(6) Measuring equipment and tools

The measuring equipment and tools are placed in the maintenance room which is located to the south of the master control room.

4-3-2 Equipment Plan

(1) Educational program production studio equipment

This studio will be used to produce programs on dialogues, panel discussions, commentaries or lectures, cooking, handicrafts, school science experiments and those that accompany some kinds of performances, smaller to medium scale music programs, dancing and viewer participation programs such as a quiz shows where children take part. Dramas and skits to be used as part of educational programs will also be produced.

Various camera work will be required, including long shots, closeups of faces and hands, scenes, etc. Three cameras will be installed in the studio as a minimum requirement.

A video switcher will have chromakey, wipe, mix and superimposition capabilities. A digital video effecter in combination with the video switcher enables production of more attractive educational programs.

At the initial stage, the video switcher will be getting feeds from the following fourteen sources. But they will be designed to be capable of receiving 18 feeds, as feeds from portable cameras and more VTR's can be expected in the future.

Camera	3	14
VTR	3	
Character generator	1	
External source	2	
Slide scanner	1	
Digital video effector	1	
Color bars	1	
Back color	2	
Portable cameras	2	4 (Future plan)
VTR	1	
Caption scanner	1	
Total	18	

The following number of video monitors are necessary to observe pictures.

- For the control room

14-inch color monitor		15
Camera	3	
VTR	3	
Character generator	1	
External source	2	
Slide scanner	1	
Color bars	1	
Video switcher preview (MK output)	2	
Transmitting studio output	1	
Master control room output	1	
14-inch precision color monitor (VE)		1

20-inch color monitor		2
Video switcher preview	1	
Video switcher line output	1	
20-inch TV receiver		1
● For studio floor		
20-inch color monitor		1

In all, the number of monitors needed in the production studio will be as follows:

14-inch color monitor	15
14-inch precision color monitor (VE)	1
20-inch color monitor	3
20-inch TV receiver	1

The VTR's will be the type that uses 1/2-inch cassette tapes. This is a more advanced type than conventional ones. Three such VTR's will be installed. Two of them will be equipped with slow-motion replay capability. This will be used for programs on school science experiments and sports commentaries. The third VTR will be used to videotape programs.

One character generator (for Arabic and English) is planned to enable the production of titles and superimposition. One slide scanner is also planned to send pictures on slides.

Two frame synchronizers will be installed to synchronize video signals coming from Aden Station, OB vehicles, etc., with those originating in the studio center. They will make it possible for external signals to be treated just like inside signals by the video switcher.

The audio mixer is capable of receiving feeds from the following 24 sources. But the audio mixer will be designed to have 22 input channels. The reason is as follows.

In cases where external signals such as those from OB vehicles, satellites, etc., come into the studio, programs produced in the studio usually do not require a lot of microphones (12 microphones) simultaneously.

In this case, the number of microphones necessary for sound production is anticipated to be less than 10.

Therefore, the 22-input channel audio mixer is to be provided in this studio.

Microphone	12	23
Audio tape recorder	2	
Cassette tape recorder	1	
CD player	1	
VTR	3	
External source	2	
Telephone sound pickup device	1	
Echo	1	
VTR		1 (Future plan)

In addition, three audio tape recorders (two open-reel type and one cassette type), one CD player, a telephone sound pickup device and others will also be installed as audio equipment. Wireless microphones will also be prepared. Wireless microphones will enable performers to speak or perform while moving around in the studio.

One intercommunication system set will be installed. This is to allow production staff in the control room and those on the studio floor including cameramen, floor directors and others, to communicate with each other while producing a program.

Studio lighting equipment consists of lighting battens, lanterns with accessories, a dimmer rack and a light control console. The dimmer rack to control lights will be installed in an independent room next to the control room. This is to prevent intensive electric current from interfering with video and audio equipment. The dimmer rack will be controlled remotely from the light control console to be installed in the control room.

For installation of studio lighting battens and suspension winches, a grid structure is required under the ceiling of a studio. The construction of the new studio center is almost completed but the production studio is not provided with such a structure. The conclusion of discussions about provision for the structure required for studio lighting is that the Yemeni side shall erect the grid structure from the studio floor with the use of I-beams and H-beams, and the Japanese side install the lighting equipment on it.

Cyclorama will be installed as a background in the studio.

(2) Transmitting studio equipment

The transmitting studio will be used to send out programs according to daily transmission schedules. It will also be used to produce news programs and announcements between programs.

Two cameras with teleprompters will be installed so that two newscasters will be able to read news scripts one after the other.

As part of the video equipment, one digital video effecter set will be installed. This is a device that has become indispensable for production of news programs in recent years.

At present, the video switcher will receive feeds from the following 12 sources. But considering future needs, they will be designed to be capable of receiving 16 feeds.

Camera	2	12
VTR	3	
Character generator	1	
External source	2	
Slide scanner	1	
Station logo generator	1	
Digital video effecter	1	
Color bars	1	
Camera	1	4 (Future plan)
VTR	1	
External source	1	
Others	1	

Video monitors will be required as follows:

- For the control room

14-inch color monitor		12
Camera	2	
VTR	3	
Character generator	1	
External source	2	
Slide scanner	1	
Station logo generator	1	
Time generator	1	
Master control room output	1	
14-inch precision color monitor (VE)		1
20-inch color monitor		2
Video switcher preview	1	
Video switcher line output	1	

20-inch TV receiver	1

- For studio floor

20-inch color monitor	1

Three VTR's will be installed to ensure transmission by replaying of video tapes.

