nation.

Outline of the Project

(1) Rehabilitation and Expansion Plan for Radio

1) Rehabilitation of the following facilities will be carried out.

a) Shortwave transmitting facilities

b) 21 radio studios in Accra and radio studio facilities in regional areas.

c) Radio OB van

2) Expansion plan

a) The recording facilities of radio studios in the regional areas will be enriched, so that programme transmission will be available for each region.

b) Establishment of FM stations around the country to provide extensive and in-depth local broadcasting to cater for local cultural, agricultural/fishing and linguistic conditions with the aim of further satisfying the needs of particular localities and districts.

The FM programme includes a plan to set up solar stations where there are no electricity plants, to use the solar

powered station to recharge rechargeable battery cells for villagers not having electricity in their area.

(2) Rehabilitation of Television and its Expansion Plan

1) Rehabilitation will be carried out on the following facilities.

a) Television studios

There are two television studios, No.1 and No.2 in GBC complex (each 170 m²), and the rehabilitation of studio No.1 is being carried out by its own financial efforts.

After completion of the rehabilitation plan, if colour television broadcasting is commenced on a regular basis, at least two studios will be needed to meet the increase in programme production, including the role of a spare studio in case of emergency.

b) Television main transmitting facilities

Four stations, Adjangote, Kissi, Jamasi and Tamale. Related facilities such as VTRs will be increased.

c) Television transposer stations

Nine stations including Sunyani and Amedzofe, etc.

2) Diffusion of Public Colour Television Receiver Sets

The primary objective of television broadcasting in Ghana is to combine school education with regional education. In the light of this objective, television sets will be initially installed at places such as markets, community centers, schools, hospitals, public halls, agricultural offices and universities, etc.

3) Expansion Plan

- a) Construction of a main transmitting station in Bolgatanga
- b) Construction of a multi-purpose hall in Accra
- c) Construction of a news studio in Accra
- d) Construction of studios for production of local programmes in nine regional cities.
This is for the expansion of the programme coverage area and to promote the development of national culture.
- e) Supply of news-gathering facilities
This is to further expand the range of news gathering
- f) Supply of a OB Van for Kumasi
Kumasi is the second largest city, and activities such as national sports, social cultural and political events are being held. The OB Van will be able to cover these events including northern regions.

CHAPTER 3 GENERAL CONDITIONS OF THE PROJECT SITES

CHAPTER 3 GENERAL CONDITIONS OF THE PROJECT SITES

The project sites are GBC broadcasting complex in Accra and at several places distributed in Ghana. The outline of each project site is stated in the following.

3-1 GBC Broadcasting Complex in Accra

(1) Location

GBC broadcasting complex is located in the central part of Accra city. The area of the site is about 65,000 m², and a group of some 30 buildings and radio and television studios are arranged in the site. The location of GBC broadcasting complex stands at 05°34'25" L.N. and long 0°11'30" W..

(2) Situation of Existing Buildings

The buildings are low storied structure of one-story or two-stories which are built of reinforced concrete.

The buildings of the main radio broadcasting facilities, television broadcasting facilities and offices are connected to each other with a roof passage. Superannuation of pillars, beams, walls and stairs which consist the main structure of the existing building of GBC broadcasting complex is scarcely recognized.

(3) Situation of National Radio Studio Building

The building is located in the south-western part of the site, it is a two-storied building of reinforced concrete structure with an ordinary roof which was built 25 years ago.

The degree of superannuation of this radio studio building is most remarkable even among the GBC broadcasting complex buildings, therefore, rehabilitation is required immediately.

Outline of the building:

Structure : Reinforced concrete (Rahmen structure, Rigid Frame)

Scale Two-storied, 1st floor 173 m²
2nd floor 161 m²
total floor area 334 m²

Roof : Reinforced concrete slab structure

Opening : Exterior..... horizontal mobile glass louver
interior..... Wooden fittings

Exterior wall : Mortar, sand textured coating finish

Air conditioning facilities:

Air-cooled package duct system and window-type cooler (cooler equipment only) are used together

In the main structure of the building (pillars, beams, exterior walls, floor boards and stairs etc.) no cracks, bending and curving, etc., were recognized so far by observation but superannuation of interior finish materials was serious. For example, peeling off of cork tiles which are the floor finish material of studios, peeling off of wall finish material and falling of ceiling finish material, etc., were partly observed at each room.

Superannuation of air conditioning facilities was most significant, the ducts on the west exterior wall were almost broken down.

The air conditioning machine itself is also superannuated that there is almost no means of recovery. As for the lighting fixtures of all rooms, they were broken and the tubes of fluorescence lights were all burnt out.

(4) Situation of Television Studio Building

This is a two-storied building of reinforced concrete structure located in the south-eastern part of the site. It was constructed 20 years ago and contains two black-and-white television studios.

Structure	: Reinforced concrete (Rahmen structure, Rigid Frame)
Scale	: Two-storied, 1st floor 1,051 m ² 2nd floor, 316 m ² total floor area, 1,367 m ²
Roof	: Reinforced concrete slab structure
Opening	: Wooden fittings
Exterior wall	: Mortar sand textured coating finish
Air conditioning facilities	: Water-cooled duct system (cooler equipment only)

The main building structure was almost in complete condition, no cracks etc., were recognized. According to the long term use, the interior materials of studios were stained a little, but some of the vinyl tiles of the floor were peeled off.

Regarding the attached rooms, peeling off of finish material of ceiling and floor was observed, and especially, according to the descend of ceiling assembly, unevenness of surface of ceiling was observed.

As for the exterior finish material, it was only slightly stained and there were no cracks and leaks in the roof, etc.

Regarding the air conditioning facilities, a central air conditioning system was installed at the time of initial construction work, and three chillers were set in the air conditioning machine room, to supply cooled air to No.1 and No.2 studios and attached rooms through three duct systems. However at present, the cooling capacity of the chiller has decreased extremely and only a little amount of cooled air is supplied to the studios. Moreover, the chiller for the

relative attached rooms is completely out of order and not operating.

As for the lighting equipment of the building, the fixtures were broken and the tubes of the fluorescence lights were burnt out at all rooms same as to the radio studios, and the lighting is extremely low, it may be insufficient for various kinds of activities.

(5) Situation of Broadcasting Facilities

The outline of the broadcasting facilities is as stated in 2-3 "Organization and Present Condition of GBC". The objects of rehabilitation are the following facilities.

- | | | | |
|----|--------------|-------------------|---------|
| 1) | Radio : | General studio | 4 rooms |
| | | Continuity studio | 1 room |
| | | Main control room | 1 room |
| | | OB Van | 1 set |
| 2) | Television : | Production studio | 1 room |

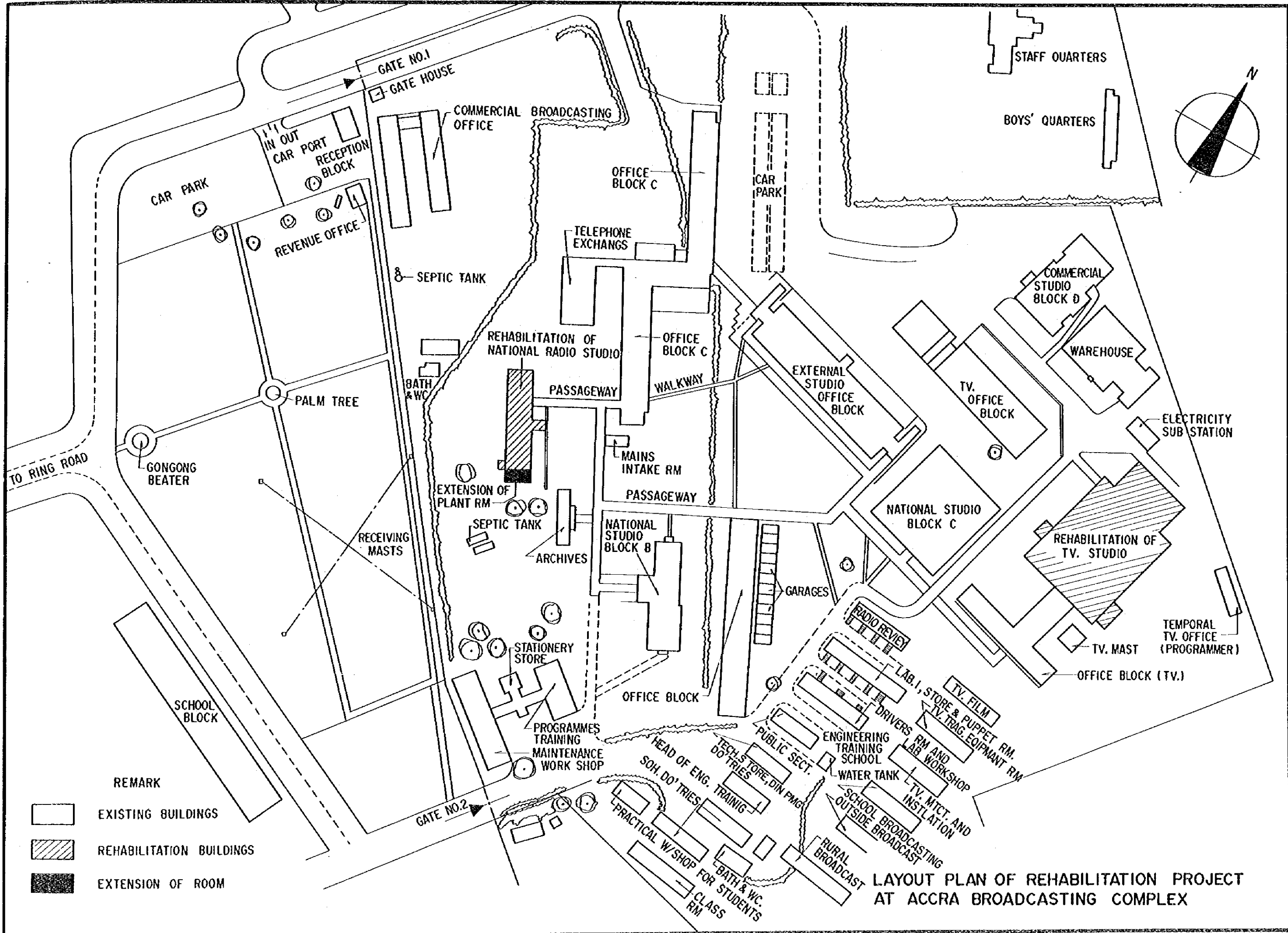
(6) Transportation

The road facing the site is the main Ring-road of Accra city, and transportation to other areas in the city by car is convenient. The Japanese Embassy is close to GBC headquarters.

