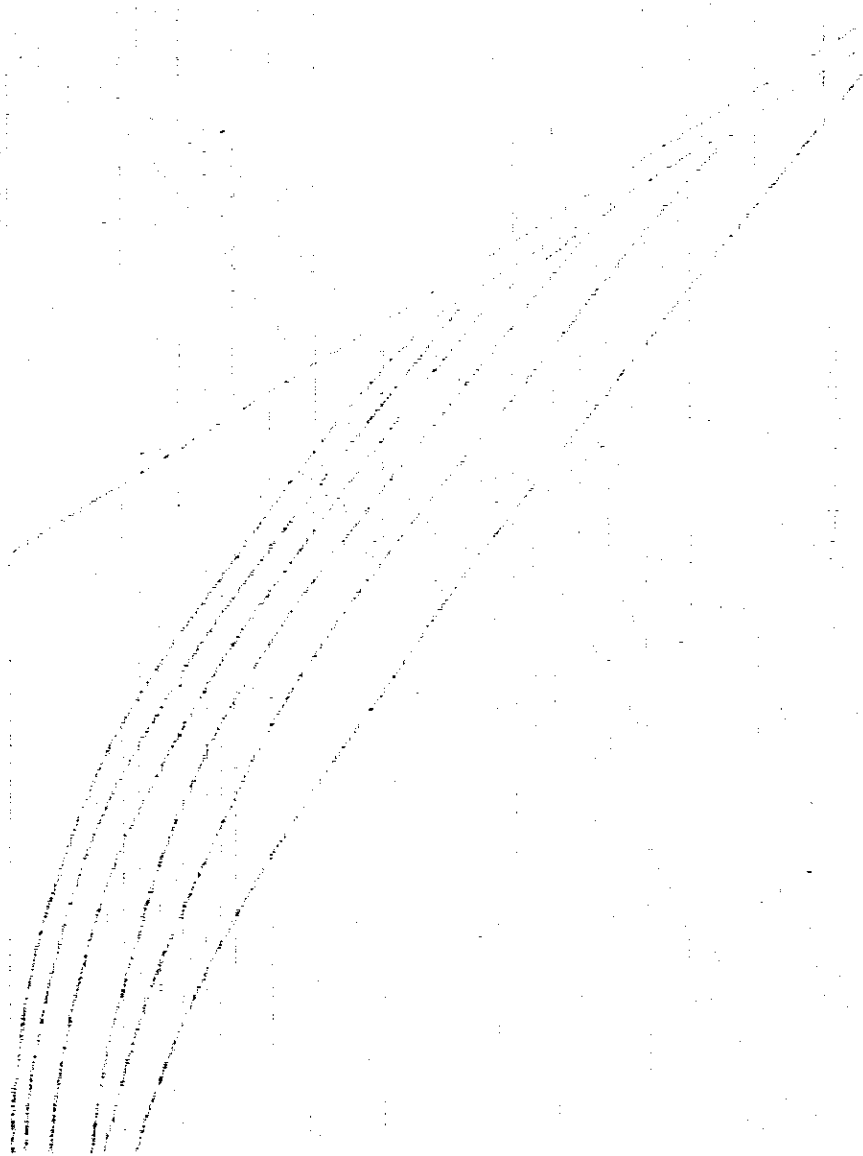
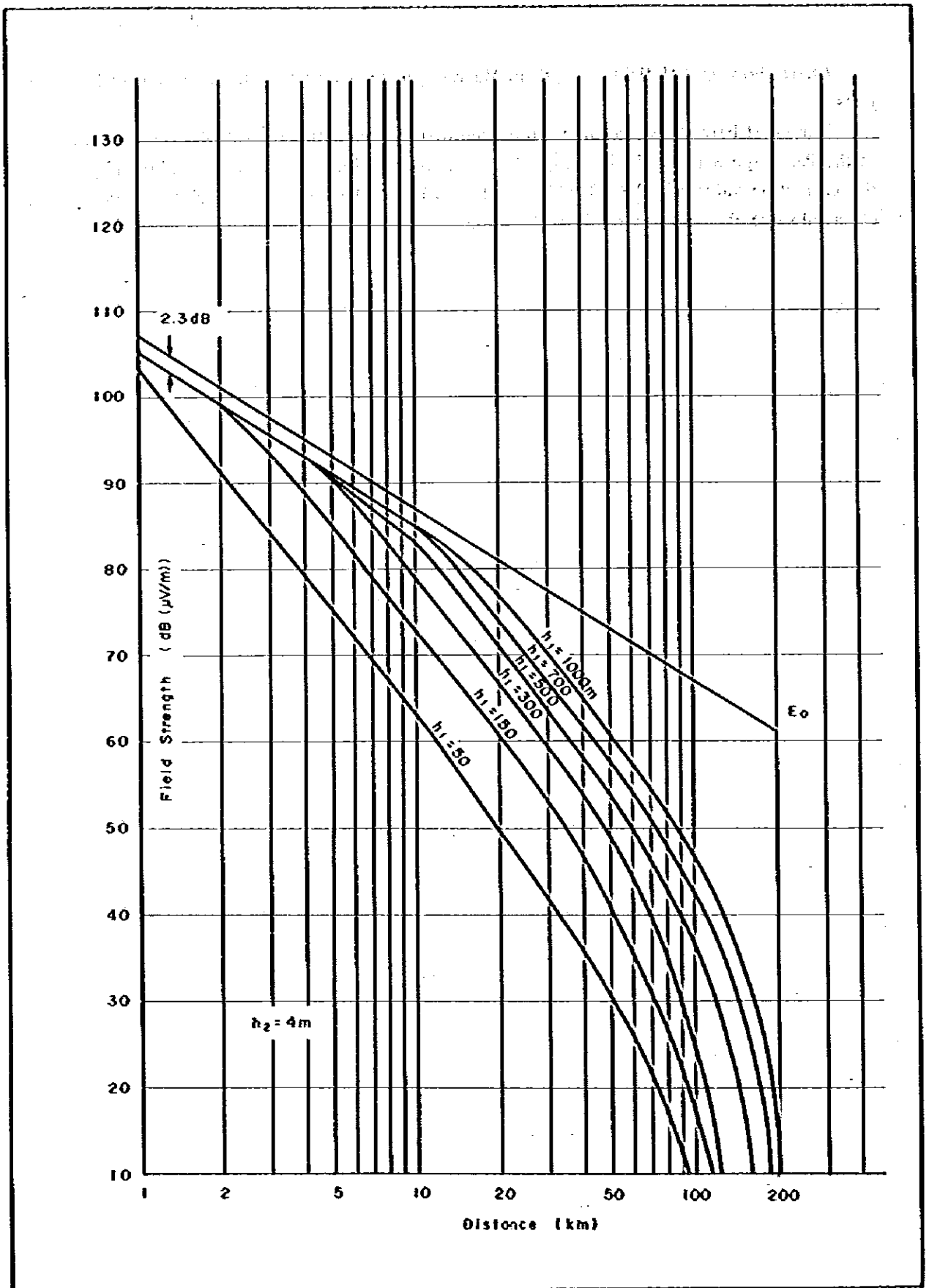


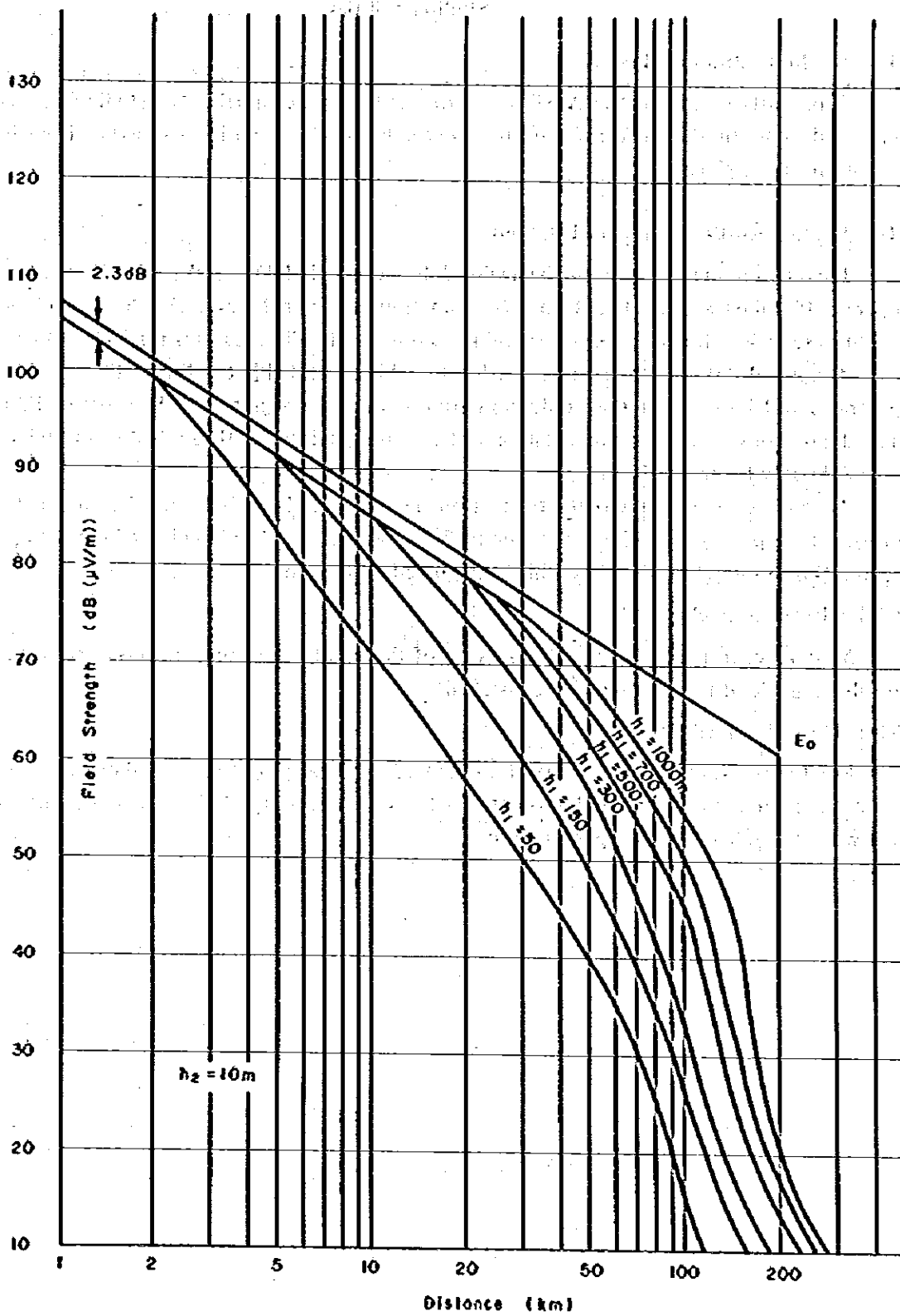
Annex H

Chart showing FM field strength in Malaysia, in the case where there are no shielding objects.