One station logo generator and one time generator will be installed so that the station identification and the time can be inserted at any time when appropriate.

Like in the production studio mentioned above, one character generator will be installed to make it possible to insert letters onto the picture. Also, one slide scanner to enable transmission of pictures from slides, and two frame synchronizers are planned.

The audio mixer will be receiving feeds from the following. Considering future needs, sixteen channels will be required.

Microphone	4	14
Audio tape recorder	2	
Cassette tape recorder	1	
CD player	1	
VTR	3	
External source	2	
Telephone sound pickup device	1	
VTR	1	2 (Future plan)
External source	1	

Other sound equipment includes two audio tape recorders, one cassette tape recorder, one CD player, one set of microphones (including wireless microphones), one telephone sound pickup device and one set of production intercommunication equipment.

As for studio lighting equipment, a movable rail suspension lighting device and dimmer controller will be installed. This is considered the most appropriate, in light of the size of the studio (about 60m^2 in floor area and about 4m high), and its purposes (production of news programs and various announcements).

Next to the transmitting studio is a VTR·telecine room. This room has one telecine set, two 1/2-inch VTR's, two U-matic VTR's, two 1-inch B-format VTR's, and two 1-inch C-format VTR's. The telecine equipment will be used to send images from 35mm films and 16mm films. The 1/2-inch VTR's will be used to record signals from satellites, Aden Station, OB vehicles and other locations outside the studio. The other VTR's will be used to replay software except for 1/2-inch video tapes. The output from these VTR's will be distributed, by way of a routing switcher installed at the master control room, and will be used at the production studio, the transmitting studio and other necessary places.

The existing four 1-inch VTR's will be moved to the new studio center and will continue to be used. This is because this type of VTR is expected to gradually go out of use.

(3) Master control room equipment

The master control room is the heart of a broadcasting station. It distributes video and audio signals coming in from outside or originating inside the station to appropriate locations inside or outside the station. This is also the place where final choice is made on which programs are to be sent out to transmitters.

Major equipment here includes a routing switcher, a program sending-out switcher, a master sync signal generator, a system converter, a 1/2-inch VTR and a slide scanner.

The routing switcher receives feeds from the following:

Production studio	2	24
Transmitting studio	2	
System converter	1	
Telecine equipment	1	
1/2-inch VTR	2	
U-matic VTR	2	
One-inch C-format VTR	2	
One-inch B-format VTR	2	
Existing master control room	4	
Aden Station	2	
Color bars	1	
Spare	3	

The output buses of the routing switcher will be distributed to the following:

Master monitor	1	18
Production studio	2	
Transmitting studio	2	
System converter	1	
1/2-inch VTR	2	
Existing master control room	4	
Aden Station	2	
Program sending-out switcher	2	
Spare	2	

As described above, the capacity of the routing switcher is 24-input × 18-bus for the time being. But the routing switcher is one of the most important apparatuses in a broadcasting station. It should be designed in such a way that its capacity can be easily expanded when the need arises.

The inputs to the program sending-out switcher will be signals from one production studio output, one transmitting studio output, one telecine, one 1/2-inch VTR, one slide scanner, one black burst, one color bar and the two above-mentioned routing switcher outputs. Three output buses will be needed, one to send signals to transmitting stations, another to send signals to VTR input and the remaining one for the input of monitoring equipment. Therefore, the program sending-out switcher requires a 12-input and 3-bus capacity.

Broadcast programs are usually sent out from the transmitting studio. After the broadcast is over, nobody will be in the transmitting studio. The master control room, on the other hand, is to operate around the clock. This is to exchange programs with other stations both inside and outside Yemen, to monitor news and for other purposes. One VTR and one slide scanner will also be installed in this room. This is to record programs coming in from outside during the night. It will also enable the replaying of video tapes and directly broadcasting them from the master control room. This would be necessary when the production of news programs at the transmitting studio is complex and requires more time for setting. It would also be used in case there are some troubles in the transmitting studio.

There will also be a system converter that allows exchanges of programs on an international level. A master clock system will be installed and used as a basis for all the clocks in the station.

When there is a power failure, the existing emergency power generator will supply electricity. To ensure continuous broadcasting, uninterrupted power supply equipment (30kVA) will be installed. This will ensure supplies of power to part of the transmitting studio equipment and the equipment at the master control room until the emergency power generator is ready to supply power.

(4) Outdoor coverage equipment

Three sets of ENG cameras, sound recording equipment and lighting equipment are planned. They will be used when production crews visit primary schools, high schools, or universities to produce educational programs. The crews may also visit various places in Yemen to introduce the local habits and customs. Such programs are expected to help promote mutual understanding among people living in different parts of the country.

One portable microwave link set is also planned. This will enable live broadcasts linking a location and Sana'a studio center. All these ENG/EFP facilities will be battery operated, so that they can be used at locations where city power is not available.

Materials taped by these portable apparatuses should be of high quality, as they may be broadcast as long programs or may be edited together with those taped in studios.

(5) Editing equipment

1) 1:1 editing equipment

This is the most basic system of electronic editing. It makes use of two VTR's, one for replaying and the other for recording. Two sets of such editing apparatuses equipped with 1/2-inch VTR's will be supplied. They will be used mainly to edit materials recorded by the outdoor coverage equipment.

2) A/B role editing equipment

This apparatus makes use of three VTR's , one for recording and two for replaying. This enables the editing of materials on two video tapes into one, making possible more elaborate ways of editing. As with the 1:1 editing equipment, 1/2-inch VTR's will be used. One set of such equipment will be supplied for use to edit materials mainly recorded in the studios.