No obstacle is expected in transporting materials during the construction work.



LOCATION OF GBC BROADCASTING COMPLEX



- REMARK
- EXISTING BUILDINGS
 - REHABILITATION BUILDINGS
 - EXTENSION OF ROOM

LAYOUT PLAN OF REHABILITATION PROJECT AT ACCRA BROADCASTING COMPLEX

3-2 Adjangote Main Transmitting Station

The service area of this transmitting station includes the regions of the capital Accra, neighbouring Tema region and the eastern regions.

(1) Location

The station is located on the summit of Mt. Adjangote at a distance of 17 km northward of Accra. The location stands at $5^{\circ}43'20''$ N.L. and long $0^{\circ}14'00''$ W. and the altitude is 309 m above sea level.

Mt. Adjangote is the highest mountain among Accra and Tema regions, and as the surroundings are flat land, the site of the transmitting station is very good for the radiation of broadcasting waves.

The area of the site is approximately $3,300 \text{ m}^2$ (45 m x 75 m). Engineering staffs are always residing at the transmitting station and an official residence is built next to it.

(2) Television Transmitting Tower

This tower was built in 1965 and it is 123 m high. The structure is a self-supporting type with a square section. The used material is zinc-coated steel of England standards. Each material and joiners are connected firmly with zinc-coated bolts. No corrosion of steel material was observed. Repainting was done 8 years ago but peeling off of paint was observed everywhere.

(3) Transmitting Station Building

This building is installed beside the tower, it is a one-storied reinforced concrete structure building with a floor area of about 128 m^2 .

There is entirely no damage observed in the main building structure, but it is considerably stained. Some of the floor finish material are peeled off and the ceiling finish materials were missing partly.

Moreover, some of the metal fittings of the wooden door were also damaged. As for the air conditioning facilities, the equipment of air cooled package system which is installed outdoor was seriously superannuated and almost not operating.

(4) Engine Generator Building

In the building, two engine generators which were made in England are installed, but only one of them is operating, the other one is completely out of order. Maintenance is impossible because it is difficult to obtain spare parts, etc. The rating of the existing generator is 3-phase, 50 Hz, 47.5 kVA.

(5) Broadcasting Facilities

The outline of the broadcasting facilities is stated in item 2-3 "Organization and present condition of GBC".

(6) Transportation

The highway from Accra to Tema port where the materials will be unloaded are in good condition, there is no problem in executing the construction work.

3-3 Jamasi Main Transmitting Station

The service area of this station includes the areas of Kumasi region, surrounding region of Sunyani city by means of off-air relay.

(1) Location

The transmitting station is located on the summit of Mt. Kumpibuo 220 km northwest of Accra, and 40 km north-northeast of the city of Kumasi which is the central area of Ashanti region. The location of the site stands at $6^{\circ}59'38''$ N.L. and long $1^{\circ}26'45''$ W. and the altitude is 590 m above sea level.

Mt. Kumpibuo is a high mountain among the Ashanti region, it is relatively close in distance to Kumasi which is the central city. The site is the most appropriate for serving the city of Kumasi. Also, the site is appropriate for conducting off-air relay of television wave to Sunyani region.

The area of the site is about 3,000 m² (50 m x 60 m).

At the transmitting station, engineering staffs are always residing.

The outline of the television transmitting tower, transmitter building, engine generator building, transmitting facilities and the condition of superannuation are approximately the same as to that of Adjangote transmitting station. Still more, the height of the transmitting tower is 61 m and the floor area of the transmitter building is about 250 m².

(2) Transportation

For the transportation of materials from Accra and Tema, the highways will be used because the rail road is barely operating.

The high ways are considerably damaged but there will be no trouble in transporting the broadcasting equipment and materials.

Access road to the project site is also in good condition.

3-4 Kissi Main Transmitting Station

The service area of this station includes Cape Coast city and Sekondi in the Western region, etc.

(1) Location

The station is located on the summit of Mt. Kissi which is 30 km west of Cape Coast, the central area of the Central region, 170 km west of Accra.

The location stands at $5^{\circ}10'00''$ N.L. and long $1^{\circ}31'24''$ W. and the altitude is 55 m above sea level.

Since Mt. Kissi is a hill relatively high above sea level which is close to Cape Coast, it is the most appropriate site for serving television broadcasting to the whole area of the Central region and the Western region.

The area of the site is approximately $3,000 \text{ m}^2$ (50 x 60 m).

The outline and the condition of superannuation of the television transmitting tower, transmitter building, engine generator building and transmitting facilities were about the same as to that of the television transmitting stations of Adjangote and Jamasi.

Furthermore, the height of the tower is 107 m.