The chart here shows the values obtained first by connecting the calculated values obtained in the Paragraph 3-1 and the Paragraph 3-2 of Chapter 2 with a smooth curve and then by adding the correction value of -2.3 dB which is the difference between the calculated value and the observed value obtained as a result of the survey.







Studio Facilities

I. Studio facilities for Plan A

Broadcasts based on Plan A will be carried out on six channels. The studio facilities are so provided as to fit the different purposes of regional stations and local stations. Their brief description will be given.

I-1 Studio facilities for regional stations

It was estimated that both the regional broadcast (FM-4) and the local broadcast (FM-5) operate 10 hours a day. Based on this estimation, a regional studio should be equipped with facilities sufficient for the production and transmission of radio programs for 20 hours a day.

A regional station also provides an educational broadcast (FM-6). Production of educational programs will be done at the production studio which belongs to the Ministry of Education. Taped programs ready for broadcasting will be brought into RTM regional studio which is responsible only for transmission.

According to the data at the time of our research in Malaysia Peninsula, 70% of the total programs are packaged, while the remaining 30% are treated as live broadcast from the operation room. Our examination this time will also be based on these data.

I-1-1 Master Control Facilities

Master Control facilities which take care of the input and output powers of 6 channels and are also capable of monitoring will be installed.

I-1-2 Operation facilities

For the transmission of regional, local and educational programs, a total of three operation rooms, one for each service, and adequate facilities are necessary. Following is a list of facilities that will be installed in each operation room.

	Content	Number
1. Sound mixing console (stereo)	10 channels	1 unit
2. Sound reproduction machine for disc (stereo)	33 1/3 r.p.m., 45 r.p.m.	2 unit
3. Recording and play-back equipment for tapes (stereo)	19 cm/s, 38 cm/s	2 unit
4. Announce repeater	Recording sound Reproduction, 4 channels	1 unit
	Only for sound reproduction, 10 channels	1 unit
5. Telephone broadcast equipment	—	1 unit
6. Microphones (stereo)	—	3 unit
7. Monitoring equipment (stereo)	—	2 sets
8. Auxiliary equipment	Microphone stand etc.	1 set

1-1-3. Program Production Studio

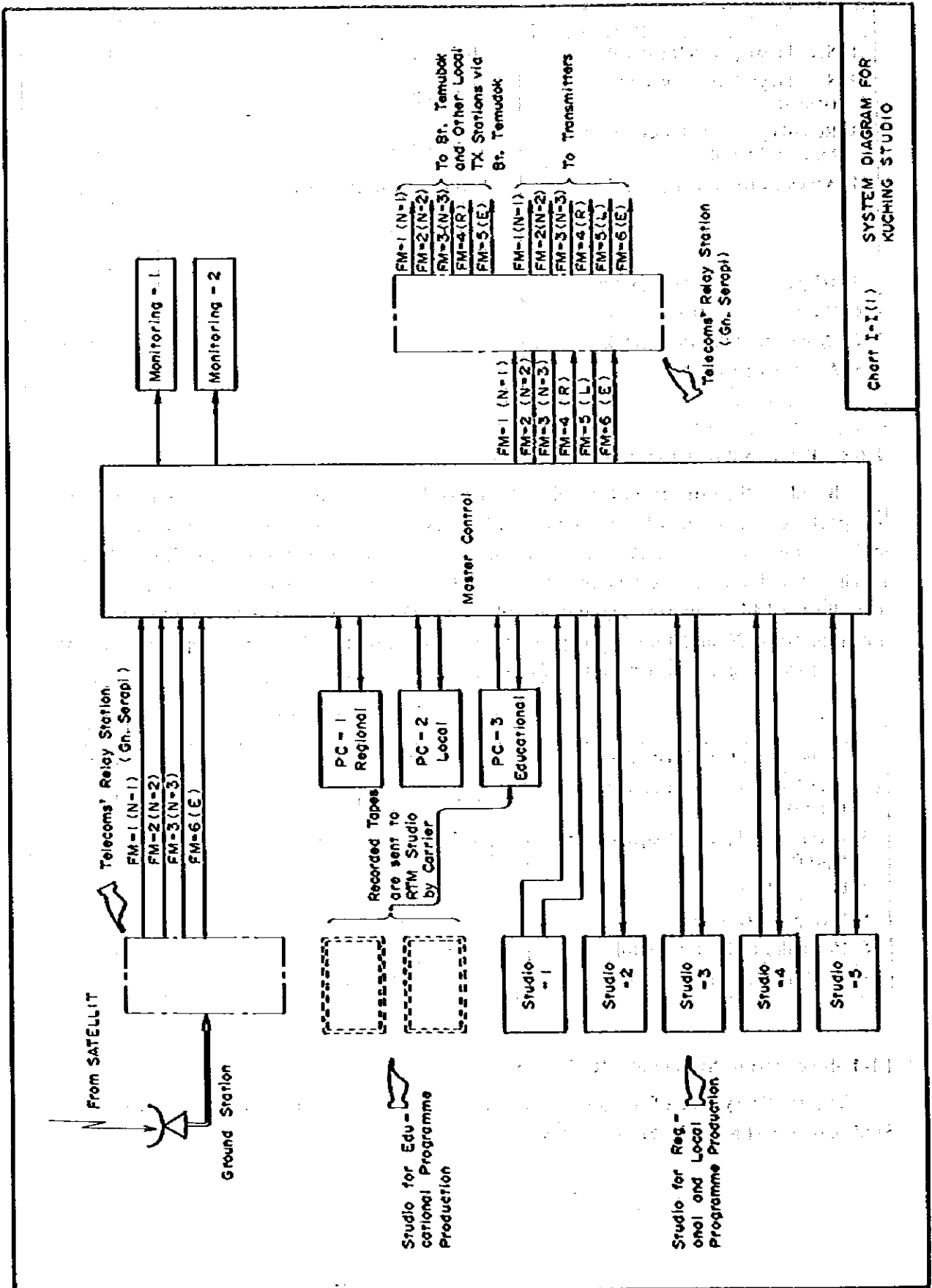
Based on the estimation that 70% of 20 broadcasting hours of regional and local programs are packaged, it is necessary to produce 14 hours of programs at the production studios. A standard time needed for production of one programs in the studio is about 3.5 or 4 times as much as the duration necessary for actual broadcasting. Therefore, a total occupation hours of a studio for 14-hour worth programs, are $14 \times 3.5 = 49$ hours/day. Assuming that working hours are from 10 to 20 or 10 hours a day, we need five studios ($49 \div 10 \approx 5$) equipped with facilities.

The following items are necessary for one production studio.

	Content	Number
1. Sound mixing Console (stereo)	16 channels	1 unit
2. Sound reproduction machine for discs (stereo)	33 1/3 r.p.m., 45 r.p.m.	2 unit
3. Recording and playback equipment for tapes (stereo)	19 cm/s, 38 cm/s	2 unit
4. Echo machine	—	2 unit
5. Microphone (stereo)	—	10 unit
6. Monitoring equipment (stereo)	—	3 sets
7. Auxiliary equipments	Microphone stands etc.	1 set

1-1-4. Broadcasting System of a Regional Studio

The studio system of a regional station is shown on Chart I-1, an Programme Continuity Studio, on Chart I-2 and a Production Studio, on Chart I-3.