(6) Measuring equipment and tools

Adequate daily maintenance is essential to keep facilities and equipment in good working condition. This requires measuring instruments that are capable of grasping working conditions of facilities and equipment. An oscilloscope, TV test signal generator, audio measuring equipment, circuit testers and standard tapes are among them. They must be robust, reliable and easy to handle. All types of such measuring equipment will be supplied to satisfy maintenance needs.

Sets of standard tools, including screw drivers, pinchers, nippers and soldering irons, and special tools will also be supplied.

(7) Spare parts

Details will be specified when the detailed design is conducted. But spare parts will include the following basic ones. There should be enough spare parts to enable operations to continue without supplies of other parts except for consumables for at least two years after the operations have started. During the two years time, the General Corporation for Radio and Television will keep records of how many spare parts will be needed. This will be used as a basis to calculate necessary spending on spare parts in the future.

Main equipment modules, units, etc.	one set
Relays, switches, etc.	one set
Lamps, fuses, etc.	one set
Semiconductors that can be replaced at site	one set

(8) Installation materials

These are materials needed to connect facilities or equipment. They include video signal cables, audio signal cables, control cables, power cables, various connectors, insulation tape, and other sundry materials.

4-3-3 Equipment List

The outline of the main equipment list and specifications are as follows. This is based upon careful examination of design policy and criteria.

(1) Educational program production studio equipment		1 set
1) Color camera chain	(3 sets)	
a) FIT CCD camera	3	
b) 14-times motorized zoom lens	3	
c) Camera control unit	3	
d) Remote control panel	3	
e) 5-inch B/W viewfinder	3	
f) 25-meter camera cable	6	
2) Pedestal with mounting head and dolly	3	
3) Video switcher	(1 set)	18-input, 2-M/K
a) Switcher (18-input, 8-bus)	1	
b) M/K processor	2	
c) Downstream keyer	1	
d) Remote control panel	1	
e) Auxiliary bus	4	

f) Auxiliary bus control panel	1	
g) Necessary accessories	1 set	
4) Digital Video Effector (DVE) with Accessories	1 set	Three-dimension
5) 1/2-inch video tape recorder with monitor	2	Recording, slow motion playback
6) 1/2-inch video tape recorder with monitor	1	Recording, playback
7) Character generator with color monitor and table	1 set	Arabic and English
8) Frame synchronizer	2	With input selection panel
9) Slide scanner	1	
10) PAL sync signal generator	2	With automatic changeover switch
11) Video monitoring equipment	(1 set)	
a) Waveform monitor	1	
b) Vectorscope	1	
c) 14-inch VE color monitor	1	Precision model
d) 14-inch color monitor	15	
e) 20-inch color monitor	3	
f) 20-inch TV receiver	1	
g) Monitor cart	1	To be used in studio
12) Monitor shelf	1	To be installed in control room

13) Video and pulse distribution amplifier	1 set	Outputs of one amplifier: more than 4; Necessary amount for making up complete system
14) Video equipment rack assembly including jack panel and internal wiring	1 set	
15) Operating console	(1 set)	
a) Video switcher console	1	
b) PD console	1	
c) VE console	1	
d) Chair	5	
16) Audio mixer	1	22-input
17) Audio monitor speaker with amplifier	2	
18) Audio tape recorder with monitor speaker and stand	2	Open reel
19) Cassette tape recorder	1	
20) CD player	1	
21) Monitor speaker rack housing the above cassette tape recorder and CD player	1	
22) Audio distribution amplifier	1 set	Outputs of one amplifier : more than 4; Necessary amount for making up complete system

23) Audio equipment rack assembly including jack panel and internal wiring	1 set	
24) Production intercom	1 set	
25) Reverberator with remote control unit	1 set	
26) Microphone and microphone stand	(1 set)	
a) Desktop type condenser microphone with stand	2	For talking
b) Floor type condenser microphone and stand	2	For talking
c) Uni-directional condenser microphone	2	For general purposes
d) Selectable directivity condenser microphone	2	For music
e) Dynamic microphone for vocal use	2	For vocal use
f) Microphone extension cable	10	
g) Microphone boom stand	1	Boom: 1,250~4,500mm adjustable Stand: 1,650~2,400mm adjustable
h) Mini boom stand	2	
i) Goose neck floor stand	2	
j) Floor stand	2	850~1,400mm adjustable
k) Table stand	2	
27) Wireless microphone	(4 sets)	
a) 400 MHz band UHF transmitter with tie-pin mic	4	

b) UHF wireless dynamic microphone	4	
c) UHF tuner	4	
d) UHF receiving antenna	2	
28) Studio lighting equipment	(1 set)	
a) Lighting batten	1 set	
b) Lantern with accessories	1 set	
c) Dimmer control system with console	1 set	
d) Cyclorama and curtain	1 set	
29) Miscellaneous items	(1 set)	
a) Telephone sound pickup device	1	
b) Cough box	1	
c) On-the-air light	3	
d) Headphones	2	
30) Acoustic material	1 set	50mm thick
(2) Transmitting studio equipment		1 set
1) Color camera chain	(2 sets)	
a) FIT CCD camera	2	
b) 14-times motorized zoom lens	2	
c) Camera control unit	2	
d) Remote control panel	2	
e) 5-inch B/W viewfinder	2	
f) 10-meter camera cable	4	
2) Tripod and dolly	2	
3) Teleprompter	2	
4) Video switcher	1	16-input and one-M/K
5) Digital video effector (DVE) with accessories	1 set	Three-dimension