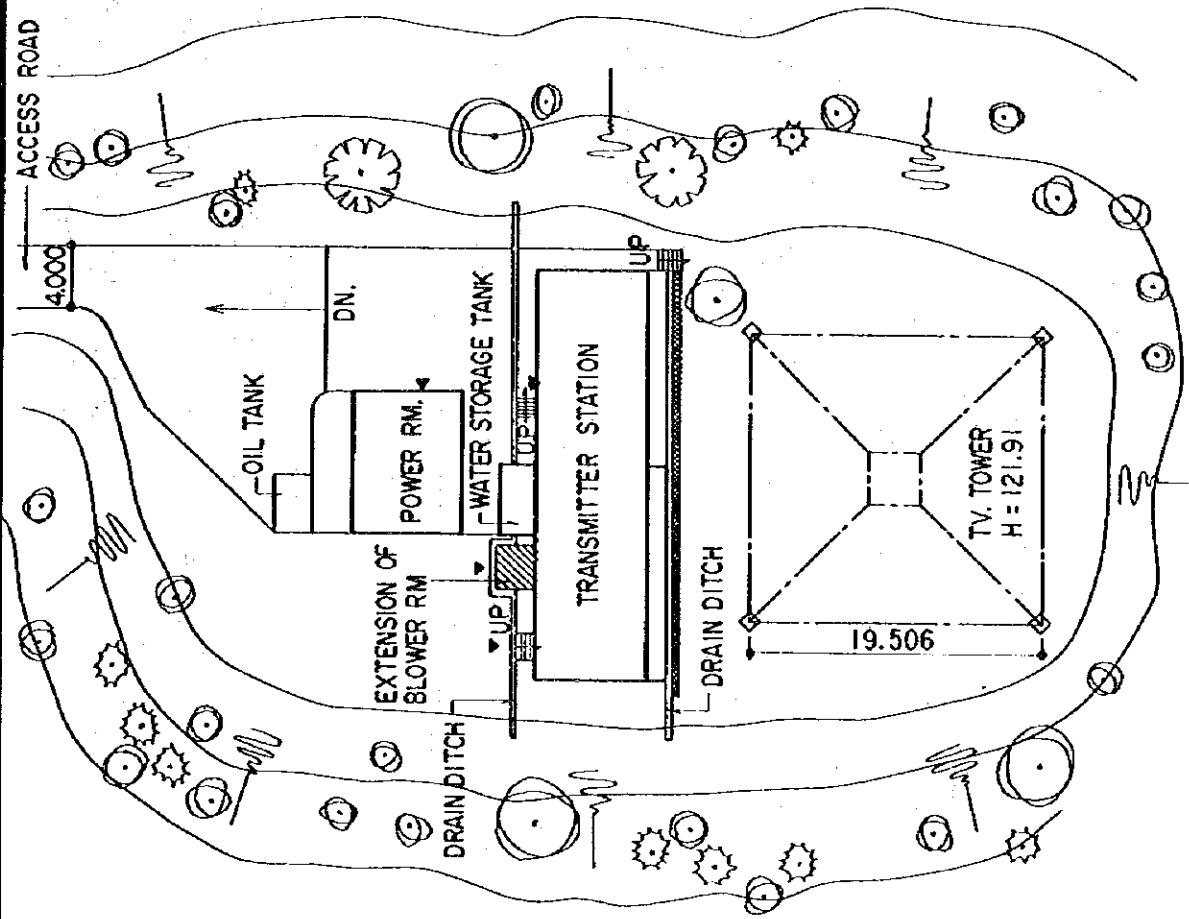
(2) Transportation

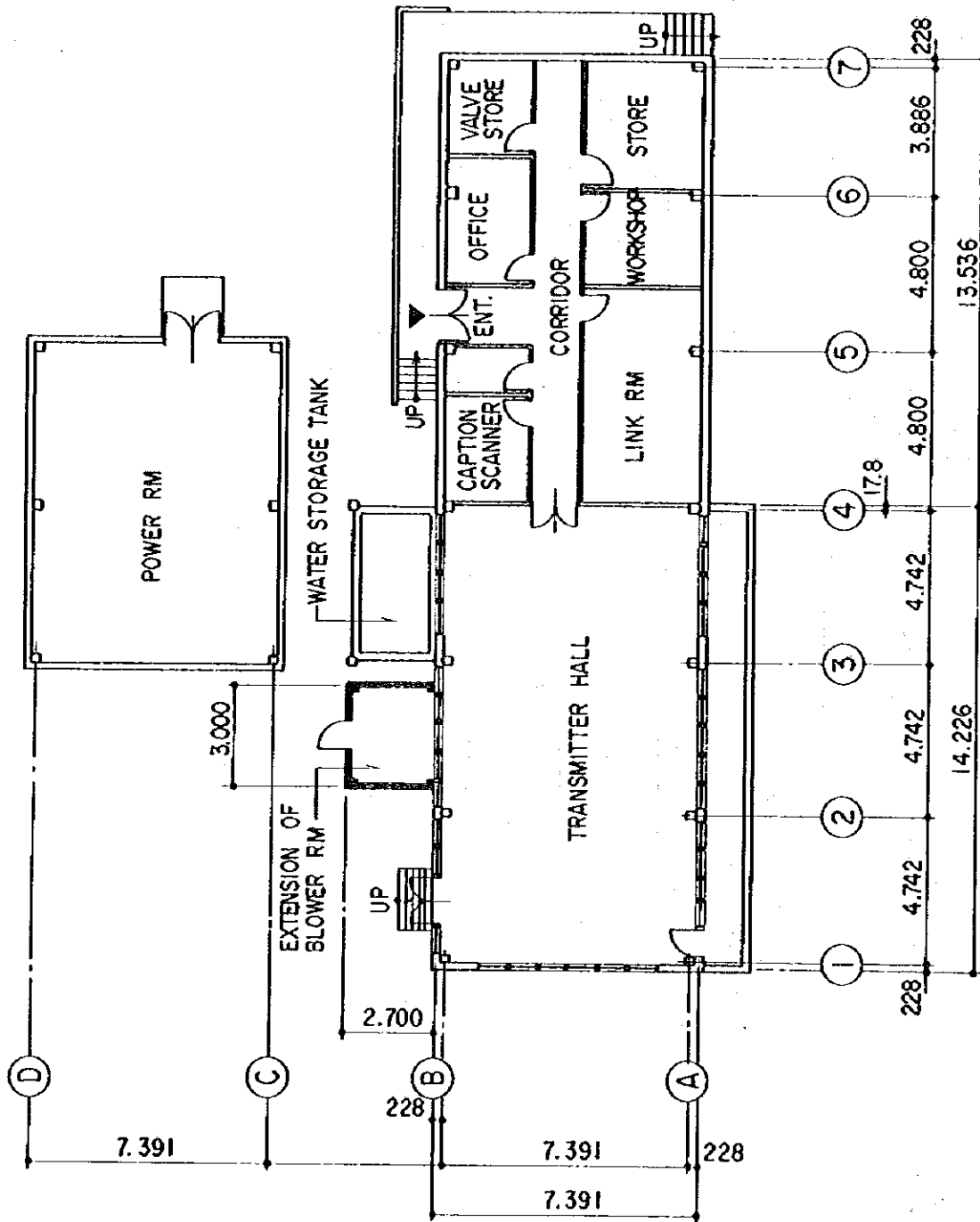
Regarding the highways from Accra and Tema, and the access road to the project site, they are all in good condition.

3-5 Diffusion of Public Colour Television Receiver Sets

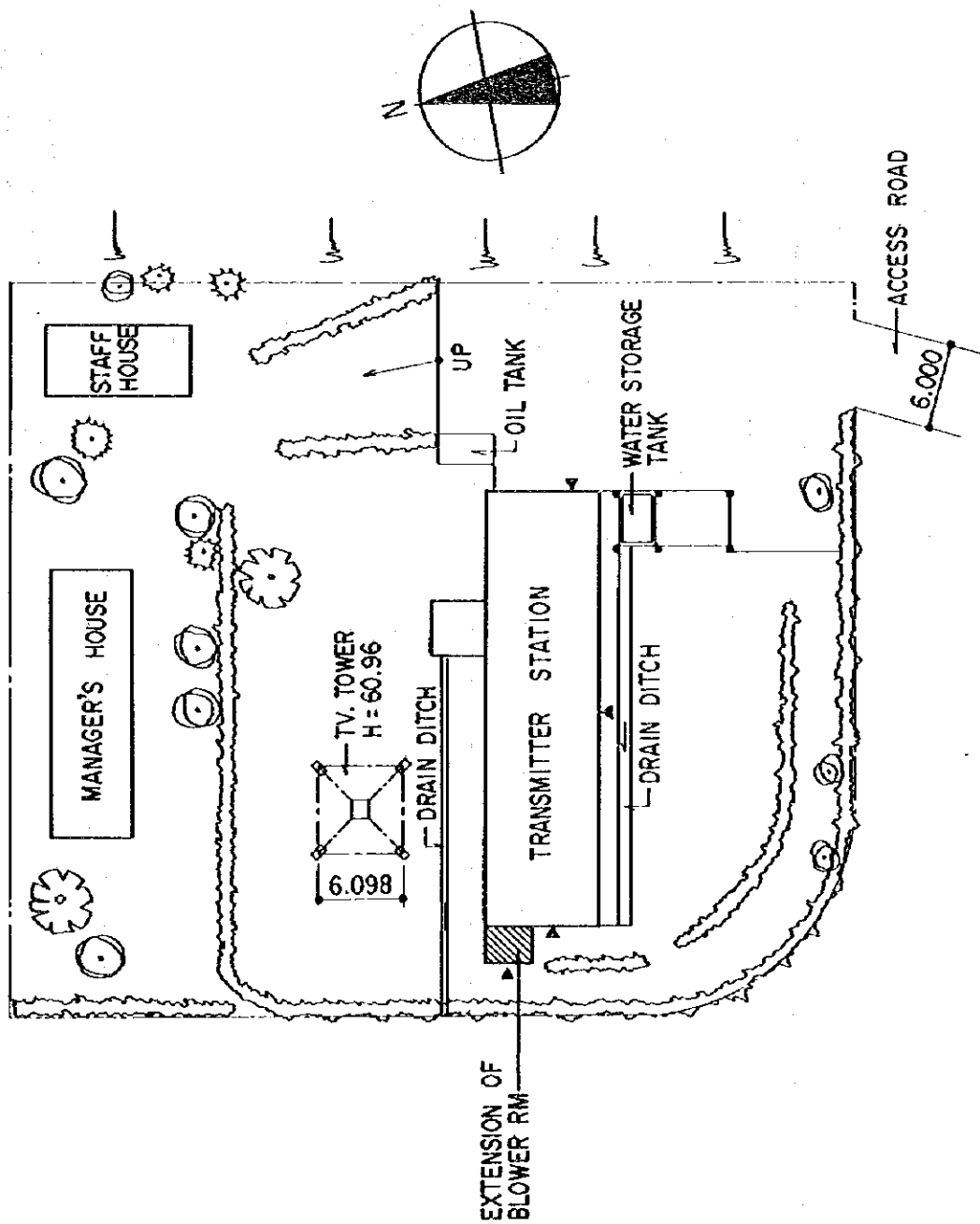
As for the places in the service areas of the above main Transmitting stations to install colour television receivers, such as schools, hospitals, public halls, offices, colleges, etc., they will be determined upon detailed consultation with GBC.