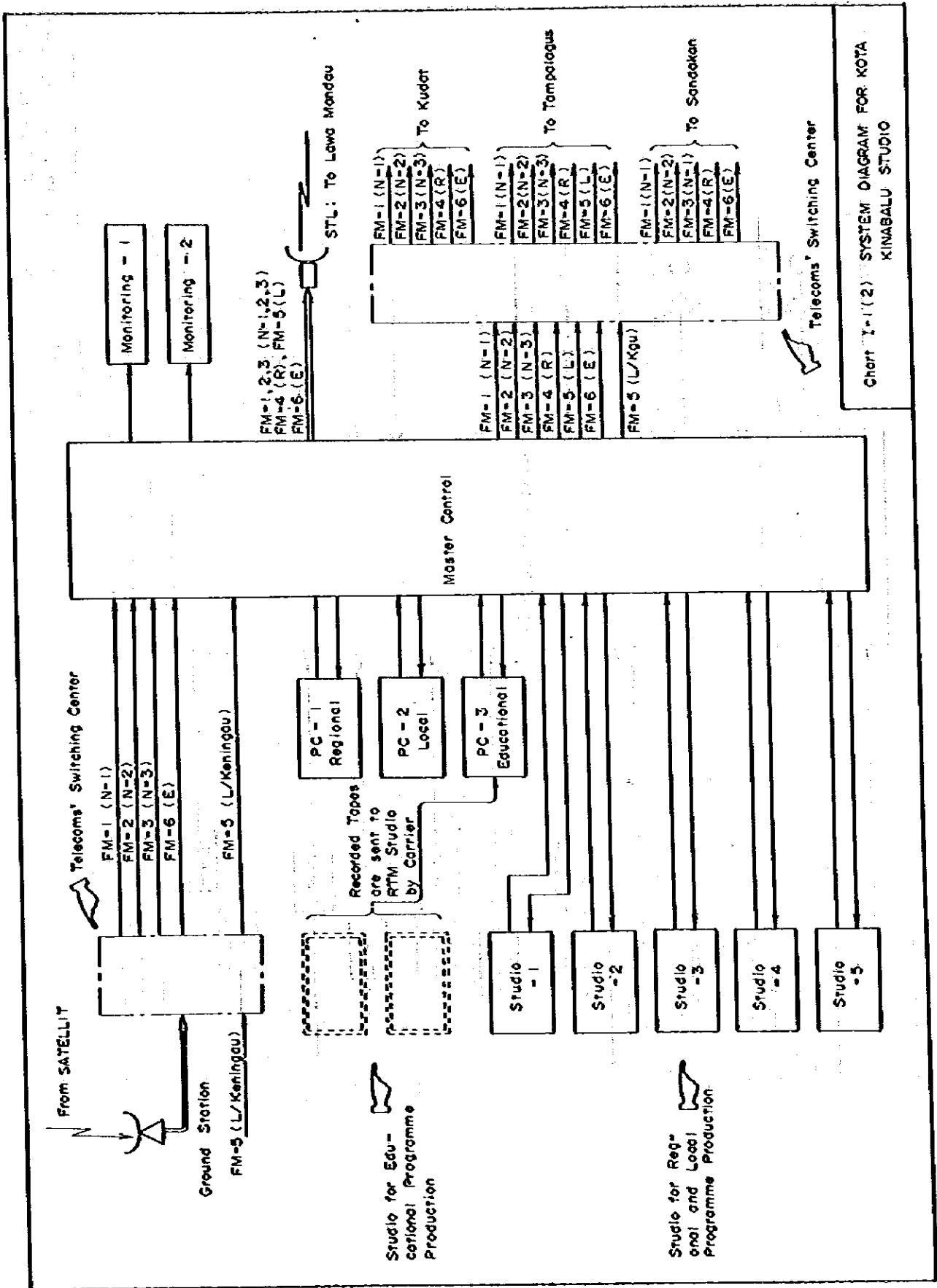


Chart 1-1(2) SYSTEM DIAGRAM FOR KOTA KINABALU STUDIO

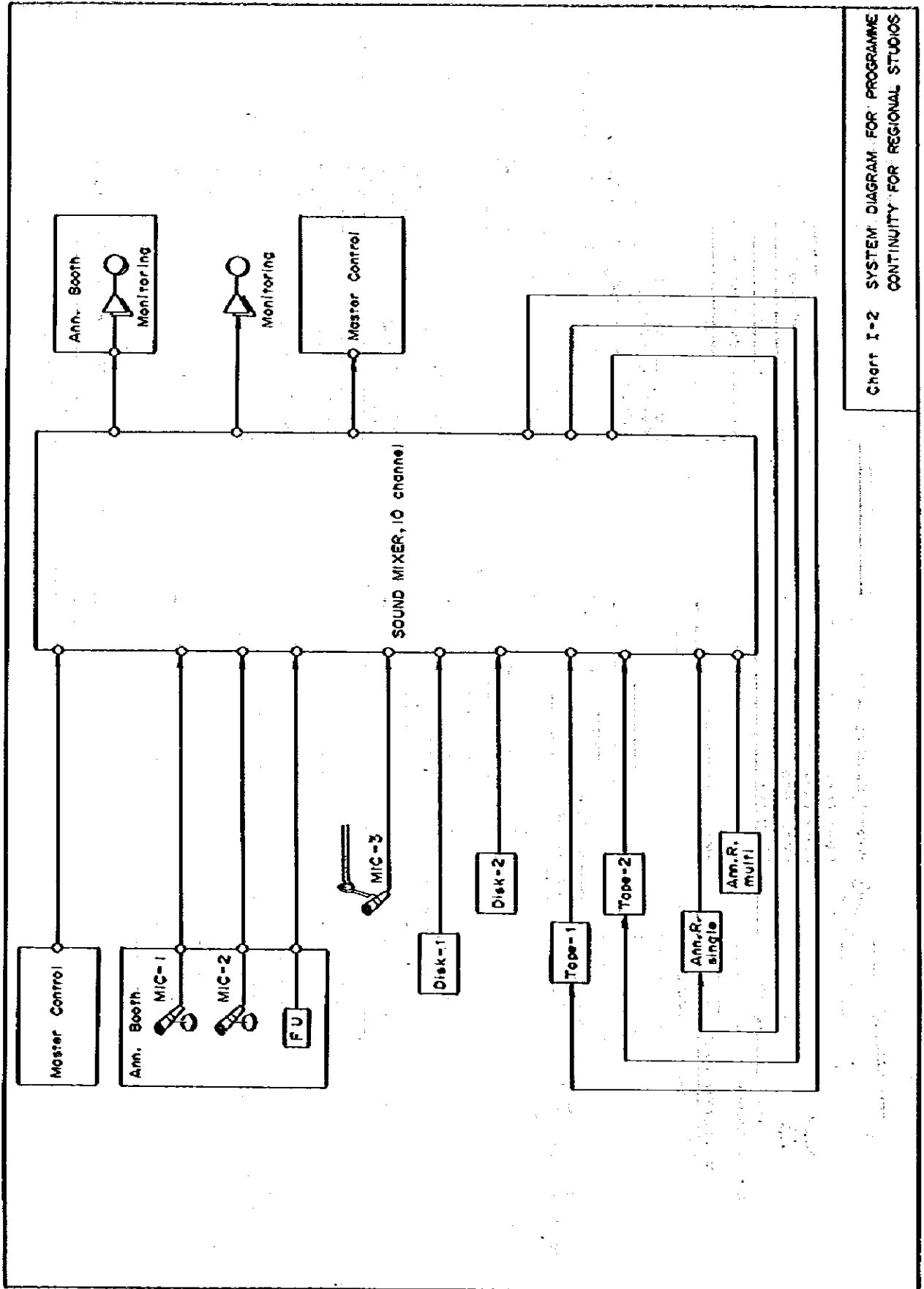


Chart I-2 SYSTEM DIAGRAM FOR PROGRAMME CONTINUITY FOR REGIONAL STUDIOS

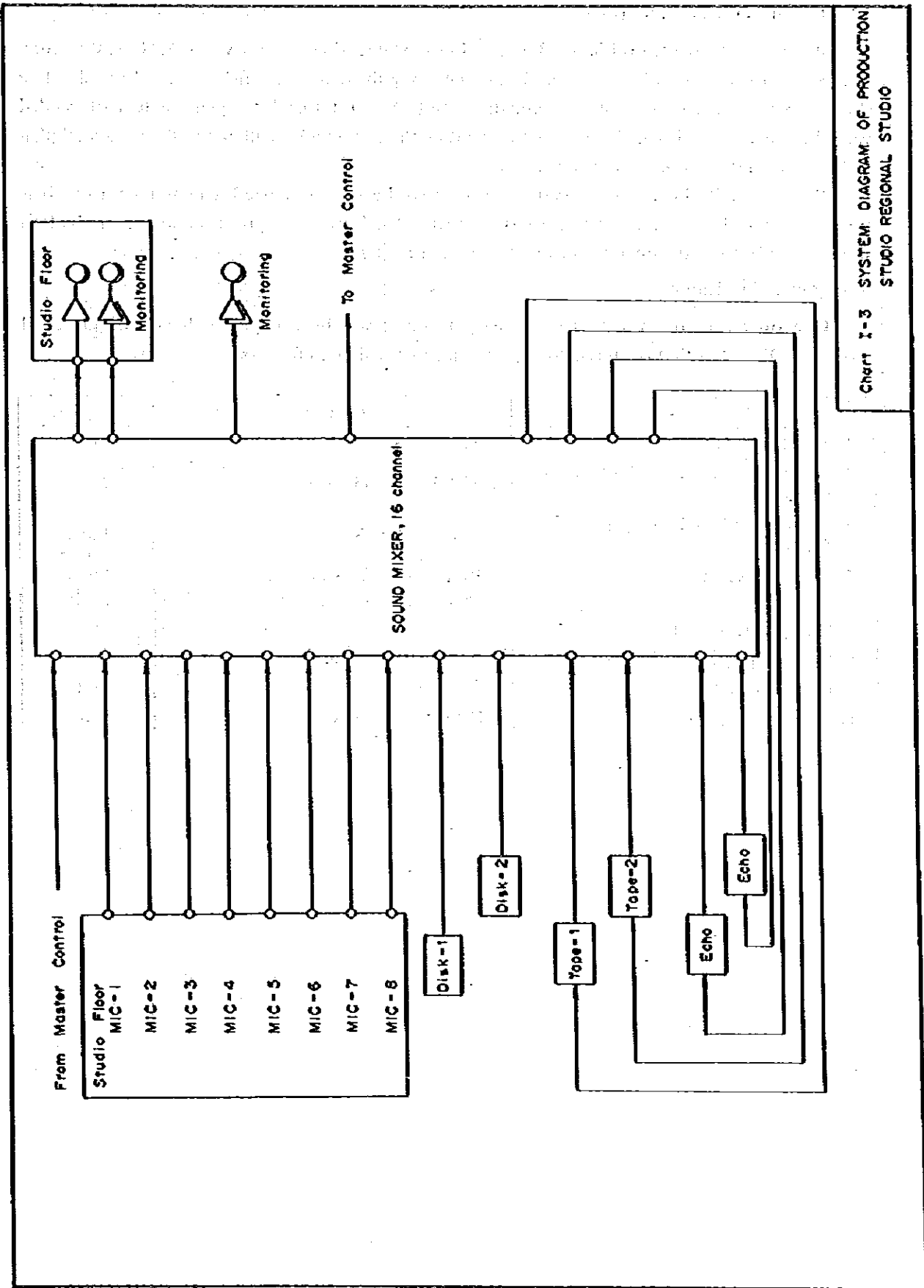


Chart I-3 SYSTEM DIAGRAM OF PRODUCTION STUDIO REGIONAL STUDIO

I-2 Facilities for Local Stations

At present there are no FM local studios in the States of Sabah and Sarawak. It is, therefore, necessary to construct a broadcasting house including living quarters, when a local broadcasting starts. As indicated in the clause of construction plan, a total of 360 square meters are needed for a building which is capable of accommodating the personnel calculated in the personnel plan including operation rooms and production studios.

Because of its broadcasting system, a local studio does not need a master control. It is sufficient enough to use a method of transmitting local programs produced at the production studio directly from the operation room to the transmitter.