6) 1/2-inch video tape recorder with monitor	2	Recording, slow motion playback
7) 1/2-inch video tape recorder with monitor	1	Recording, playback
8) Character generator with color monitor and table	1	Arabic and English
9) Frame synchronizer	2	With input selection panel
10) Slide scanner	1	
11) Station logo generator	1	
12) Video timer	1	Digital indication
13) PAL sync signal generator	2	With automatic changeover switch
14) Video monitoring equipment	(1 set)	
a) Waveform monitor	1	
b) Vectorscope	1	
c) 14-inch VE color monitor	1	Precision model, with input switcher
d) 14-inch color monitor	12	
e) 20-inch color monitor	3	
f) 20-inch TV receiver	1	
g) Monitor cart	1	To be used in studio

15) Monitor shelf	1	To be installed in control room
16) Video and pulse distribution amplifier	1 set	Outputs of one amplifier: more than 4; Necessary amount
17) Video equipment rack assembly including jack panel and internal wiring	1 set	
18) Operating console	(1 set)	
a) Video switcher console	1	
b) PD console	1	
c) VE console	1	
d) Chair	4	
19) Audio mixer	1	16-input
20) Audio monitor speaker with amplifier	2	
21) Audio tape recorder with monitor speaker and stand	2	Open reel
22) Cassette tape recorder	1	
23) CD player	1	
24) Monitor speaker rack housing the above cassette tape recorder and CD player	1	
25) Audio distribution amplifier	1 set	Outputs of one amplifier: more than 4; Necessary amount
26) Audio equipment rack assembly including jack panel and internal wiring	1 set	

27) Production intercom	1 set	
28) Microphone and microphone stand	(1 set)	
a) Desktop type condenser microphone with stand	2	For talking
b) Uni-directional condenser microphone	2	For general purposes
c) Microphone floor stand	2	850~1,400mm adjustable
d) Microphone extension cable	4	
29) Wireless microphone	(2 sets)	
a) 400 MHz UHF transmitter with tie-pin microphone	2	
b) UHF tuner	2	
c) UHF receiving antenna	2	
30) Studio lighting equipment	(1 set)	
a) Suspension device	1 set	
b) Lantern with accessories	1 set	
c) Dimmer controller	1 set	
d) Cyclorama curtain	1 set	
31) Miscellaneous items	(1 set)	
a) Telephone sound pickup device	1	
b) Cough box	2	
c) On-the-air light	3	
d) Headphones	2	
32) Acoustic materials	1 set	50mm thick
33) VTR·Telecine room	(1 set)	
a) 1/2-inch video tape recorder with monitor	2	Recording, playback

b) Telecine equipment	1	35mm and 16mm films
c) U-matic video tape recorder with monitor	2	Recording, playback
(3) Master control room equipment		1 set
1) Routing switcher	1 set	24-input by 18-bus (extendible to 40-input by 40-bus), One video and dual audio crosspoints
2) Program sending-out switcher	1 set	12-input by 3-bus; Audio-follow-video crosspoints
3) System converter	1	PAL, SECAM and NTSC convertible
4) Slide scanner	1	
5) 1/2-inch video tape recorder with monitor	1	Recording, playback
6) Sync signal generator	2	With automatic changeover switch
7) Monitoring equipment	(1 set)	
a) Waveform monitor	2	

b) Vectorscope	2	
c) 14-inch VE color monitor	2	Precision model, with input switcher
d) 14-inch color monitor	2	
e) 20-inch color monitor	1	
f) 20-inch TV receiver	1	
g) Monitor stand	1	
8) Video, video equalizing and pulse distribution amplifiers	1 set	Outputs of one amplifier: more than 4; Necessary amount
9) Video signal processing amplifier	1	
10) Video equipment rack assembly including jack panel and internal wiring	1 set	
11) Operating console	(1 set)	
a) Routing switcher console	1	
b) Program sending-out console	1	
c) Chair	2	
12) Audio monitoring equipment	(1 set)	
a) Monitor speaker with amplifier	3	
b) Monitor speaker cart	2	
c) VU meter panel	3	
13) Cassette tape recorder	1	
14) Oscillator	1	400, 1,000, 8,000Hz

15) Audio distribution amplifier	1 set	Outputs of one amplifier: more than 4; Necessary amount
16) Audio limiting amplifier	1	
17) Audio equipment rack assembly including jack panel and internal wiring	1 set	
18) Interphone unit	15	
19) Clock equipment	(1 set)	
a) Master clock	1	
b) Slave clock	10	
20) Miscellaneous items	(1 set)	
a) On-the-air light	1	
b) Headphones	2	
21) Uninterrupted power supply (UPS) equipment	1	30kVA, 10 minutes
22) Power distribution board	6	
(4) Outdoor coverage equipment		1 set
1) VTR camera equipment	(3 sets)	
a) FIT CCD camera	3	
b) 1/2-inch video tape recorder	3	
c) 18-times motorized zoom lens	3	
d) Shotgun type condenser microphone	3	
e) Rechargeable battery pack	12	
f) Battery charger	6	
g) AC power adaptor	3	

h) Tripod	3	With dolly
i) Pan and tilt head	3	
j) VTR playback adaptor	3	
k) Carrying case	3	
l) Interconnection cable	6 sets	
2) Audio equipment	(3 sets)	
a) Portable audio mixer	3	4-input
b) Unidirectional dynamic microphone	3	
c) Lavalier type condenser microphone	3	
d) UHF wireless microphone	3	
e) UHF tuner	3	
f) Headphones	3	
3) Monitoring equipment	(3 sets)	
a) 6-inch color monitor with speaker	3	
b) Portable waveform monitor	3	
c) Battery	6	
d) Charger	3	
e) Carrying case	3	
4) Lighting equipment	(3 sets)	
a) Portable lighting kit with accessories	3 sets	
b) Battery charger	3	
c) Lamp for portable lighting kit	9 sets	
d) Carrying case	3	
5) Field pickup equipment	(1 set)	
a) 7GHz transmitter	1	1W
b) 7GHz receiver	1	
c) Parabolic antenna	2	
d) Mounting head	2	