SITE LAYOUT OF ADJANGOTE
TV TRANSMITTING STATION S = 1/500

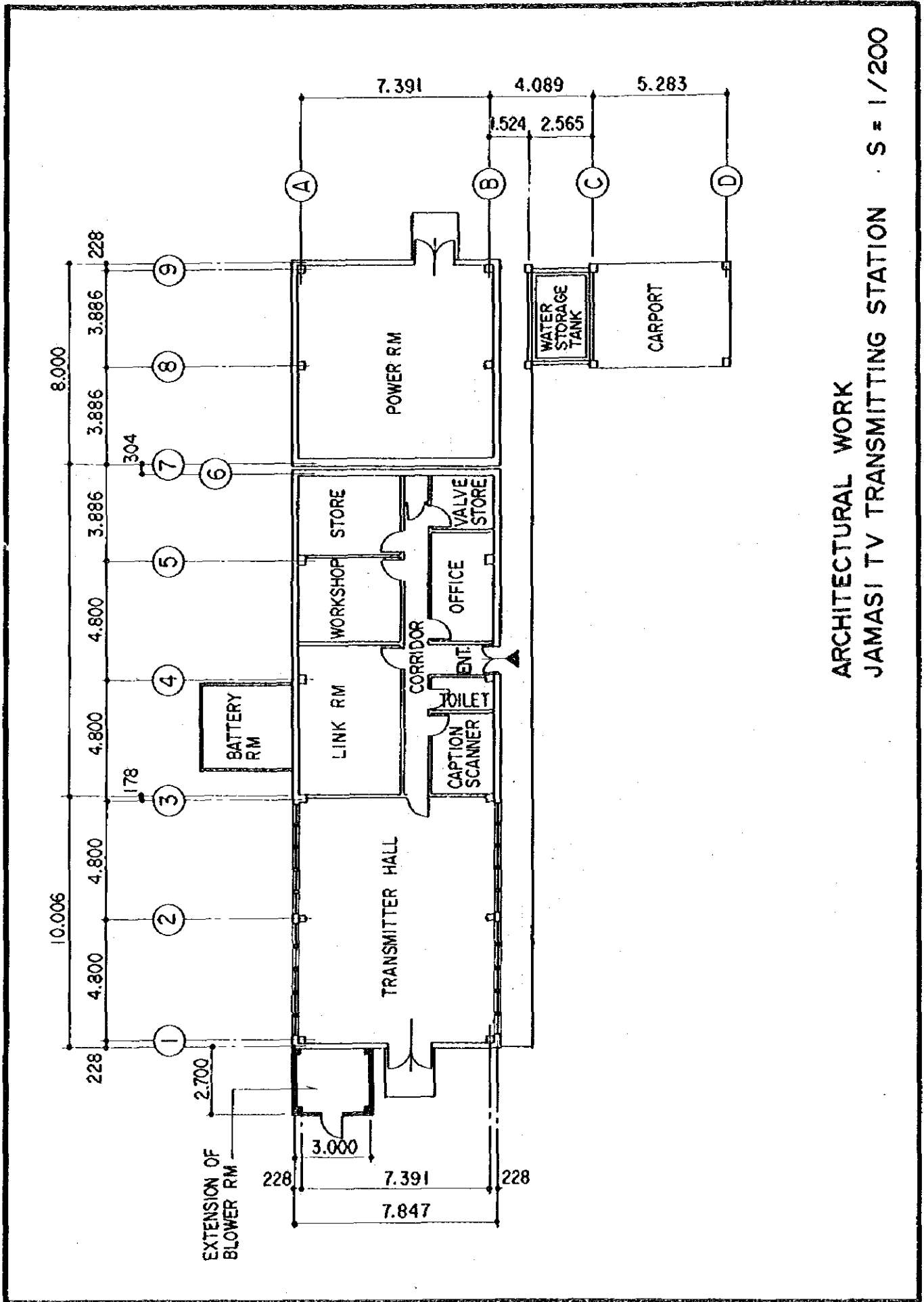




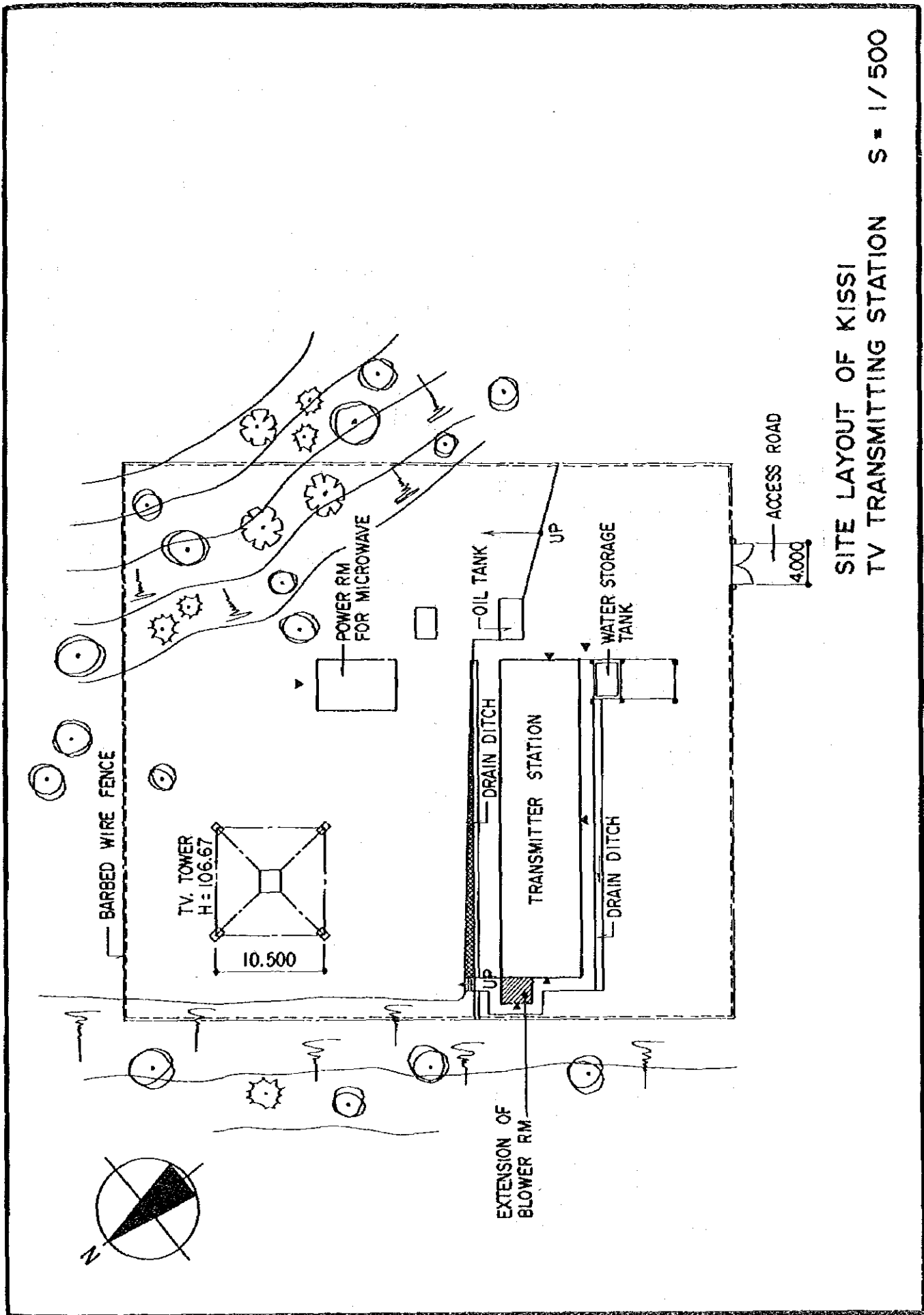
ARCHITECTURAL WORK
 ADJANGOTE TV TRANSMITTING STATION S = 1 / 200



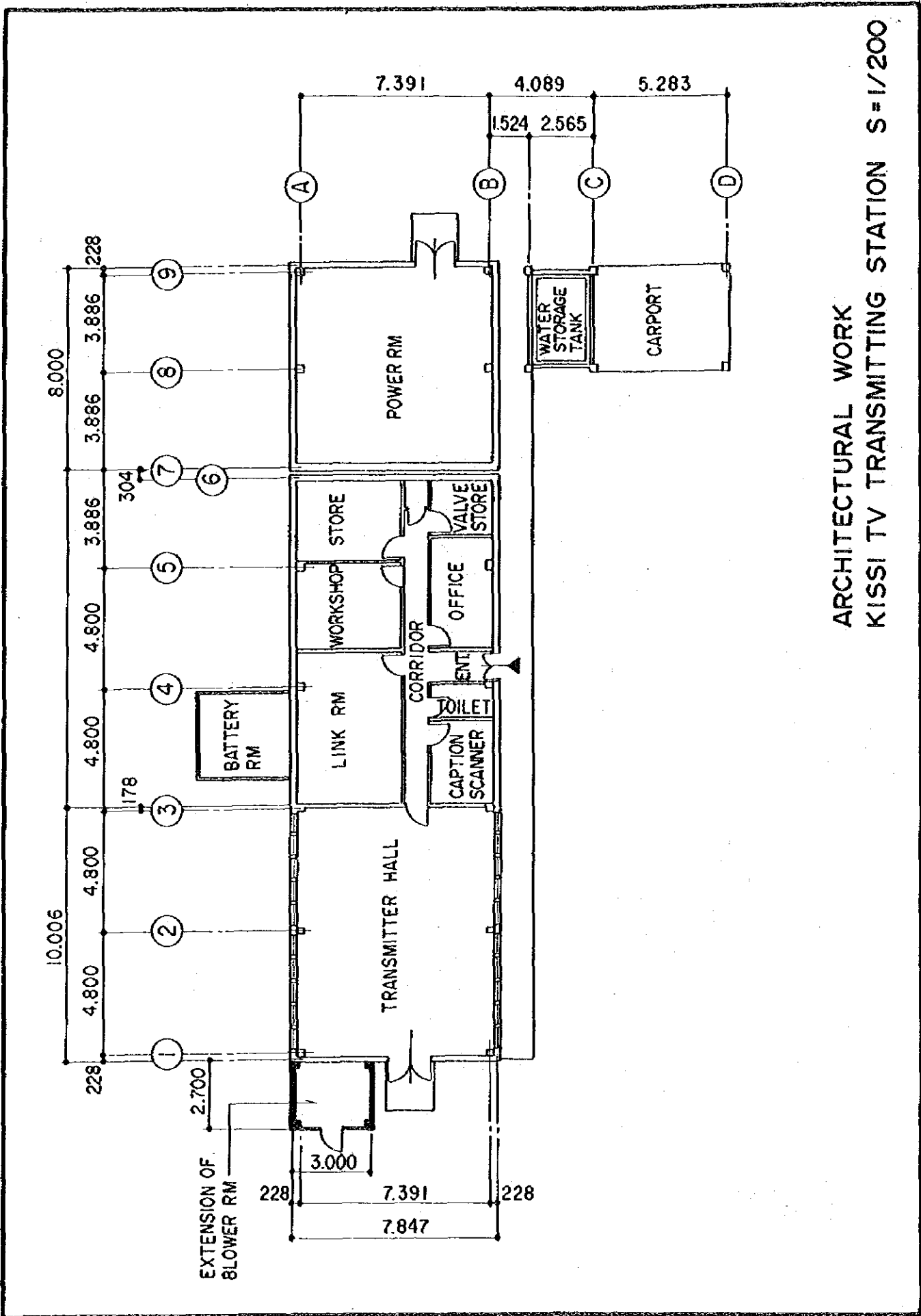
SITE LAYOUT OF JAMASI
TV TRANSMITTING STATION S = 1/500



ARCHITECTURAL WORK
 JAMASI TV TRANSMITTING STATION · S = 1/200



SITE LAYOUT OF KISSI
 TV TRANSMITTING STATION S = 1/500



ARCHITECTURAL WORK
 KISSI TV TRANSMITTING STATION S=1/200

3-6 Geography and Climate

(1) Geography

The territory of Ghana is approximately 240,000 km², it extends from 4°45' N.L. to 11°11' N.L. , and from long 1°12' E. to long 3°15' W., and the area is about 2/3 of that of Japan. It is bordered by Togo on the east and Burkina Faso on the north and Ivory Coast on the west.

In general, the geography of the African continent is a vast plateau, most of the flat land of which the altitude is lower than 200 m is distributing narrowly along with the coastal line.

More than half of the territory of Ghana is flat land, but there is a high land in the central part and the neighbour of the border line, which can be geographically divided into 4 zones, they are namely a low sandy coast-zone, a grassy plain of about 100 km width spreading along with this land, a forest zone in the western border line and the central Ashanti region, and a dry zone in the northern and eastern part.

The main river of Ghana is the Volta. At a place of half-way down the river, it joins the Black and White Volta. At present, after the completion of Akosombo dam, the river up to the joining point has become a lake which is called Lake Volta. This lake has an area of 8.500 km² and is the largest artificial lake in the world.

(2) Climate

Most of the African continent is in the tropical zone. The area which is the most tropical zone is near the equator, where the altitude is lower than 200 m and the temperature and the humidity are high.

1) Temperature

In general, the temperature is high throughout the year, although, there is little variation. The average maximum temperature marks the highest in March throughout the country, and the average minimum temperature marks the

lowest in August. The highest temperature usually occurs between February and April, usually just before a heavy rainfall.