I-2-1 Operation Room

One operation room with its necessary facilities will be enough for handling only local programs. Facilities that comprise the operation room will be as follows:

	Content	Number
1. Sound mixing console (stereo)	10 channels	1 unit
2. Sound reproduction machine for discs (stereo)	33 1/3 r.p.m., 45 r.p.m.	2 unit
3. Recording and playback equipment (stereo)	19 cm/s, 38 cm/s	2 unit
4. Announce repeater	Recording/Playback, 1 channel Only for playback, 10 channels	1 unit 1 unit
5. Microphones (stereo)	—	3 unit
6. Monitoring equipment (stereo)	Including air monitor	2 sets
7. Remote control equipment	—	1 set
8. Auxiliary equipment	Microphone stands etc.	1 set

I-2-2 Programme Production Studios

In the local stations, packaged programmes account for 70% of a total of 10 broadcasting hours exclusively for local programmes. So it is necessary to produce 7-hour worth of programmes and for that purpose, it is necessary to have two studios with facilities provided (7 hours x 3.5 = 10 hours/day \approx 2.45 rooms \approx 2 rooms). Production facilities that comprise one studio are as follows:

	Content	Number
1. Sound mixing console (stereo)	12 channels	1 unit
2. Sound reproduction machine for discs (stereo)	33 1/3 r.p.m., 45 r.p.m.	2 units
3. Recording and playback equipment for tapes (stereo)	19 cm/s, 38 cm/s	2 units
4. Echo machine	—	1 unit
5. Microphones (stereo)	—	6 sets
6. Monitoring equipment (stereo)	—	2 sets
7. Auxiliary equipment	Microphone stands etc.	1 set

I-2-3 Broadcasting System of a Local Studio

In connection with a local studio system, Chart I-4 shows an Programme Continuity Studio and Chart I-5, a Production Studio.

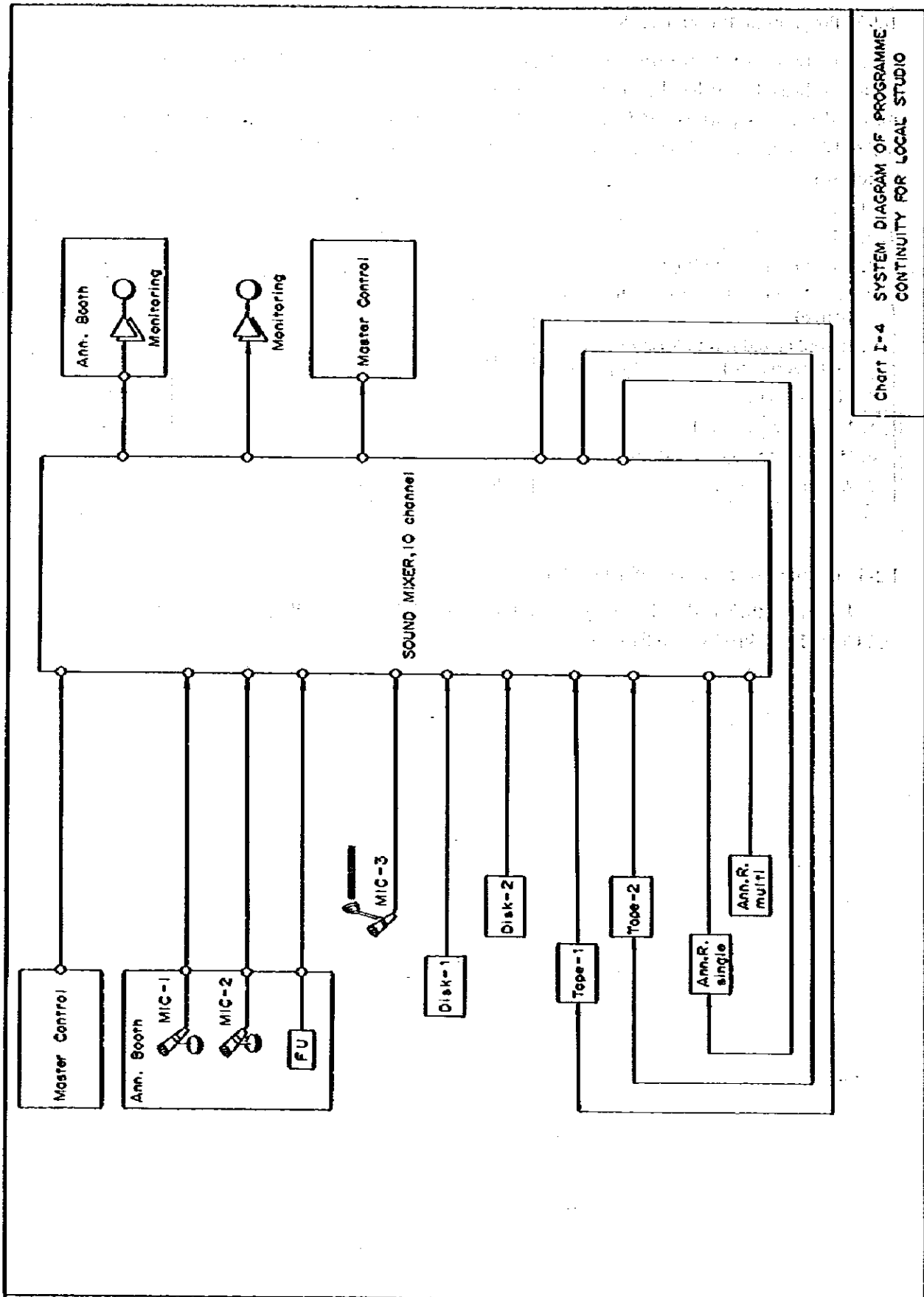


Chart I-4 SYSTEM DIAGRAM OF PROGRAMME CONTINUITY FOR LOCAL STUDIO

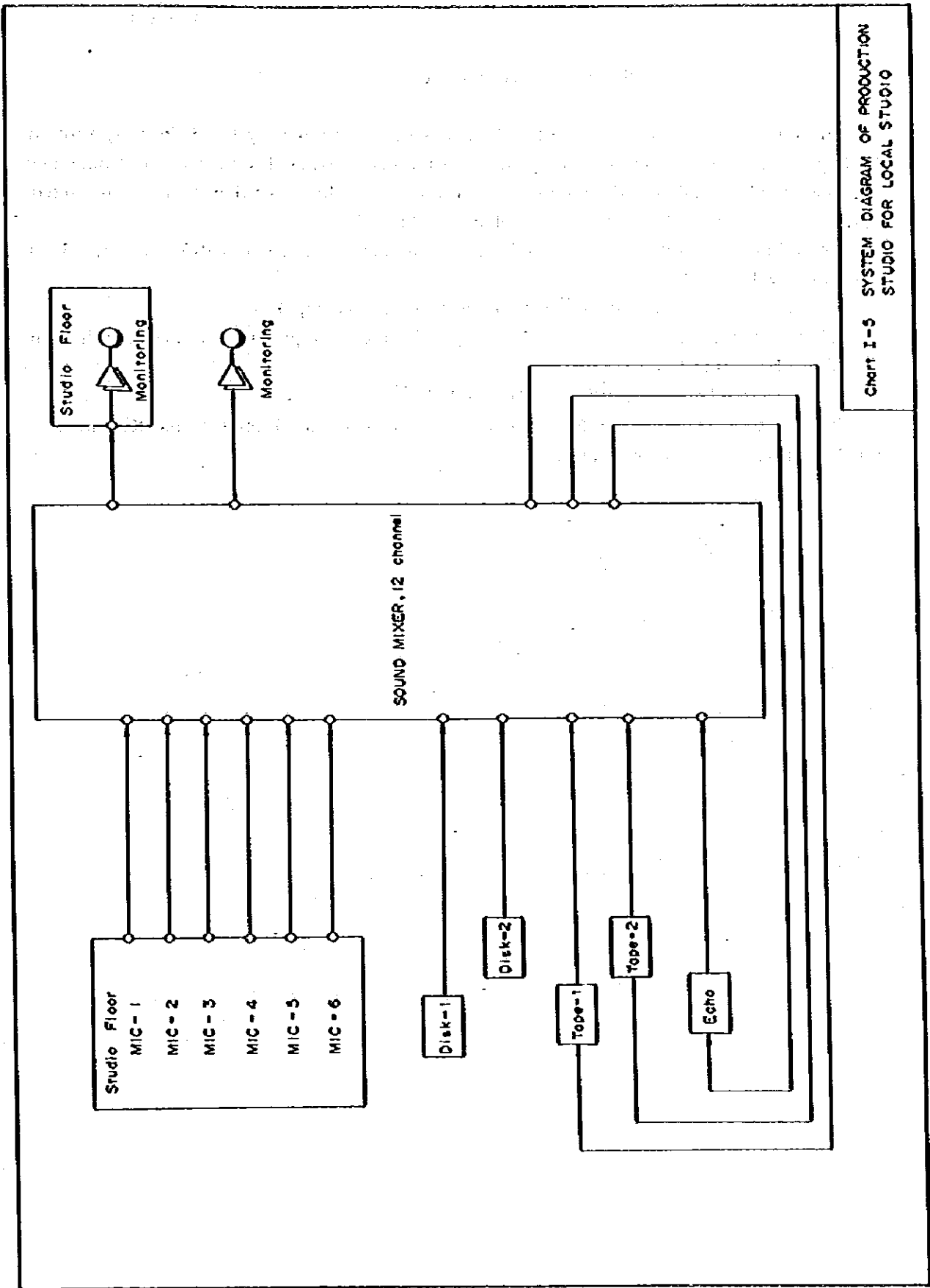


CHART I-5 SYSTEM DIAGRAM OF PRODUCTION STUDIO FOR LOCAL STUDIO

Study of the coverage for the new 3 areas

Since 6 frequencies are assigned to all stations by stereophonic system in Plan -A, it would be impossible to assign any more frequencies to the new areas at this moment. But minimum necessary field-strength for the monophonic receiving is 6 dB lower than that for the stereophonic in evaluation "4" and "3" is calculated by Table 2-6-2.