e) Tripod	2	
f) Radio telephone	3	VHF
g) Interconnection cable	4 sets	
(5) Editing room equipment		1 set
1) 1:1 editing equipment	(2 sets)	
a) 1/2-inch video tape recorder	2	Recording, playback
b) 1/2-inch video tape player	2	Slow motion playback
c) 14-inch color monitor with sound	4	
d) Desk	2	
e) Chair	2	
f) Interconnection cable	2 sets	
2) A/B roll editing equipment	(1 set)	
a) 1/2-inch video tape recorder	1	Recording, playback
b) 1/2-inch video tape player	2	Slow motion playback
c) Editor	1	
d) Video switcher	1	With special effects
e) Audio switcher	1	8-input
f) 14-inch color monitor	3	
g) Desk	1	
h) Chair	1	
i) Interconnection cable	1 set	

(6) Measuring equipment and tools		1 set
1) TV test signal generator	1	Multiburst, pulse/bar, stair-step, color bars
2) Audio measuring equipment	1	Frequency response, distortion factor, S/N
3) Oscilloscope with cart	1	100MHz bandwidth, dual inputs, with cart
4) Waveform monitor	1	
5) Vectorscope	1	
6) Illumination meter	1	
7) Color meter	1	
8) Circuit tester	3	DC voltage: 0.5~1,000V DC current: 0.2~1,000A AC voltage: 3~300V Resistor: 2k~200Mohm
9) Megohm meter	1	500V

10) Ground positioning instrument	1	For field intensity measurement
11) Hand tool set	5 sets	
12) Standard tool set	3 sets	
13) Special jig for equipment	1 set	
14) Standard tape for 1/2-inch VTR	2 sets	
15) Standard tape for open reel audio tape recorder	2 sets	
(7) Spare parts		1 lot
(8) Installation materials		1 lot Video cable, audio cable, control cable, power cable, connectors, etc.