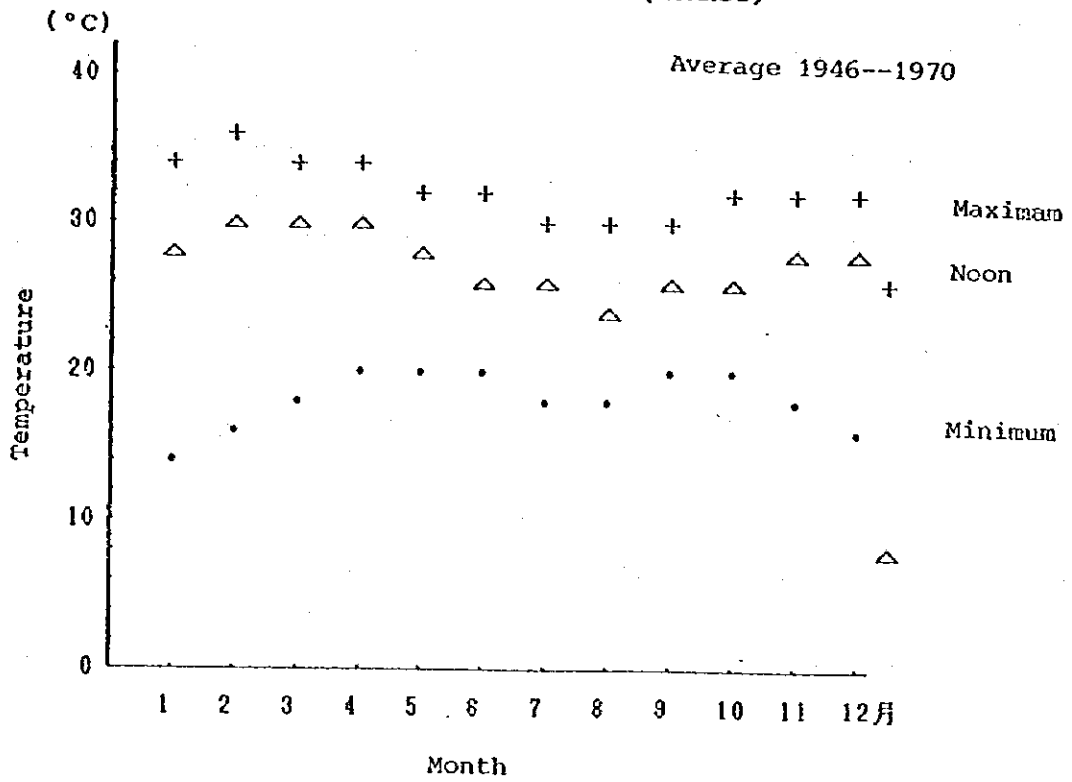
The average minimum temperature marks in the coastal area in August.

2) Humidity

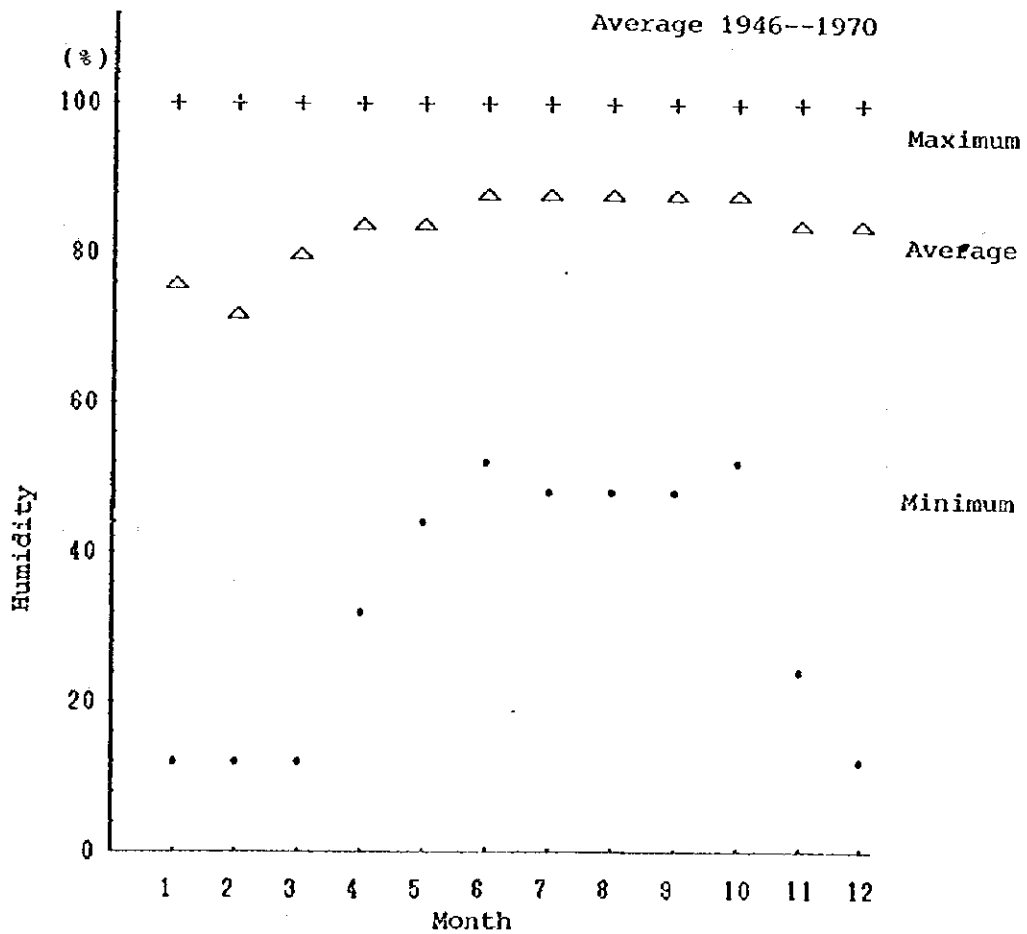
The humidity is high in the southern regions, especially at night and in early morning. In the coastal area, the humidity rises to 95% - 100% at night and morning. But in the evening, it descends to 65 - 75%.

In the northern part, the humidity is similarly high in the rainy season, but in other seasons it is lower than 80%. In January in the extreme northern part it becomes as low as 25%.

ANNUAL AVERAGE TEMPERATURE (KUMASI)



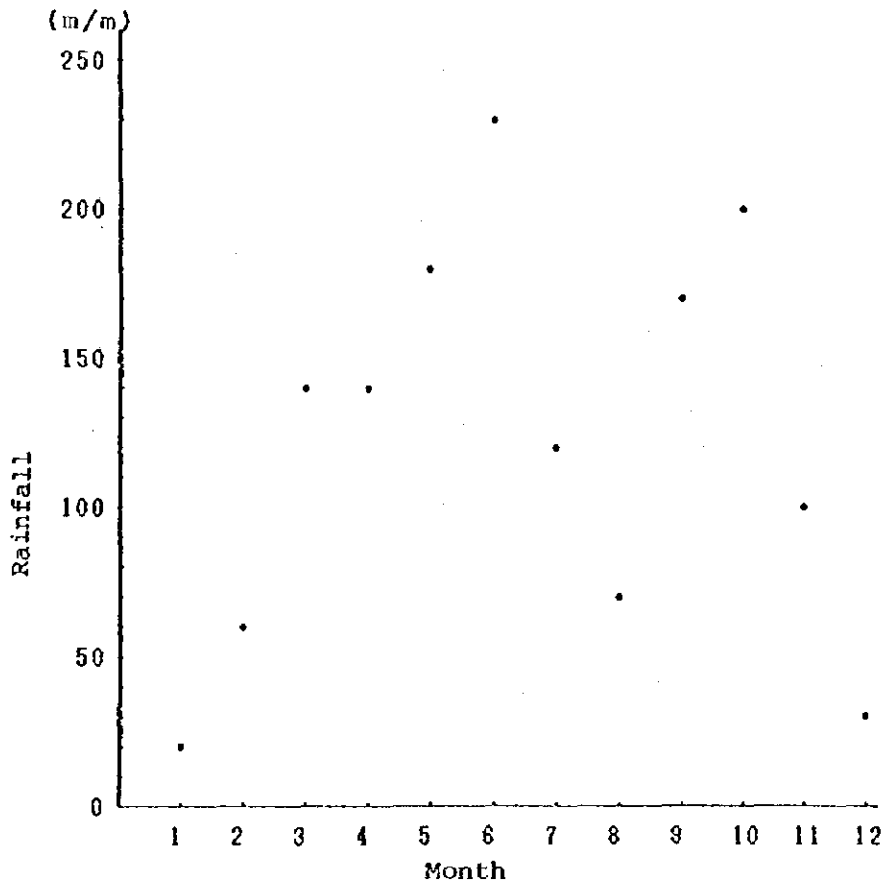
ANNUAL AVERAGE HUMIDITY (KUMASI)



3) Rainfall

Rainfall in Ghana is very seasonal, there is a large difference in rainfall according to the regions on the month and the total of a year. In a rainy season, it is quite common that there are days with even no rainfall. In general, January is dry throughout the country, although, the driest month in the eastern coastal zone is August. It is to be noted that lightning mostly occurs in the rainy season.

ANNUAL AVERAGE RAINFALL (KUMASI)



4) The Harmattan

The harmattan attacks the whole northern area during the period between November and April. In the southern area of the country, the influence of Harmattan is slight, but it affects the coastal areas every year during a short period. At the initial period of Harmattan, the sky becomes cloudy and the ground becomes extremely dry. Then, it fogs on the ground for many days and interrupts the sunbeams. In the worst case, yellow sandy dust attacks the ground surface.

As mentioned above, the average temperature is relatively high, and the humidity also rises according to the time in the day. There is relatively much rainfall but the influence upon this broadcasting project is less, the matters taken into consideration are the countermeasures against the sandy wind which occurs with the Harmattan, no other special countermeasures are required.

(3) Topography

As the rehabilitation work will be carried out at the existing buildings, there will be no topographical problem.

Regarding the main three transmitting stations, Adjangote, Jamasi and Kissi, where were build on the summit of a mountain, there is no special problem to take into consideration to execute this project, because the broadcasting stations exist and leveling of ground is already finished.

(4) Geology

Survey of geology of each site was not conducted for this project, but as there was no deterioration observed in the foundation of Accra GBC complex building, and the building itself which was built over 20 years ago, it seems to be no problem in geology.

In regard to the three main transmitting stations, as a result of the examination of sub-soil of neighboring spots of civil engineering, etc., the surface of ground is

covered with reddish brown monomolinite stratum which is peculiar to the African continent, but approximately 2.5 m downwards from the surface of ground, there is gravel stratum which has a bearing capacity of 30 - 50 t/m². For this reason, it can be judged that the building as well as the steel tower of all the transmitting stations will be able to bear continuous usage from now on.