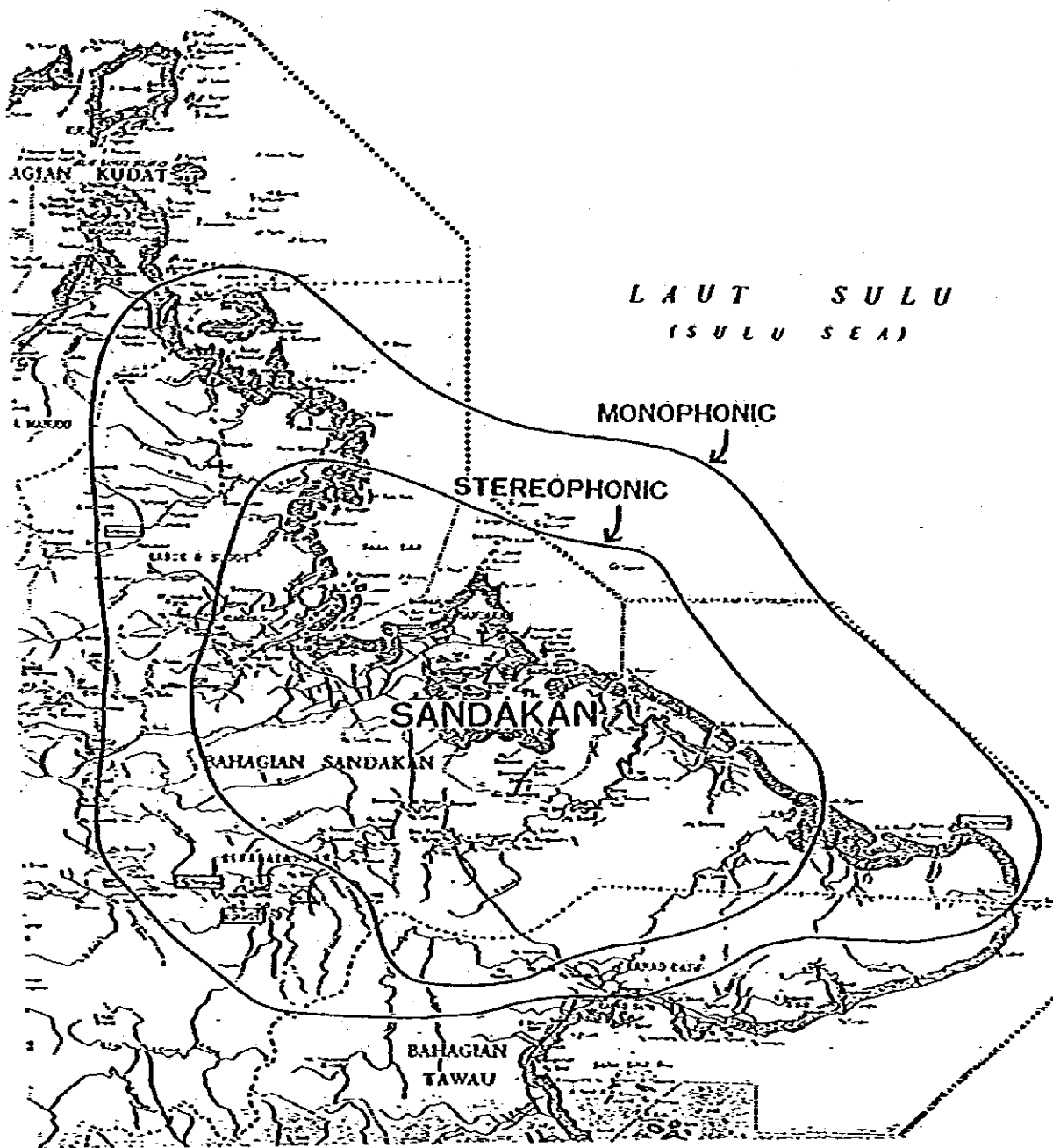
In addition, the difference value of the field-strength between evaluation "4" and "3" is calculated by Table 2-6-2.

$$28\text{dB} - 14\text{dB} = 14\text{dB} \text{ (at 80\% evaluation percentage)}$$

Therefore, minimum necessary field-strength for the monophonic receiving in evaluation "3" is calculated as follows.

$$54\text{dB}\mu\text{v/m} - (6\text{dB} + 14\text{dB}) = 34\text{ dB}\mu\text{v/m}$$

The contour of Sandakan for the new 3 areas (Lingkabau, Tambisan, and Kuamut and Tangkulap) is shown in the next map.



A Map showing the Contour of Sandakan

ANNEX - 2

**INTERIM REPORT
FOR
FEASIBILITY STUDY
ON
VHF/EM BROADCAST COVERAGE PLAN
FOR
THE STATES OF SABAH AND SARAWAK, MALAYSIA**

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Japan International Cooperation Agency

The Japanese Feasibility Study Team

This Interim Report is agreed on by the following two authorities concerned.

Economic Planning Unit, Prime Minister's Department, Malaysia

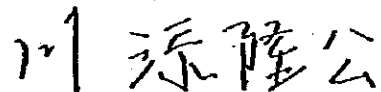
Japan International Cooperation Agency, the official agency responsible for implementation of technical cooperation programmes of the Government of Japan

To confirm the aforementioned, Interim Report is herewith attached and signed by the representatives of the said authorities concerned.

Kuala Lumpur August, 1982



.....
(HALMI MOCHAMMED NOOR)
DIRECTOR OF SOCIAL SERVICES
ECONOMIC PLANNING UNIT
PRIME MINISTER'S DEPARTMENT
on behalf of
THE GOVERNMENT OF MALAYSIA



.....
(TAKAHIRO KAWAZOE)
LEADER
JAPANESE FEASIBILITY
STUDY TEAM
on behalf of
JAPAN INTERNATIONAL
COOPERATION AGENCY

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1. Introduction:

In response to a request from the Government of Malaysia for technical assistance on VHF/FM Broadcast coverage plan for the States of Sabah and Sarawak, Malaysia, the Government of Japan through the Japan International Cooperation Agency has sent a Study Team headed by Mr. Takahiro Kawazoe, Deputy Director of Planning Division, Broadcasting Department, Radio Regulatory Bureau, Ministry of Posts and Telecommunications, to Malaysia, to carry out a feasibility study on this project from June 15th to August 3rd, 1982.

The Team has conducted field survey an investigation throughout the States of Sabah and Sarawak, Malaysia and data collection and also has held a series of discussions and exchanged view with officials of the Government of Malaysia. The Team finalized its necessary activities in Malaysia successfully with close cooperation of authorities and officials concerned.

On the basis of the results of field activities, the Team shall retain further study after return to Japan in order to prepare the Feasibility Study Report.

Finally, the Team would like to express sincere gratitude to the Authorities and officials concerned.

2. Record of Itinerary of Field Survey.

The member of Feasibility Study Team are shown in attached table 1. Day by day activities of the Feasibility Study Team are Summarized into attached table 2.

3. The summary of the survey:

(I) The survey related to site selection and frequency assignment plan.

(A) Field strength measurements of radiated signal in VHF band;

The Team measured field strength, picture quality and azimuth of incoming signals of TV signals and existing radio waves in VHF band at 60 spots in service area of protected coverage, in main cities and as proposed sites. These data will make available to us

a) prediction of field strength of interfering signals;

Channel separation among each site is determined on the basis of these predictions.

b) estimation of proposed service area to be covered by FM Tx which will be co-sited at TV Tx and/or TELECOM's repeater stations.

c) prediction of multi-path distortion in proposed FM reception.

d) estimation of signal quality in the case of off-air relay.

(B) Observation of the actual condition of Social Development in the States of Sabah and Sarawak;

Relation between the Social Development and Broadcasting is a very important element, therefore, the Team checked the receptional condition for broadcasting signals at the various places.

(C) Checking the actual situation of the existing TV Tx buildings and antenna towers; The Team visited 14 TV sites and checked a possibility to accomodate the FM Broad-

casting facilities in the existing TV Tx buildings in the future.

The antenna towers were also checked by the Team. Results of checking, the team considered that Fm Broadcasting facilities will be accommodated at the existing TV Tx buildings (including extension of the building) and existing antenna towers, in principle.

However, its decision will be made after analysis of data by the team in Japan.

(2) Confirmation of FM Broadcasting Network Plan;

The following items were confirmed by and between both parties to prepare the Final Report

(A) Technical Standard;

The same Technical Standard will be adopted as that adopted in the Feasibility Study Report on VHF/FM Broadcast Coverage for Peninsular Malaysia, dated March 1981. However, the supplementary value of propagation curves will be calculated based on the actual measuring in order to check whether it will be same or not with the case of Peninsular Malaysia.

(B) Assignment plan of FM broadcasting stations;

(B-1) Network;

a) National Network;

The National Network will be planned for throughout the nation. National Programmes will be produced at the Studio RTM/K.L. and distributed for the nation wide as same plan as Peninsular Malaysia.

b) Regional Network;

The Regional Network will be planned separately for the two (2) states level.

c) Local Network;

The Local Network will be planned for the five (5) for Sabah and eight (8) for Sarawak.

The Local Broadcasting Programmes will be prepared separately for each district level and its programmes will be served for the inhabitants in each district level.

d) Education Network;

The Educational Network will be established for the School Education and completely separated from other Networks. And various educational programmes will be produced at National Studio and Regional Studio/Ministry of Education, and transmission will be carried out at RTM studio site.

(B-2) Programme production Studio;

Four (4) kinds of Studios will be established for each Network as follows;

a) For National Network;

The Programme production and sending out of the National Programme will be done by RTM/K.L studio.

b) For Regional Network;

The Programme Production and sending out of the Regional programmes will be RTM/studio Kota Kinabalu for the state of Sabah and RTM/studio Kuching for

the state of Sarawak.

c) For Local Network;

The Programme production and sending out of the Local programmes will be done by the following studios;

(c-1) Sabah

- a) Residenci Pantai Barat : Studio Kota Kinabalu
- b) Residenci Kudat : Studio Kudat
- c) Residenci Sandakan : Studio Sandakan
- d) Residenci Tawau : Studio Tawau
- e) Residenci Pendalaman : Studio Keningau

(c-2) Sarawak

- a) 1st Division : Studio Kuching
- b) 2nd Division : Studio Bandar Sri Aman
- c) 3rd Division : Studio Sibü
- d) 4th Division : Studio Miri, Bintulu
- e) 5th Division : Studio Limbang
- f) 6th Division : Studio Sarikei
- g) 7th Division : Studio Kapit

d) For Educational Network;

The Educational Programmes will be produced at Studio K.L./Ministry of Education for Nation-wide, Studio K.K. and Kuching Ministry of Education for Region-wide.

The two (2) kinds of programmes mentioned above will be broadcasted for the school educational purposes according to the daily broadcasting time schedule, which will be prepared based on the curriculum, under management of the Ministry of Education.

(C) Sites of FM transmitting station;

Existing TELECOM's repeater stations as well as existing TV-TX stations will be examined for the main sites of FM transmitting station.

(D) FM broadcasting system and Programme transmission network lines;

Stereophonic system will be employed for this purpose.

4. Work Diagram for Feasibility Study;

See attached table 3.