4-3-4 Basic Design Drawing

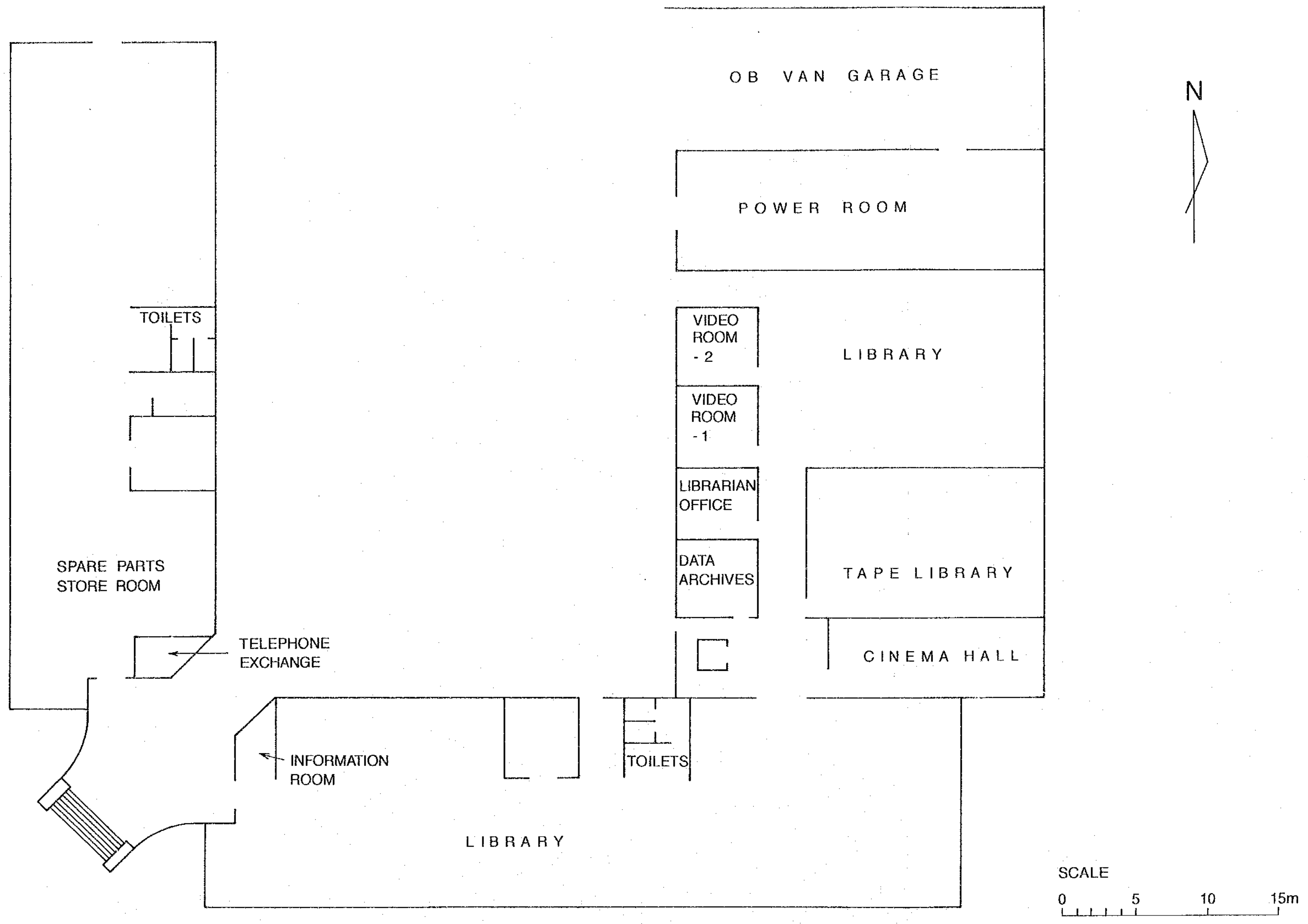


FIG.4-3-1 GROUND FLOOR PLAN OF NEW STUDIO CENTER

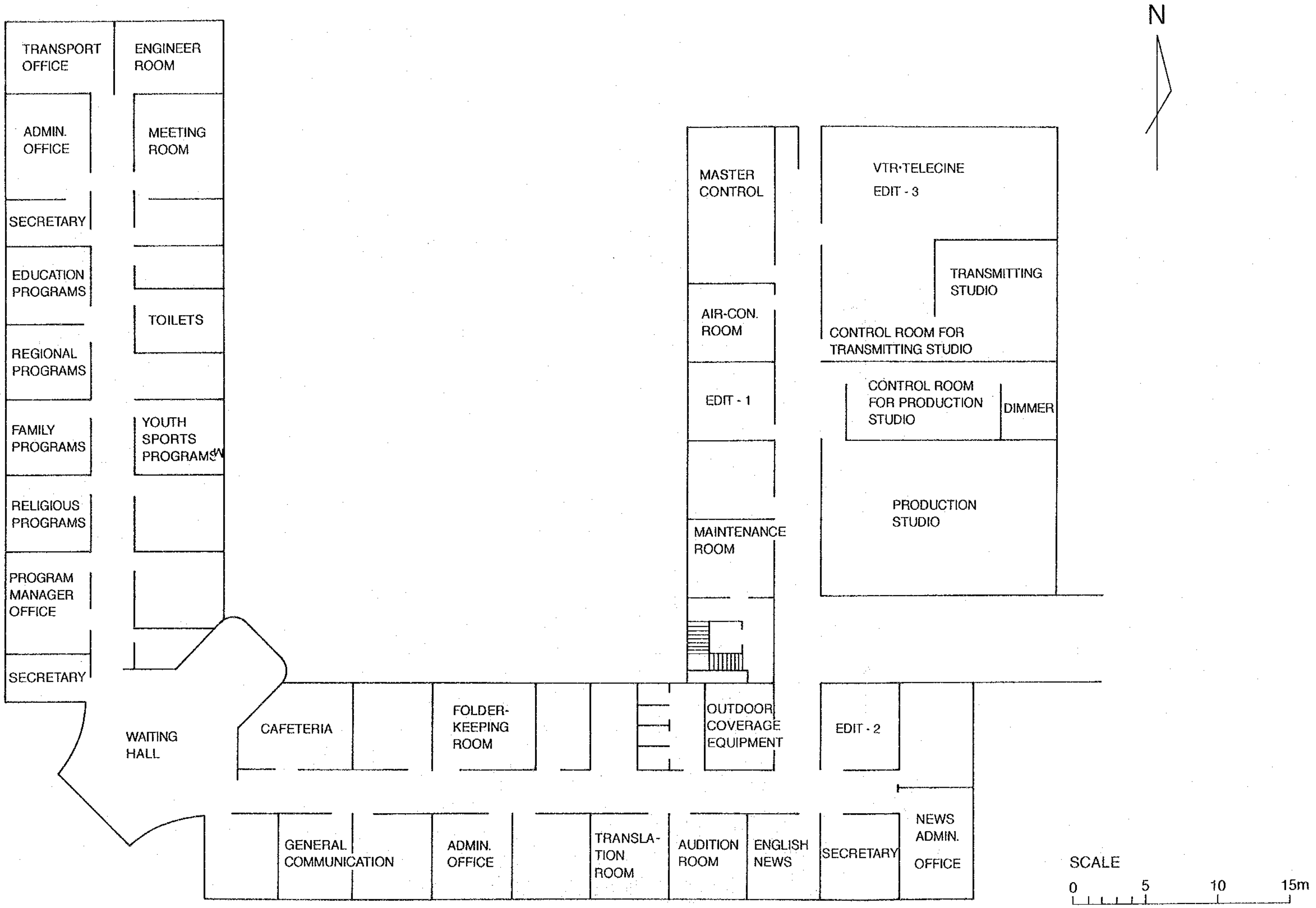