3-7 Infrastructure

(1) Situation of the Electric Power Supply

The all electric power in Ghana is generated by hydropower. The electric power is being generated at Akosombo Dam power plant of the artificial Volta Lake. The lake was made by damming up the Upper Volta River. The electric power generated from this plant is supplied throughout the country.

The maximum generating electric capacity of the power plant per day is 9,600,000 kWh. However, according to the economic difficulty the Government is limiting (The supply of power is suspended 21 hours in two days, but during television broadcasting hours (6:00 p.m. - 9:00 p.m.) there is no power failure) the supply of electric power to the general public, and is exporting the surplus electric power to Togo to gain foreign currency.

It is to be noted that for the public organizations such as radio, television stations and the police, etc., there is no power failure.

Since the increase of pondage of Akosombo Dam is expected from now on, as the amount of generation of electricity will be increased power failure may be terminated by the end of 1984.

Under such a condition, the stability of the supplied power voltage could not be said that it is good. voltage variation is as much as $\pm 10\%$.

Regarding the electric power receiving facility of GBC, 11 kV 50 Hz power is received by the 3-phase, 3-line system, and stepped down to 240 V through a transformer, and supplied to each equipment.

Regarding this power receiving facility, superannuation is serious, therefore, rehabilitation is necessary.

The power receiving facilities of each main transmitting station are operating at least. However, the emergency engine generators are seriously superannuated and rehabilitation is required.

(2) Telephone

Telephone communication between the cities in Ghana and each of the prospected site is almost impossible because of the superannuation of communication facilities.

The Government is planning to revive the communication network by OECF Yen loan, and a loan from the IBRD. At present the plan is the executing stage.

It is expected that the communication network will be in operation at the time of completion of this project.

(3) Water Supply and Drainage

Water supply and sewage are no special problem

3-8 Construction Circumstances

(1) Construction Industry

Regarding the construction industry in Ghana, new construction works are suppressed of the stagnation of economy. Therefore, many half-finished buildings can be seen in the cities. For this reason, most of the construction enterprises are out of business, although, they are proficient in construction work.

(2) Construction Workers

The quality of construction workers is high. However, many of them are emigrating to neighboring countries, such as Nigeria and Ivory Coast because of lack of work in the country.

(3) Construction Materials

Under the economic difficulty, construction materials are extremely lacking and it would be difficult to secure a large amount of them.

The materials which can be procured in Ghana are only cement, timber, sand and gravel.

All materials necessary for the project will have to be imported from Japan except for the ones mentioned above.

(4) Other Problems on Execution of the Project

1) Petrol

As the supply of petrol is limited in Ghana, it will be very difficult to get a sufficient amount of it.

2) Vehicle

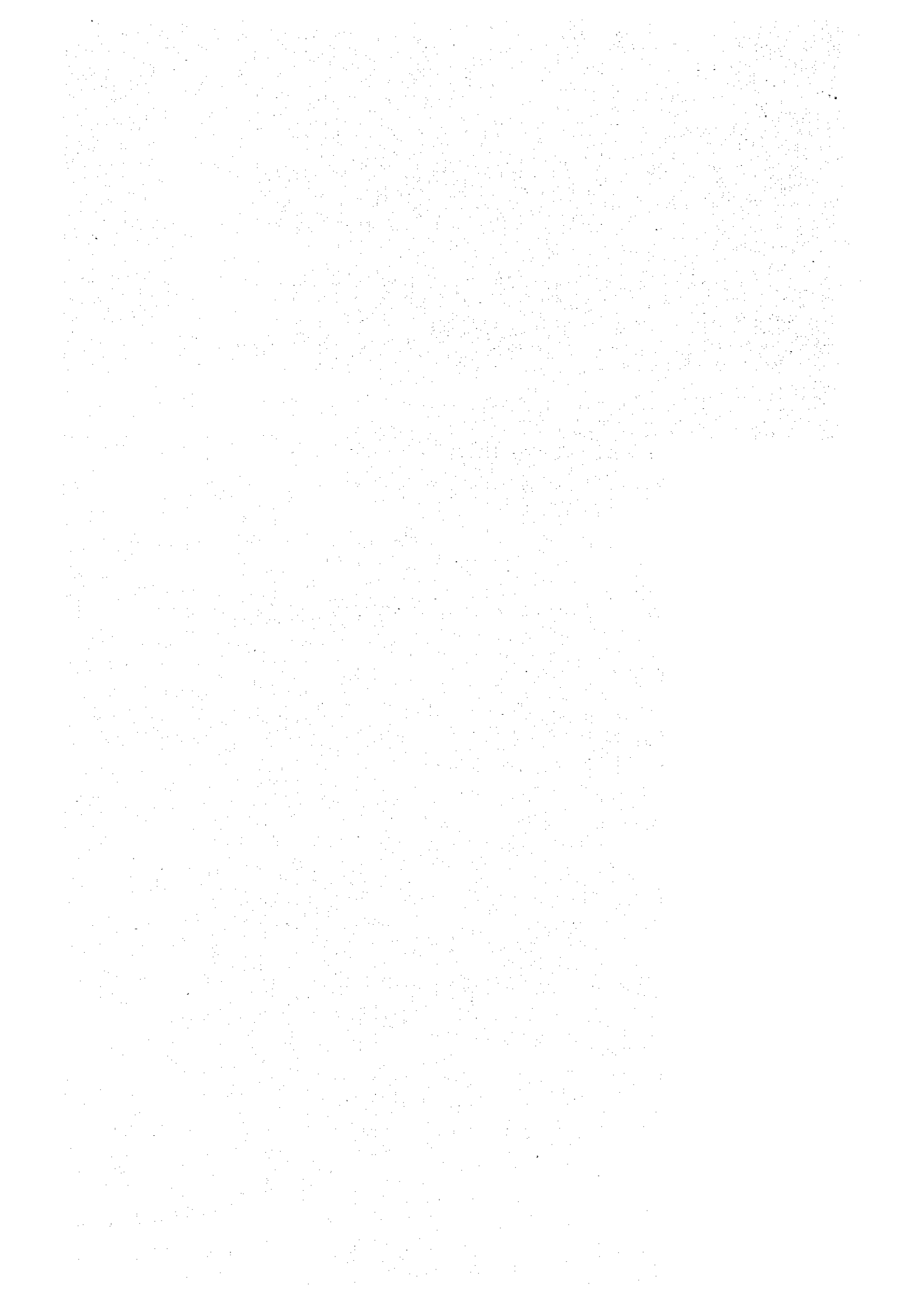
The number of vehicles is few. A rent-a-car is very expensive and securing of cars for the construction work will be difficult.

For this reason, it will be necessary to bring in vehicles from Japan for the construction work.

3) Inland Transportation (from Tema Port to each project site)

According to the agreement with the Government of Ghana, it was decided that the Government of Ghana will bear the necessary expenses of inland transportation.

CHAPTER 4 CONTENTS OF THE PROJECT



CHAPTER 4 OUTLINE OF THE PROJECT

4-1 Objective of the Project

The project is aiming at the rehabilitation of superannuated radio and television broadcasting facilities to recover the original functions to serve with. All television equipment will be fully colour broadcast with high fidelity colour programmes.

In accordance with rehabilitation of radio broadcasting facilities, it is intended that the broadcasting service improves the social communication, education and livelihood of regional inhabitant.

4-2 Basic Concept on the Rehabilitation of Radio and Television Facilities

The Government of Ghana have been establishing their policy on the promotion of the project to develop human resources through educational broadcast by the rehabilitation of broadcast facilities. The survey has been conducted on the functions of existing facilities from studio to transmitting stations.

4-2-1 Rehabilitation of Radio Broadcasting Facilities

(1) Studio Equipment

Among the existing 21 studios, 12 studios are scarcely used and the remaining 9 studios are operating provided with poor functions.

As the results of study to ensure the minimum functions to provide with, it has concluded to rehabilitate four studios and related transmission facilities including continuity studio and master control room for domestic service (GBC-1, national service).

Almost all of the six studios mentioned above are in the same building and required to be improved for reestablishment of broadcasting service.

All of the six studios will be improved by the renewal of studio facilities, master control room and air conditioners.

As for the building itself, it is limited to the partial improvement such as acoustics and so on that are necessary for the project.

(2) Radio OB Van

In order to establish the news broadcasting at the site of event, medium sized radio OB Van will be provided along with the improvement of studio facilities and its functions.

4-2-2 Rehabilitation of Television Facilities

(1) Studio Facilities

Two television studios are existing, however features of the first studio are almost out of order. Renewal of equipment are being under way in the self-financed project of the GBC.

Floor area of the second studio which is the objective of the project is about 170 m² and the equipment will be renewed with new ones for colour television service and the functions to produce their own programmes will be recovered and increased with high quality picture, giving large influence on various fields of broadcasting.

Even after the completion of the project, it is required to provide two more studios to meet with the increase of programme hours and to cope with emergency service for programme production.

Improvement of air conditioner will also be made together with broadcast facilities.

(2) Transmitter Facilities

At present 4 main transmitting stations and 9 transposer stations are being maintained under the supervision of the GBC, however due to failures of transmitter facilities, almost all of these stations are operated insufficiently and main transmitter stations at Adjangote, Kissi and Jamasi are scarcely operating with radiated signal of poor picture quality. From the fact it can be easily estimated that renewal of superannuated equipment would be necessary as early as possible, because of the fact that these transmitting equipment are using many vacuum tubes.

In order to establish the basic design, survey on the population distribution and the necessity of the design is conducted and as the result of it, it is concluded that the three stations as Adjangote (Eastern region and Accra), Jamasi (Ashanti region, Kumasi) and Kissi (Central and Western region, Cape-Coast) have to be renewed due to their importance in the regions.

Transmitter power is specified to 5 kW each, and population coverage within the service areas is totally expected to be more than 60%.

Beside there has been a plan to construct new transmitter station at Bolgatanga by the Yen credit project to construct microwave link through the country as a part of northern microwave link and if it is included the coverage will become more large.

Transmission at the northern region (Tamale) which has about 9.5% of total population are not being operated due to the failure of equipment, requiring the continuation of transmission service by executing next project.

As for the service at Sunyani and its surrounding region, radiated signal from Jamasi could not be received directly, hence rehabilitation of Sunyani transposer station would be inevitably necessary.