5. Contents of Draft Final Report;

1. Introduction
2. Technical Standards
3. Site and ERP of the Project
4. Frequency Assignment
5. Transmitting Facilities

6. Station Building and Tower
7. Programme Planning
8. Programme Transmission Line
9. Staff Planning
10. Construction Shedule
11. Construction Cost
12. Operation Cost
13. Basic Study for the Plan-B
14. Project Evaluation

Table 1. Names and Duty of Study Team Members

Name		Duty
Takahiro	KAWAZOE	Team Leader
Masayuki	HIRATA	Broadcasting System
Hitoshi	SHIODA	Frequency Planning
Hiroshi	NARITA	Ditto
Shoji	TSUDA	Site Planning
Yoshiaki	HIGASHI	Equipment Planning
Masami	DOUCHI	Ditto
Tetsuya	NOHMURA	Building & Antenna Tower
Hogara	CHIBA	Ditto
Mitsutoshi	KIKUCHI	Coordinator

Table 2. Survey Schedule

JOB ITEMS	Leader and Coordinator	Group-1	Group-2	Group-3
		Field Survey for SABAH	Field Survey for SARAWAK	Survey for Site situation of the existing TX stations (Building and Antenna Tower)
Name of Japanese Experts	Mr. T. KAWAZOE Mr. M. KIKUCHI	Mr. M. HIRATA Mr. H. SHIODA Mr. M. DOUCHI	Mr. S. TSUDA Mr. H. NARITA Mr. Y. HIGASHI	Mr. T. NOMMURA Mr. H. CHIBA
1	JUNE 15 (TUE)	TOKYO (10:00 Lv.) - MH-11 via Taipei, Hong Kong, - KUALA LUMPUR (19:50 Ar.)		
2	16 (WED)	Team meeting with members of JICA/K. L. at JICA office		
3	17 (THU)	Visiting the Embassy of Japan		
4	18 (FRI)	Discussion on the project and submission of the Inception Report at EPU's office		
5	19 (SAT)	Discussion and confirmation with the members of Telecoms and RTM for the survey schedule at RTM's office		
6	20 (SUN)	Detailed study for the results of discussion		
7	21 (MON)	Preparation and checking the measurement equipment		
8	22 (TUE)	KUALA LUMPUR (10:50 Lv.) - MH-63 - KOTA KINABALU (13:10 Ar.) Discussion on the project and survey schedule with Telecoms and RTM at Telecom's office		
9	22 (WED)	Cursey-call to the Japanese Consulate and meeting KOTA KINABALU (13:45 Lv.) MH-672	Checking the equipment	Same as Group-1
		KUALA LUMPUR (17:50 Ar.) Report to the JICA/K. L.		
10	24 (THU)	KUALA LUMPUR (10:35 Lv.) JL-714 TOKYO (19:45 Ar.)	K. K. (12:35 Lv.) MH-242 KUCHING (16:25 Ar.)	Same as Group-1
11	JUNE 25 (FRI)	AM: Measuring the Field Strength at RANAU PM: Measuring the Field Strength at Kpg. SILAD and SEGINDAL	AM: Technical meeting at Telecoms office PM: Measuring the Field Strength at RTM Studio site	Travelling to K. K. by car

	Leader and Coordinator	Group-1	Group-2	Group-3
12		AM: Measuring the Field Strength at TAMBUNAN PM: Measuring the Field Strength at KENINGAU	AM: Inspection of Gn. SERAPI TX STATION AND RTM Studio Complex PM: Measuring the Field Strength at SEMARIAN	Inspection of Bt. LAWA. MAN-DAU TX station
13		AM: Data analysis PM: Inspection of Bt. TIGA & Telecoms Station	Data Analysis	Data Analysis
14		AM: Travelling to Bt. TAMPU-LAGUS Station PM: Measuring the Field Strength at SIPTANG	AM: Measuring the Field Strength at BAU & LUNDU PM: Measuring the Field Strength at SEMATAN	Inspection of Bt. TAMPULA-GUS Station
15		AM: Measuring the Field Strength at WESTON HOSPITAL PM: Measuring the Field Strength at BEUFORT	AM: Measuring the Field Strength at SIBRAN PM: Technical meeting at RTM	K. K. (12:25 Lv.) MH-242 KUCHING (15:50 A.C.)
16		AM: Inspection of Bt. LAWA MANDAU Station PM: Measuring the Field Strength at PAPAR & K. K.	AM: Travelling to BANDAR SRI AMAN Measuring the Field Strength at SERIAN PM: Measuring the Field Strength at PANTU Technical meeting at RTM and Inspection of RTM Studio Complex	Same as Group-2
17		AM: Measuring the Field Strength at KOTA BELUD PM: Travelling to KUDAT and Inspection of Bt. KELA-PA Station	AM: Curtsey-call to RESIDENT SECOND DIVISION Measuring the Field Strength at ENKKILILI	AM: Curtsey-call to RESIDENT SECOND DIVISION PM: Inspection of Bt. TEMU-DOK Station

	Leader and Coordinator	Group-1	Group-2	Group-3
18 JULY 2 (FRI)		AM: Travelling to DPG, SENAJA PM: Measuring the Field Strength at KPG, ROSOB, KOTA MARUDU and KUDAT	AM: Measuring the Field Strength at RTM studio site Inspection of Bt. TEMUDOK Station PM: Technical meeting at RTM	AM: Travelling to KUCHING PM: Technical meeting at Telecoms Office
19 3 (SAT)		AM: Measuring the Field Strength at MATUNG-GONG PM: Travelling to K. K.	AM: Reconfirmation of the Flight PM: Site Planning	Inspection of Gn. SERAPI Station
20 4 (SUN)		AM: Travelling to KPG, NABA-WAN PM: Measuring the Field Strength at KPG, NABA-WAN	Data Analysis	Data Analysis
21 5 (MON)		AM: Inspection of RTM Studio Complex PM: Technical meeting at RTM	KUCHING (11:00 Lv.) MH-257 SIBU (12:00 Ar.) PM: Technical meeting at RTM and Telecoms Inspection of Bt. LIMA Station	Same as Group-2
22 6 (TUE)		AM: Travelling to SANDAKAN PM: Inspection of TRIG HILL Station	AM: Curseycall to RESIDENT THIRD DIVISION Measuring the Field Strength at SARIKEI PM: Measuring the Field Strength at JULAU	AM: Curseycall to RESIDENT THIRD DIVISION Travelling to SARIKEI by ship PM: Inspection of SARIKEI Radio Station Travelling to SIBU by ship







	Leader and Coordinator	Group-1	Group-2	Group-3
23		AM: Measuring the Field Strength at SANDAKAN PM: Ditto	AM: Measuring the Field Strength at SIBINTEK PM: Measuring the Field Strength. Technical meeting at LI HUA HOTEL	AM: SIBU (8:05 Lv.) MH-271 BINTULU (8:40 Ar.) Inspection of NYABAU Station PM: BINTULU (14:20 Lv.) MH-242 SIBU (14:45 Ar.)
24		AM: Measuring the Strength at Bt. GALAM PM: Measuring the Field Strength at BELURAN	AM: Travelling to SONG by Express ship Measuring the Field Strength at SONG Travelling to KAPIT PM: Inspection of KAPIT Station Measuring the Field Strength at KAPIT	AM: Travelling to KAPIT by Express ship Technical meeting at Telecoms PM: Inspection of KAPIT Station
25		AM: Travelling to TELUPID PM: Measuring the Field Strength at TELUPID AND travelling to SAN. DAKAN	AM: Measuring the Field Strength at suburbs KAPIT PM: Travelling to SIBU by Express ship	PM: Travelling to SIBU by Express ship
26		Data Analysis	AM: Measuring the Field Strength at SIBINTEK PM: Data Analysis	SIBU (11:35 Lv.) MH-243 MIRI (12:40 Ar.)
27		Travelling to LAHAD DATU	Data Analysis	Data Analysis
28		AM: Technical meeting at Telecoms PM: Inspection of Mt. SILAM Station	SIBU (12:10 Lv.) MH-273 BINTULU (12:45 Ar.) PM: Inspection of Bt. NYA-BAU Station Measuring the Field Strength at Suburbs BINTULU Technical meeting at HOOVER HOTEL	AM: Technical meeting at Telecoms PM: Inspection of Bt. Lambir Station

	Leader and Coordinator	Group-1	Group-2	Group-3
29 JULY 13 (TUE)		<p>AM: Measuring the Field Strength at KPG, TONG-KU</p> <p>PM: Measuring the Field Strength at KPG, SILI-BUKAN & LAHAD DATU</p>	<p>AM: Measuring the Field Strength at suburbs BINTULU & BINTULU</p> <p>PM: Technical meeting at Telecoms BINTULU (15:55 Lv.) MH-245 MIRI (16:30 Ar.)</p>	<p>MIRI (8:45 Lv.) MH-954</p> <p>LMBANG (9:25 Ar.)</p> <p>PM: Technical meeting at Telecoms Inspection of Bt. MAS</p>
30		<p>AM: Travelling to TAWAU</p> <p>PM: Inspection of Mt. ANDRASSY</p>	<p>AM: Technical meeting at Telecoms & RTM</p> <p>Inspection of LAMBIR Station</p> <p>PM: Measuring the Field Strength at NIAH</p> <p>Inspection of Bt. ANOHARANG</p>	<p>LMBANG (13:30 Lv.) MH-907</p> <p>MIRI (14:10 Ar.)</p>
31		<p>AM: Travelling to KALABAKAN</p> <p>PM: Measuring the Field Strength at KALABAKAN & MERUTAI Travelling to TAWAU</p>	<p>AM: Curtsey-call to RESIDENT FOURTH DIVISION</p> <p>Measuring the Field Strength at MIRI</p> <p>PM: Measuring the Field Strength at K. BARAM</p> <p>Picture Quality (10GH)</p> <p>Survey in front of GLO-RIA HOTEL</p>	<p>AM: Curtsey-call to RESIDENT FOURTH DIVISION</p> <p>MIRI (13:10 Lv.) via K. K. MH-243, 219</p> <p>SANDAKAN (15:30 Ar.)</p>
32		<p>AM: Travelling to KUNAK</p> <p>PM: Measuring the Field Strength at KUNAK, SEMPORNA and TINACAT</p> <p>Travelling to TAWAU</p>	<p>AM: Site Planning</p> <p>PM: Technical meeting and Site Planning at Telecoms & RTM</p>	<p>Inspection of TRIG HILL Station</p>