FIG.4-3-2 FIRST FLOOR PLAN OF NEW STUDIO CENTER

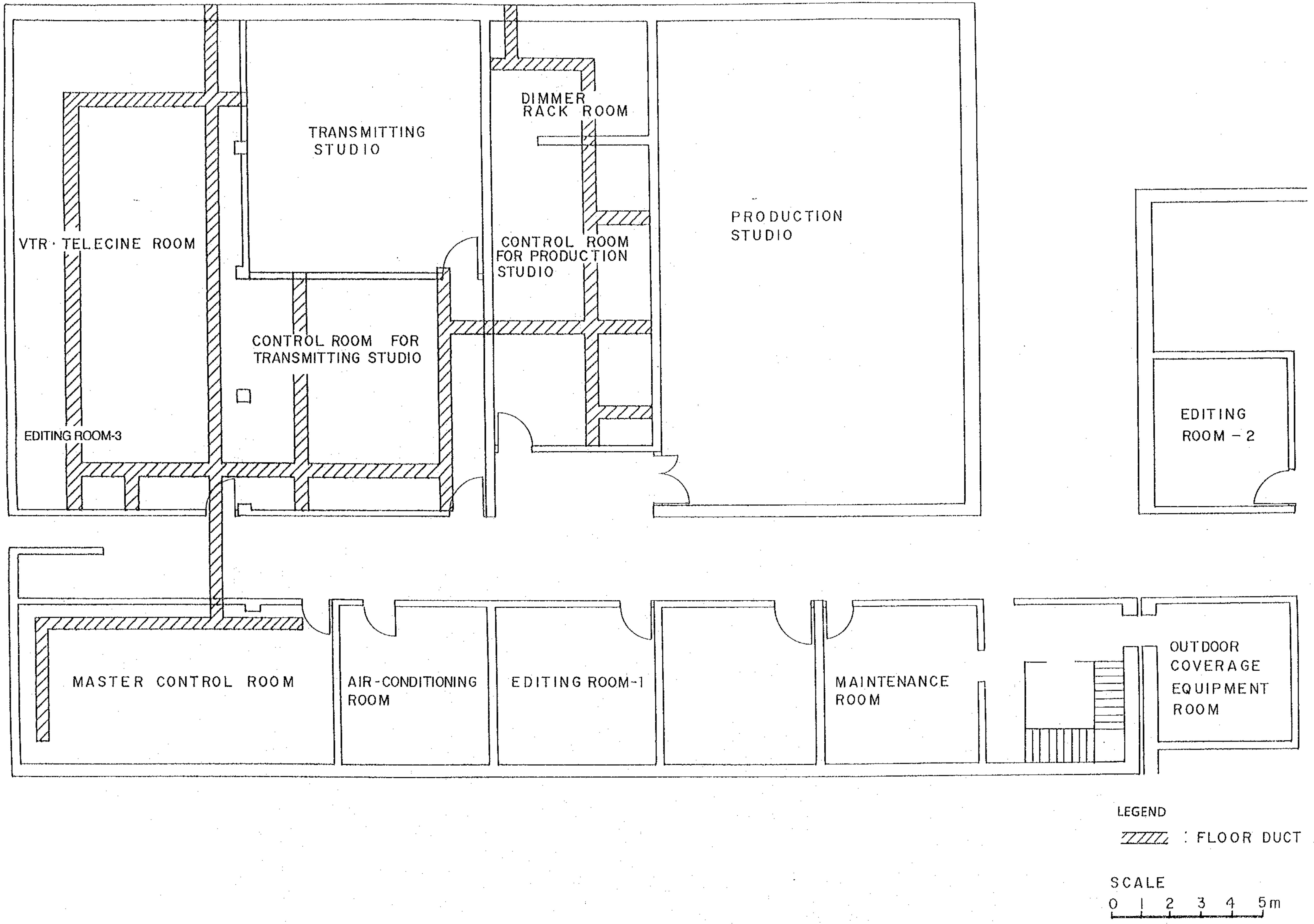


FIG.4-3-3 FIRST FLOOR PLAN OF FUNCTION ROOMS