Especially, it should be pointed out that some of the receiving antenna of audience are directed to the neighbouring Ivory Coast to receive the signal coming from.

From the fact and political viewpoint on administration, it would be necessary to serve with Ghana television programme transmission as soon as possible.

4-2-3 Diffusion of Public Colour Television Receiver sets

GBC has been planning to increase educational programmes on social, adult education and women programmes when the project is completed. Due to the reason that the people under the object of the service are mainly belong to the lower social classes in many cases, so to make effectively use of the educational effect of television broadcasting together with the attractiveness of colour television service and to accelerate the diffusion of television receivers, installation of public colour television sets at community centres, schools, hospitals, etc., have been planned. Those are totally 200 places.

4-2-4 Power Supply Facility for Accra Studio

Power receiving transformers at both broadcasting houses of GBC's radio and television at Accra are superannuated and renewal of them with capacity of about 750 kVA are necessary.

4-3 Basic Design

4-3-1 Basic Principle of Design

Following items are made as the basic principle of project design.

- (1) To plan a facility that best meets the objective of the Project and most optimum within the framework of the Grant Aid.

- (2) Appropriate machineries, materials and way of construction have to be selected to meet with the objective and utilization of the facilities within the period of construction schedule.
- (3) To take precautions on the project construction not to affect the broadcasting activities in the existing facilities.
- (4) In order to make efficient use of labour power and to reduce the total construction cost, it is required to use the combination of materials imported and manufactured domestically in architectural portion.
- (5) In designing the facilities, care should be taken to make economical and easy for operation and maintenance and to meet with the future expansion.
- (6) Specifications of all equipment are required to satisfy the CCIR technical standards and designed to have enough mechanical strength, electric performances, mechanical guard for safety, and so on.
- (7) Especially following items such as maneuverability, reliability, economy and supplies of spare parts have to be taken into consideration in the basic design. As for the provision of spare parts, each part is principally furnished for main parts, however with regard to the convenience of maintenance, some of them are supplied in the form of module units.

4-3-2 Basic Design

(1) Studio Facilities

Following facilities will be supplied and if necessary repairing of building would be made partially for the damaged portion.

Renewal of air conditioner will be made.

- 1) Sound control console, tape recorder, disk player and microphone are installed in each of 4 radio and one continuity studios.
- 2) Radio Master Control Room (Radio-MCR)
 - a) Switching and control console for the above studios will be provided.
 - b) Receiver and ancillary equipment to relay programmes from OB Van will also be installed.

RADIO STUDIO EQUIPMENT

LOCATION	FACILITIES	Q'TY	REMARKS
Radio-1 Studio Radio-2 Studio Radio-3 Studio Radio 6 Studio	Audio Console Tape Recorder Disk Player Monitor Equipment Microhpone Microphone Stand	1 set 2 sets 2 sets 1 set 1 set 1 set	Radio - 1, 2, 3, Studio, Continuity Studio and Master Control Room are in- cluding rehabilitation of Air Conditioning System.
Continuity Studio	Audio Console Tape Recorder Cassette Tape Recorder Disk Player Monitor Equipment Talk back Speaker Microphone Microphone Stand Fader Unit Announce Table Announce Table Microphone Cable	1 set 3 sets 1 set 2 sets 1 set 1 pc 1 set 1 set 1 set 1 pc 1 pc 1 set	
Master Control Room	Main Control Equipment Audio Monitor Timer Clock	1 set 1 set 1 set	

3) Radio OB Van

A OB Van with an ability of relaying programmes from site of distance apart 50 km from Accra, will be supplied.

RADIO OB VAN EQUIPMENT

EQUIPMENT	Q'TY	REMARKS
Vehicle	1 set	including Air conditioning system
Generator	1 set	2 kVA, 220 V, 50 Hz
Audio Console	1 set	16 ch Input, Portable type
Monitor System	2 sets	
Wide Band Relay System	1 set	including Receiving system at Accra Station
V H F Transceiver	1 set	
Tape Recorder	3 sets	
Microphone	1 set	
Microphone Stand	1 set	
Wireless Microphone	1 set	
Air Monitor	1 set	

4) Television studio and its sub-control equipment

a) Studio equipment

Three studio-use television cameras would be provided together with necessary lighting equipment.

b) Sub-control room equipment

Camera control unit, video switcher console, sound control console, tape-recorders, flying spot opaque scanner, disc players, lighting control console will be installed to make signal interchange between master control room.

c) VTR

Four 1-inch VTRs, four 3/4-inch VTRs will be installed for recording and transmission of programmes. Two sets of tape editing equipment will also be installed.

d) Telecine

Telecine equipment will be installed.

TELEVISION STUDIO EQUIPMENT

ITEM	EQUIPMENT	QUANTITY
TV-2 Studio	Colour Camera Chain	3 sets
	Flying Spot Scanner	1 set
	Video Production Equipment	1 set
	Audio Mixer	1 set
	Tape Recorder	2 sets
	Disc Player	2 sets
	Microphone	1 lot
	Lighting Equipment	1 set
	Monitoring Equipment	1 set
	Video/Audio Monitor	1 set
VTR	1" Video Tape Recorder	4 sets
	3/4" Video Tape Recorder	4 sets
	VTR Editing Equipment	2 sets
	Rec/PB MTX	1 set
Telecine	Telecine Camera	1 set
	16 m/m Film Projector	2 sets
	35 m/m Slide Projector	1 set
	Multiplexer	1 set

5) Power Supply

Existing power supply is fed from city power source and the situation is unchanged even after the rehabilitation. To regulate the fluctuation of voltage, new automatic voltage regulator will also be used.

Superannuated power receiving equipment will also be renewed. Capacity of receiving power is expected to be about 750 kVA.

Emergency engine generator will not be provided.

(2) Transmitter Facilities

- 1) From the viewpoint of maintainability, operation, economy of transmitter station, high reliability, stable and low power consumption, dual transmitter system with instant change over switching device will be installed. Output power of each transmitter is 5 kW.
- 2) Existing television antenna tower will be used with slight modification.
- 3) Transmitter antenna will be replaced with new type due to the change of channel allocation. The antenna must be strong enough electrically and mechanically with high gain and broad band characteristics to meet with future expansion of network.
- 4) Feeders will be renewed.
- 5) A emergency engine generator will be installed.

(3) Channel Plan

Channel plan has been made with due to consideration on the frequency utilization of existing station and effective use of television channel, benefit of audience, propagation of radiated signal and the future expansion of broadcasting and so on, by referring the following norms as a standard.

- 1) Refer to the general principle of frequency allocation, necessary frequency will be allotted to each station.
- 2) Adjacent channel will not be allotted to the stations nearby.
- 3) In order to reduce interference caused by sporadic propagation, low band channels of band III will be assigned.

As the result of study on the assignment of frequency of the television broadcasting, it was concluded to follow the CCIR standards as much as possible.

(4) Technical Standards

- 1) Television standards : CCIR B system
- 2) Colour television system : PAL/625 lines

4-4 Basic Design Drawing

Schematic diagram of radio studios, television studio and floor plan of Adjangote, Jamasi, and Kissi transmitting stations and their block diagrams are also shown in the Basic Drawings of Chapter 9.

4-5 Budget to be borne by Ghana

Total amount of budget to be borne by Ghana side is 1.64 million Cedis. It will be roughly classified into the following two items

- (1) Transportation Charge (inland) 440 thousands Cedis
- (2) Modification of Transmitter Tower 1.2 million Cedis

TRANSMITTER STATION MAIN EQUIPMENT

ITEM	ADJANGOTE TRANSMITTER STATION	JAMASI TRANSMITTER STATION	KISSI TRANSMITTER STATION
Television Transmitter	5 kW, 9 ch : 1 set	5 kW, 7 ch : 1 set	5 kW, 11 ch : 1 set
Transmitter Antenna System	9 ch, 4 Dipole, 3 Stacks 1 set	7 ch 1 set	11 ch 1 set
Monitor	14 inch Color Receiver 1 set	- ditto -	- ditto -
Control Equipment	Automatic Switch Over, Programme Input Control System	- ditto -	- ditto -
Automatic Voltage	A.V.R., Insulating Transformer	- ditto -	- ditto -
Measuring Equipment	Oscilloscope, signal Generator, Frequency Counter, Audio Meter, etc.	- ditto -	- ditto -
Emergency Engine Generator	Approx 50 kVA 1 set	- ditto -	- ditto -

CHANNEL ALLOCATION

CHANNEL	MAIN TRANSMITTER STATION					REPEATER STATION	
	ADJANGOTE	JAMASI	KISSI	TAMALE	BOLGATANGA	SUNYANI	AMEDZOFE
5				○			
6					○		
7		○					
8							
9	○						
10						○	
11			○				
12							○

CHAPTER 5 IMPLEMENTATION PLAN

CHAPTER 5 IMPLEMENTATION PLAN

5-1 Implementation Organization

GBC, managing the radio and television broadcasting with a well arranged organization and proficient staff as aforementioned, has a sufficient capability as an implementation organization of the project.

With regard to the managerial organization and staff for the construction work, the Engineering & Technical Division under the control of the Director General of GBC will be in charge. It is to be noted that in respect to the contract of construction work, it is expected to be made with the Board of Directors of GBC.

5-2 Implementation Plan

The objective of this rehabilitation project is to renew the superannuated equipment and facilities of radio and television studios and transmitting stations which are barely operating, and revive the broadcasting of Ghana. For this reason, the expectation to realize this project is great for the nation.

As GBC has many proficient engineers and architects related to the construction work, the plan for executing the rehabilitation work was made on the basis of using these staff efficiently.

However, in respect to broadcasting facilities, Ghana is well acquainted with European equipment through technical cooperation such as England and West Germany, but is somewhat not well accustomed with the technical standards and construction procedures, etc., of Japan.

For this reason, in the implementation of the project, it is necessary to rely on an excellent consultant with sufficient experience in broadcasting for the supervision of this project.

5-3 Allotment of Funds for the Construction Work

The scope of which will be executed by the Grant Aid of Japan and executed by funds of the Government of Ghana are as follows.

(1) Rehabilitation of Buildings and Sites

The sites and buildings are already existing. The buildings were constructed more than 20 years ago, but the foundation of buildings are in good condition.