	Leader and Coordinator	Group-1	Group-2	Group-3
33		AM: Measuring the Field Strength at KPG, TANJUNG BATU and TAWAU	MIRI (9:00 Lv.) By Chartered Plane BN-2 MURUDI (9:15 Ar.) Measuring the Field Strength at MURUDI AIRPORT MURUDI (10:30 Lv.) BN-2 LAWAS (11:00 Ar.) Measuring the Field Strength at LAWAS AIRPORT LAWAS (11:4 Lv.) BN-2 LIMBANG (12:10 Ar.) PM: Inspection of Bt. MAS Station. Technical meeting at RTM.	SANDAKAN (8:30 Lv.) MH-223 LAHAD DATU (8:55 Ar.) Inspection of Mt. SILAM Station
34		Data Analysis	Data Analysis	LAHAD DATU (15:10 Lv.) MH-225 TAWAU (15:35 Ar.)
35		AM: Travelling to K. K. PM: Report to Japanese Consulate	AM: Measuring the Field Strength at BUANG SOIL and KPG, BAKOL LIMBANG (15:10 Lv.) BN-2 MIRI (15:55 Ar.)	Inspection of Mt. ANDRASSY
36		AM: Meeting with RTM & Telecoms PM: Data Analysis	AM: Technical meeting at RTM and Telecoms MIRI (13:10 Lv.) MH-243 KOTA KINABALU (14:30 Ar.)	TAWAU (12:2 Lv.) MH-552 KOTA KINABALU (13:00 Ar.)
37		AM: Meeting with RTM KOTA KINABALU (13:50 Lv.) MH-672, via SINGAPORE KUALA LUMPUR (17:40 Ar.)		Travelling to KUDAT Inspection of Bt. KELAPA Station Travelling to K. K.
38		Data Analysis		KOTA KINABALU (13:50 Lv.) MH-672, via SINGAPORE KUALA LUMPUR (17:40 Ar.)

	Leader and Coordinator	Group-1	Group-2	Group-3
39	JULY 23 (FRI)			
40	24 (SAT)	Preparing the Interim Report		
41	25 (SUN)	TOKYO (10:00 Lv.) MH-11 via TAIPEI & HONG KONG KUALA LUMPUR (19:50 Ar.)	Ditto	
42	26 (MON)	Ditto		
43	27 (TUE)	Technical meeting with RTM & Telecoms at RTM office and submission of the Interim Report		
44	28 (WED)	Making and signature of minutes of technical meeting		
45	29 (THU)	Gathering of information & datas at Telecoms		
46	30 (FRI)	Gathering of information & datas at Telecoms		
47	31 (SAT)	Preparation for departure		
48	AUGUST 1 (SUN)	Ditto		
49	2 (MON)	Submission of Interim Report including of minutes of technical meeting to EPU and signature. Reporting the Results of survey to Embassy of Japan and JICA office/ KUALA LUMPUR		
50	3 (TUE)	KUALA LUMPUR (11:40 Lv.) CX-720 HONG KONG (15:15 Ar.) HONG KONG (16:25 Lv.) CX-500 TOKYO (21:35 Ar.)		

Table 3. STUDY SCHEDULE

	1982					1983								
	4	5	6	7	8	9	10	11	12	1	2	3	4	5
Field Survey														
Preparation of Draft Final Report														
Submission of Draft Final Report														
Explanation of Draft Final Report														
Preparation of Final Report														
Submission of Final Report														

Remarks:  Work in Malaysia
 Work in Japan

**FEASIBILITY STUDY OF VHF/FM BROADCASTING
IN THE STATES OF SABAH AND SARAWAK**

Discussion between members of JICA Study Team, RTM and Telecoms Officials

Date : 19th June, 1982
Time : 11:00 morning
Venue : Meeting Room at 2nd Floor Angkasapuri

The list of participants appears as annex.

1. Introduction

The discussion aimed to facilitate the JICA Study Team to undertake their field survey in Sabah and Sarawak. A number of questions were also raised by RTM and Telecoms officials as regards to the Inception Report prepared by JICA.

2. Mr. Tham (RTM) asked whether any other areas will be surveyed apart from those shown in the schedule of Inception Report.

JICA replied no.

3. Mr. Tham also asked JICA to relate the Inception Report to Plan A and Plan B as envisaged in earlier discussions. JICA replied that Plan A is in the Inception Report but Plan B is on the map survey and will be prepared later.

4. JICA requested RTM and Telecoms to furnish it with the following information:

- a. Priority of channels and the reasons.
- b. Can the frequencies for e.g. Layang-Layang be shifted if necessary?
- c. Broadcasting differences between medium wave radio and FM; including future plan.
- d. Where will the broadcast programmes be produced?
- e. What kind of transmission lines do you plan to use?
- f. Also what is the operation costs for different transmission lines used.
- g. Any future plan as regards to transmission lines from station to station in Sabah and Sarawak and also estimated costs per year.
- h. Based on the Final Report of Peninsular Malaysia where the possible height is more than 100 meter for the tower which is also used for FM, does this apply to Sabah and Sarawak. Therefore information on the detail drawings of the tower.
- i. Seismic data (and range of wind velocity for design of tower).

Other matters raised

5. JICA wanted to know whether RTM and Telecoms have any comments on the Final Report for Peninsular Malaysia particularly from the personnel and costs viewpoint.

Mr. Tham replied that Economic Planning Unit has due to say.

6. JICA asked whether there is any difference between frequency planning for Sabah and Sarawak and Peninsular Malaysia.

Mr. Tham replied that basically there is no difference and said that what RTM and Telecoms wanted is a master frequency plan with the maximum number of networks.

7. JICA wanted to know the Acts governing telecommunications.

8. JICA enquired whether there is any future plan for VHF frequency.

Mr. Chong (Telecoms) will give details of this soon.

9. JICA requested for frequency details.

Discussion on Feasibility Study of VHF/FM Broadcasting in the States of Sabah and Sarawak, held on 19th June, 1982 at Angkasapuri, Kuala Lumpur

Present

Mr. S. K. Tham (Chairman)	R. T. M.
Mr. Takahiro Kawazoe	J. I. C. A.
Mr. Masayuki Hirata	"
Mr. Hitoshi Shioda	"
Mr. Tetsuya Nohmura	"
Mr. Masami Douchi	"
Mr. Shoji Tsuda	"
Mr. Hiroshi Narita	"
Mr. Yoshiaki Higashi	"
Mr. Hogara Chiba	"
Mr. H. S. Gendeh	R. T. M.
Mr. P. Balagopal	"
Mr. Chandra Malairaja	Ministry of Information
Mr. Chong Beng Tiat	Telecoms
Mr. Khen Wah	"

**MINUTES OF MEETING FOR FEASIBILITY STUDY ON VHF/FM
BROADCAST COVERAGE PLAN FOR THE STATES OF SABAH AND SARAWAK**

Discussion between members of RTM, telecoms Officials and JICA Study Team.

Date : 27th of July, 1982

Time : 14:30 – 17:30

Venue : Meeting Room at 2nd Floor Angkasapuri

1. Introduction

The Meeting aimed to confirm the basic data and references for preparation of the Draft Final Report and to report the completion of field survey in Sabah and Sarawak by JICA Study Team to RTM and Telecoms.

2. Minutes of last meeting, which was held dated 19th of June, was introduced by the Malaysian side and its contents were confirmed by both parties.

3. A number of data and information, which were requested by JICA Study Team at the time of the last meeting, were introduced by the Malaysian side and also the Malaysian side promised to give the reply by letter as soon as possible for some items as that could not be prepared yet so far.

4. Mr. T. Kawazoe, Leader of JICA Study Team, expressed appreciation for the cooperation and assistance extended to JICA Study Team by counterparts at the time of field survey on the spot.

5. The 'Interim Report' was submitted and explained by JICA Study Team to RTM and Telecoms and agreed by RTM and Telecoms.

Other matters raised

6. Existing FM Radio Transmitters, (at Layang Layang) and STL's
(from Kota Kinabulu Studio to Lawa Mandau, Layang Layang, Tuaran)

a) JICA wanted to know whether the FM Radio Transmitter frequencies at Layang Layang can be shifted to other frequencies, if necessary. RTM agreed to this provided the frequency shiftings are within the FM Broadcast Band.

b) The existing STL frequencies are within the FM Broadcast Band. RTM said that these STL frequencies will eventually be shifted out of the FM Broadcast Band. RTM informed the Meeting that they have indications from Telecoms that in future all STL frequencies should be in the 2 GHz Band, however this is to be confirmed by Telecoms.

7. Maps

JICA Study Team requested for assistance in getting some maps for states of Sabah and Sarawak. Most of the maps of 1/50,000 scale have already been supplied by EPU to JICA Study Team, however eight (8) sheets of the map are still lacking.

Mr. S.K. Tham (RTM) promised to try to obtain these maps and send to JICA, Tokyo by mail as soon as possible.

And also JICA Study Team wanted a letter giving permission to take the Maps out of Malaysia to Japan.

Mr. S. K. Tham (RTM) agreed to arrange for this.

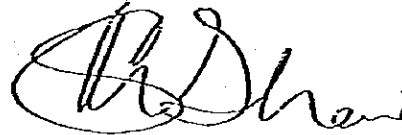
Above mentioned matters were confirmed and agreed by and between the both parties.

Kuala Lumpur, 27th of July, 1982.

川添隆公

(Takahiro Kawazoe)

Leader
Japanese Feasibility Study Team
on behalf of
JAPAN INTERNATIONAL COOPERATION
Agency.



(S. K. THAM)

Deputy Director General (Engineering)
Department of Broadcasting,
Malaysia.

List of attendants

Mr. S. K. Tham (Chairman)
Mr. P. Balagopal
Mr. Ahmad Abdullah
Mr. Cheah Fook Yen
Mr. Chandra Malairaja
Mr. Takahiro Kawazoe
Mr. Masayuki Hirata
Mr. Hitoshi Shioda
Mr. Hiroshi Narita
Mr. Shoji Tsuda
Mr. Yoshiaki Higashi
Mr. Tetsuya Nohmura
Mr. Hogara Chiba
Mr. Masami Douchi
Mr. Mitsutoshi Kikuchi

R. T. M.

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Telecoms.