As for the repair materials of building which are necessary for the installation work and related drawings will be supplied from Japan, and the construction work is to be carried out by Ghana side under the direction of Japan side.

(2) Ancillary Facilities

1) Electricity, Water Supply and Drainage

All expenses are all to be borne by Ghana side.

2) Furniture and Fittings

All furniture and fittings related to broadcasting facilities except for tables and chairs are to be procured by Ghana side.

3) Broadcast Equipment

All necessary expenses for execution of the project including installation work and wiring work are to be borne by the Grant Aid from Japan.

4) Import of Construction Materials

Concerning the transportation expense for broadcasting equipment and facilities and building construction materials those will be covered with the Grant Aid from Japan, the shipment charge from Japan to Port Tema including insurance charge will all be included in the Grant Aid. However, custom clearance of imported materials, procedures for exemption of tax at Tema Port and the necessary inland transportation charge from Port Tema to each construction site are to be borne by Ghana side.

5) Maintenance and Operation

All facilities and equipment which were procured by Grant Aid from Japan are to be maintained and operated efficiently by Ghana side after the completion of construction work.

6) Others

All expenses necessary for the construction and installation of facilities which are not included in the frame work of the Grant Aid from Japan are to be borne by Ghana side.

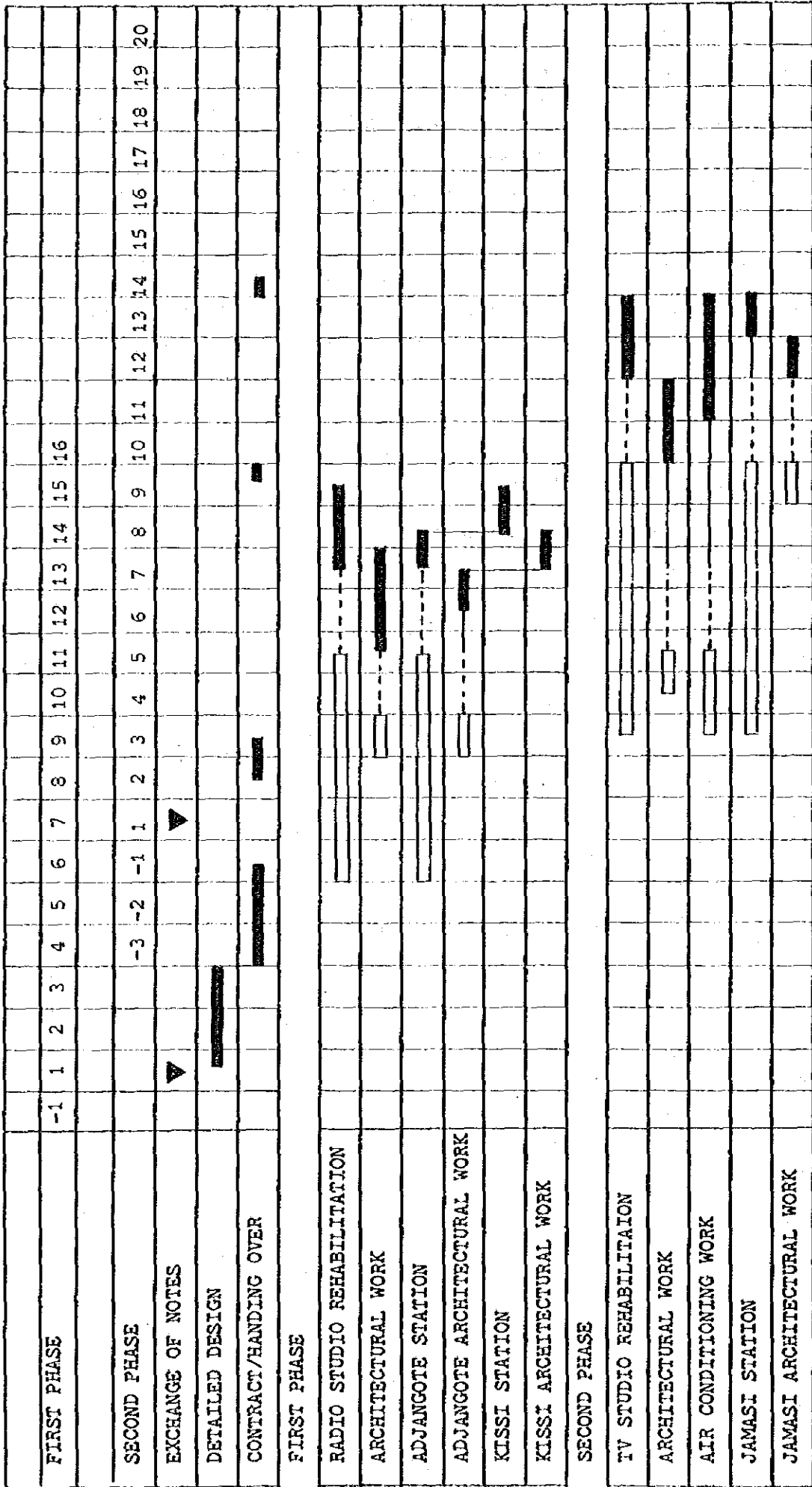
5-4 Construction Schedule

Implementation plan and tentative time schedule are shown in figure and table.

	FIRST PHASE	SECOND PHASE	
Radio Studio	Studio x 4, Continuity x 1, Master Control x 1	OB Van	
Adjangote Trans- mitting Station	Transmitter Facility		
Jamasi Trans- mitting Station	Transmitter Facility		
Kissi Trans- mitting Station		Transmitter Facility	
TV Studio		VTR	Other Studio Facility
Power Supply	Power Supply		
TV Receiver Diffusion			TV Receiver

IMPLEMENTATION PLAN

TENTATIVE TIME SCHEDULE



: FACTORY WORK
 : TRANSPORTATION
 : SITE WORK

TENTATIVE TIME SCHEDULE

5-5 Maintenance and Administration Plan

(1) Engineering and Programming Staff

GBC is paying every efforts to continue programme production and broadcasting with the superannuated radio and television broadcasting facilities.

However, as there are many suspensions in the broadcasting according to the superannuation of facilities, it seems to be that there are some surplus staffs in each sector, especially in studio programme production, VTR editing, air-conditioning, transmitting station and maintenance work.

For this reason, after completion of the project, the engineers and programme production staffs could be rearranged for the increase in work.

(2) Maintenance System for Broadcasting Facilities

At present, GBC has a maintenance sector consisting of about 10 persons in charge of cameras, telecine chains, VTRs and monitoring devices.

After completion of this project, some additional maintenance persons will be required to meet the increase in work, but they can be obtained by rearranging the present GBC staff.

However, as the majority of the existing facilities of GBC are using the old vacuum tubes type, the maintenance staff are well acquainted with old type equipment but the most of them have no experience in equipment using the latest transistors and ICs. For this reason, in executing the project, on-the-job training will be taken into consideration so they can acquire the latest knowledge to improve their technical skills.

5-6 Procurement Plan

All the broadcasting materials necessary for the project will be procured in Japan and exported to Ghana. As for the materials to repair the buildings, it is desirable to procure them in Ghana as

far as possible, but according to the results of market survey, only cement, wood, sand and gravel, etc., can be procured in Ghana.

With regard to the reinforcing bars, a small quantity can be procured in Ghana but as they are very expensive, they will be imported from Japan.

As for the materials to repair the buildings and antenna towers, wall materials, paint, reinforcing bars, etc., will be imported from Japan, and steel plates for air-conditioning ducts will be imported from Japan and assembled in Ghana in order to reduce the project cost.

CHAPTER 6 PROJECT EVALUATION

CHAPTER 6 PROJECT EVALUATION

The effect of the rehabilitation project of the radio and television broadcasting facilities, which will produce results on the social and economic fields of this country, is difficult to be explained quantitatively, because of the characteristics of the broadcasting field, but qualitatively, several improvements can be expected.

In general, the objectives of radio and television broadcasting in developing countries are not only for mass communication, entertainment and education etc., as in advanced countries, but also a partial infrastructure of the country.

From this view point, the definite effects of broadcasting which will be produced in Ghana with the execution of this project are expected as follows.

(1) Integration of Multiracial Country

Ghana has many tribal societies which have their own customs, and use different languages.

In such a country, English is used as an official language, but mutual understanding between races is still insufficient. The most important things for the integration and development of the country are solidarity between tribes, equality of culture, propagation of national policy, regional development and education of the nation. Radio and television broadcasting will be the important media to accomplish this purpose.

(2) Encouragement of School Education

Application to school education is important. In the 1960's, educational broadcasting by radio and television was carried out as one of the most important policies of the country. However, it has been forced to be suspended because of the obsolescence of the broadcasting facilities. The effect of re-establishment of educational broadcasting on the society through this rehabilitation project is immense because this

country has been enthusiastic about the educational field since its independence.

(3) Promotion of Adult and Social Education for the Lower Social Classes.

There are still many old illiterate people in this country. The educational effects of visual education, which television has, for the people of those classes, will be great. GBC intends to further enrich the educational television broadcasting programmes for social education, adults, especially, the completion of this project. However, people of those classes, who are the object of educational television, can hardly afford to buy a television set. Therefore, it is planned to install public colour television receiver sets at community centers, schools and hospitals, etc., in order to enhance the educational effects to those people, as well as promote the distribution of color television sets.

(4) Improvement of the Economic Gap Between Regions and Activation of Economy

The inland of Kumasi and Tamale are economically rich compared with the coastal areas, as in agricultural production and timber, etc. Recently, however, according to the aggravation of economic conditions, the infrastructure of Ghana has become much worse and economic activities are extremely retarded.

For this reason, utilization of radio and television broadcasting will be available to rehabilitate the overall economic conditions of the country. Other examples are to further increase the production of cacao beans, to enhance the circumstances to bring young workers of urban areas back to the production areas, to enlighten the Government economic policy to unemployed workers, to improvement the regional gap by bringing about national consensus.

(5) Presentation of Entertainment

The presentation of entertainment and culture to people in rural areas where entertainment is scarce through radio and television broadcasting will be useful for the stabilization of livelihood and development of the country.

It is considered that the execution of this project will become an important social infrastructure for the stabilization and development of the country within several years.