Ministry of Information

J. I. C. A.

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Scope of Work (S/W)

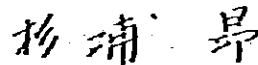
**SCOPE OF WORK FOR FEASIBILITY STUDY
ON VHF/FM BROADCAST COVERAGE PLAN
FOR THE STATES OF SABAH AND SARAWAK, MALAYSIA
ABREED BETWEEN
THE GOVERNMENT OF MALAYSIA
AND
JAPAN INTERNATIONAL COOPERATION AGENCY**

Kuala Lumpur

22ND MARCH 1982



(TAN SRI ISHAK BIN PATEH AKHIR)
DIRECTOR GENERAL
ECONOMIC PLANNING UNIT
PRIME MINISTER'S DEPARTMENT
on behalf of
THE GOVERNMENT OF MALAYSIA



(TAKASHI SUGIURA)
LEADER
JAPANESE PRELIMINARY
STUDY TEAM
on behalf of
JAPAN INTERNATIONAL COOPERATION
AGENCY

I. Introduction

In response to the request of the Government of Malaysia, the Government of Japan has agreed to conduct a Feasibility Study on VHF/FM Broadcast Coverage Plan for the States of Sabah and Sarawak (hereinafter referred to as 'the Study') in accordance with laws and regulations in force in Japan, and the Japan International Cooperation Agency (hereinafter referred to as JICA), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan, will carry out the Study in close cooperation with the Government of Malaysia and the authorities, in particular the Ministry of Information and the Telecommunications Department of Malaysia.

The present document sets forth the Scope of Work for the Study.

II. Objective of the study

To conduct the Feasibility Study on the VHF/FM Broadcasting Coverage Plan for the states of Sabah and Sarawak.

III. Outline of study

The Study will entail field survey in Malaysia and analysis work in Japan. Items to be covered by the Study are as follows:

1. General

Present status of broadcasting facilities and services in Malaysia:

- 1) Existing facilities and future plan of domestic telecommunications network.
- 2) Present technical standards of broadcasting facilities
- 3) Laws and regulations concerned
- 4) Broadcasting service revenue and expenditure

2. Project

- 1) Preparation of frequency allocation plan for the optimum number of networks.
- 2) Determination of transmitter power, ERP and estimate coverage area for each expected transmitting station.
- 3) Topographical condition and their surroundings at expected sites.
- 4) Selection of sites
 - a) Using existing Telecoms stations
 - b) Other alternative sites
- 5) Radio propagation test
- 6) Selection of optimum system
- 7) Determination of programme relay system
- 8) Preparation of preliminary engineering designs
- 9) Preparation of specification with respect to international standards
- 10) Programme plan
- 11) Personnel plan
- 12) Estimation of construction, equipment, operation and maintenance costs

13) Preparation of implementation schedule

14) Project evaluation including socio-economic aspect

IV. Schedule of study

The Study shall be undertaken in accordance with the schedule of Study (refer to Annex).

V. Report

The JICA will prepare and submit the following reports in English to the Government of Malaysia.

1. Draft final report (20 copies)

To be submitted within four-half months after completion of the field survey. The government of Malaysia is requested to provide its comments on the draft final report within a period of two months after its submission.

2. Final report (50 copies)

To be submitted within two months after receiving comments on the draft final report from the Government of Malaysia.

3. All reports when finalised and submitted to the Government of Malaysia shall remain the property of the Government of Malaysia.

VI. Undertakings of the government of Malaysia

1. To provide the team with relevant data, information and materials necessary for implementation of the Study.

2. To exempt the Study Team from taxes and duties normally accorded under the provision of General Circular No.1 of 1979 for materials, equipment and personal effects brought into Malaysia for the purpose of the Study.

3. To appoint counterpart personnel to the Study Team during the Study period.

4. To arrange adequate means of transportation (expenses for transportation will be borne by the team).

5. To provide the Study Team with suitable office space, necessary office equipment and secretarial services for the study wherever available.

6. To make arrangement for the Study Team to take back to Japan the data, maps and materials connected with the Study subject to the approval by the Government of Malaysia in order to prepare the reports.

7. To secure the necessary entry permits for the Study Team to conduct field surveys in Malaysia.

8. To inform the members of the Study Team of any existing risk in the study area and take any measure deemed necessary to secure the safety of the members of the Team.

9. To indemnify any member of the Study Team in respect of damages arising from any legal action against him in relation to any act performed or omissions made in undertaking the survey except when the two Governments agree that such a member is guilty of gross negligence or wilful misconduct.
10. To provide the Study Team with medical facilities when needed, but medical expenses shall be chargeable to the Study Team.

VII. Undertaking of the government of Japan

1. To send a Study Team in relevant fields to undertake the Study.
2. To bear travelling expenses and fares between Japan and Malaysia and also within Malaysia including necessary aircraft charters for members of the Study Team.
3. To meet the cost of accommodation and living expenses for members of the Study Team during their visits to Malaysia.
4. To perform technology transfer to Malaysian counterpart personnel in the course of the Study.

The Principle in Frequency Assignment Planning on Proposed Report

Upon request of the Government of Malaysia, the Study Team would like to propose the under-mentioned principle in frequency assignment planning on proposed report.

- PLAN A** Frequency assignment plan for most populated area
Estimated number of the sites will be 10-15 for 1st Stage, while 3-10 for 2nd stage.
- PLAN B** Frequency assignment plan to cover entire population Land
Land coverage will be 98%.
Number of possible networks by Plan B will be less than that of Plan A.
The reason is that it is necessary to avoid mutual interference among stations by means of estimation at initial planning stage.
If Plan B is made after completion of Plan A networks, it is much easier to find more possible channels in number because it will be possible to measure actual radiated field strength to predict mutual interference in more precise way.

Thus, we stressed the merit of Plan A. Meanwhile, the merit of Plan B is that possible number of networks is guaranteed to cover whole States though the number of networks is less than that of Plan A. Therefore, when implementation of the project, the Government of Malaysia will have to choose one of Plan A or B.

Proposed Frequency Assignment Plan

	PLAN A		PLAN B
Implementation schedule	1st Stage	2nd Stage	
Number of site	10 – 15	3 – 10	30 – 50
Number of network	6 – 7	6 – 7	2 – 4
Station names (MHz)	Kuching (88.0, 90.0, ... , 98.0) Simmangang (100.0, 102.0, ...) Tawau (90.0, 92.0 ..., 100.0)	 Long Geng (88.0, 90.0, ...) Long Tebangan (91.0, ...) 	Kuching (88.0, 90.0, 92.0) Simmangang (100.0, 102.0, 104.0) Long Geng (88.0, 90.0, 92.0) Long Tebangan (91.0, . . , .) Tawau (90.0, 92.0, 94.0) Long Seridan (97.0, 99.0, 101.0)
Population coverage	90 (%)	95 (%)	100 (%)
Land coverage	50 (%)	55 (%)	98 (%)

TERMS OF REFERENCE

7th December, 1981.

URGENT/BY HAND:

**Mr. K. Takada,
First Secretary,
Embassy of Japan,
6th Floor, AIA Building,
Jalan Ampang,
KUALA LUMPUR**

Dear Mr. Takada,

Feasibility Study on VHF/FM Broadcasting in the States of Sabah and Sarawak

Further to the discussions held on 6th July, 1981 in this Unit with the Japanese Technical Cooperation Mission, I am pleased to submit herewith the Terms of Reference for the above-mentioned Study for your onward transmission to Tokyo.

2. We look forward to the early despatch of the Preliminary Survey Mission for the Study.
3. Your kind cooperation in this matter is much appreciated.

Yours sincerely,

(WONG PEG HAR)
for Director General
Economic Planning Unit

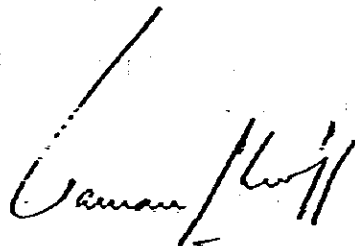
WPH/rs.

**MINUTES OF MEETING ON THE DRAFT FINAL REPORT
FOR THE FEASIBILITY STUDY ON VHF/FM BROADCAST COVERAGE
FOR THE STATES OF SABAH AND SARAWAK, MALAYSIA**

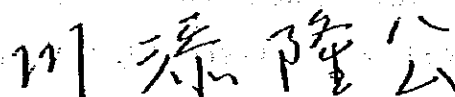
A series of discussion on the Draft Final Report was held and views were exchanged between the JICA Study Team headed by Mr. T. Kawazoe and relevant authorities of the Government of Malaysia, namely the Economic Planning Unit of the Prime Minister's Department, Ministry of Information and the Department of Telecommunications.

The Final Report, which would incorporate comments and amendments attached herewith, should be submitted to the Government of Malaysia by the end of May, 1983.

Kuala Lumpur
9th March, 1983.



(KAMARUZZAMAN SHARIFF)
DIRECTOR
EXTERNAL ASSISTANCE/
GENERAL SERVICES SECTION
ECONOMIC PLANNING UNIT
PRIME MINISTER'S DEPARTMENT



(TAKAHIRO KAWAZOE)
LEADER
JAPANESE FEASIBILITY STUDY TEAM
on behalf of
JAPAN INTERNATIONAL COOPERATION
AGENCY

**Scope of Work and Terms of Reference for Feasibility Study of VHF/FM Broadcasting
in the States of Sabah and Sarawak**

1. To formulate a Master Frequency Plan for the maximum number of networks covering the total land area of Sabah and Sarawak irrespective of concentration of population.
2. To recommend transmitter power, Effective Radiated Power (ERP) and estimated coverage area for each transmitting station.
3. To recommend a suitable programme relay interconnecting the proposed stations and between Sabah, Sarawak and Peninsular Malaysia taking into consideration the existing telecommunication networks.
4. To prepare radio profiles and confirm through radio propagation tests.
5. To recommend suitable Transmitting Station sites, taking into consideration the existing Telecoms Stations.
6. To prepare preliminary engineering designs.
7. To prepare preliminary cost estimates.

Reports

To prepare and submit the following reports in English to the Government of Malaysia:-

- (a) Draft Final Report — 20 copies
- (b) Final Report — 50 copies

Training

On completion of the preliminary surveys in Sabah and Sarawak, local counterpart engineers involved in the Study should be provided with training in Japan to learn how the data obtained is processed and the techniques employed in carrying out the frequency planning.

COMMENT

The Malaysian Government requested the JICA Study Team to include if possible, under Plan A, the coverage of the following three areas;

- (a) LINKABAU
- (b) TAMBISAN
- (c) KUAMUT and TANGKULAP

(It is understood that the three areas are covered under Plan B. However, JICA Study Team is requested to see if there is any possibility of covering these areas in Plan A.)

JICA Study Team agreed to look into this request and will incorporate their findings as an Annex to the Final Report.