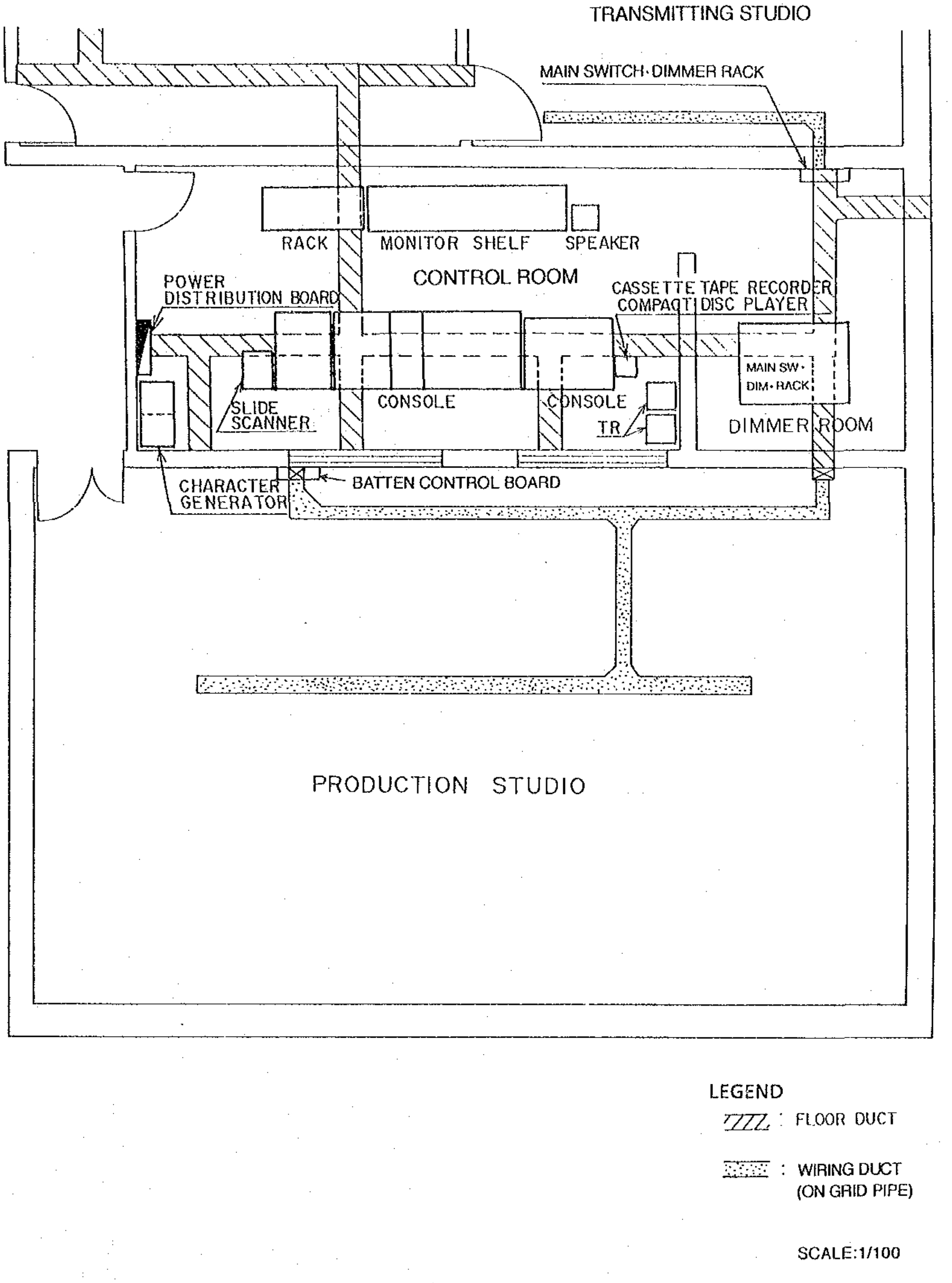


FIG.4-3-4 EQUIPMENT LAYOUT OF PRODUCTION STUDIO CONTROL ROOM

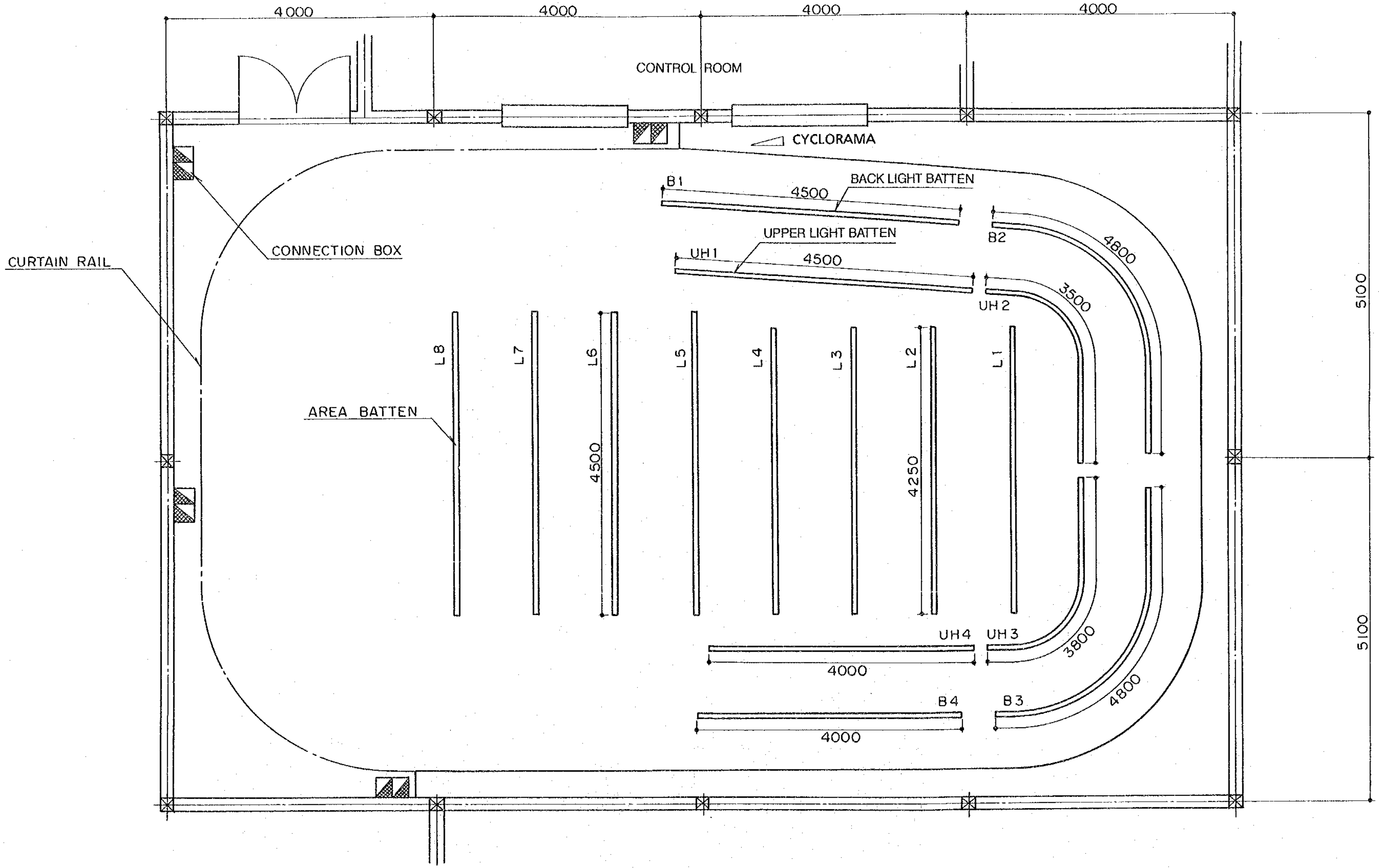
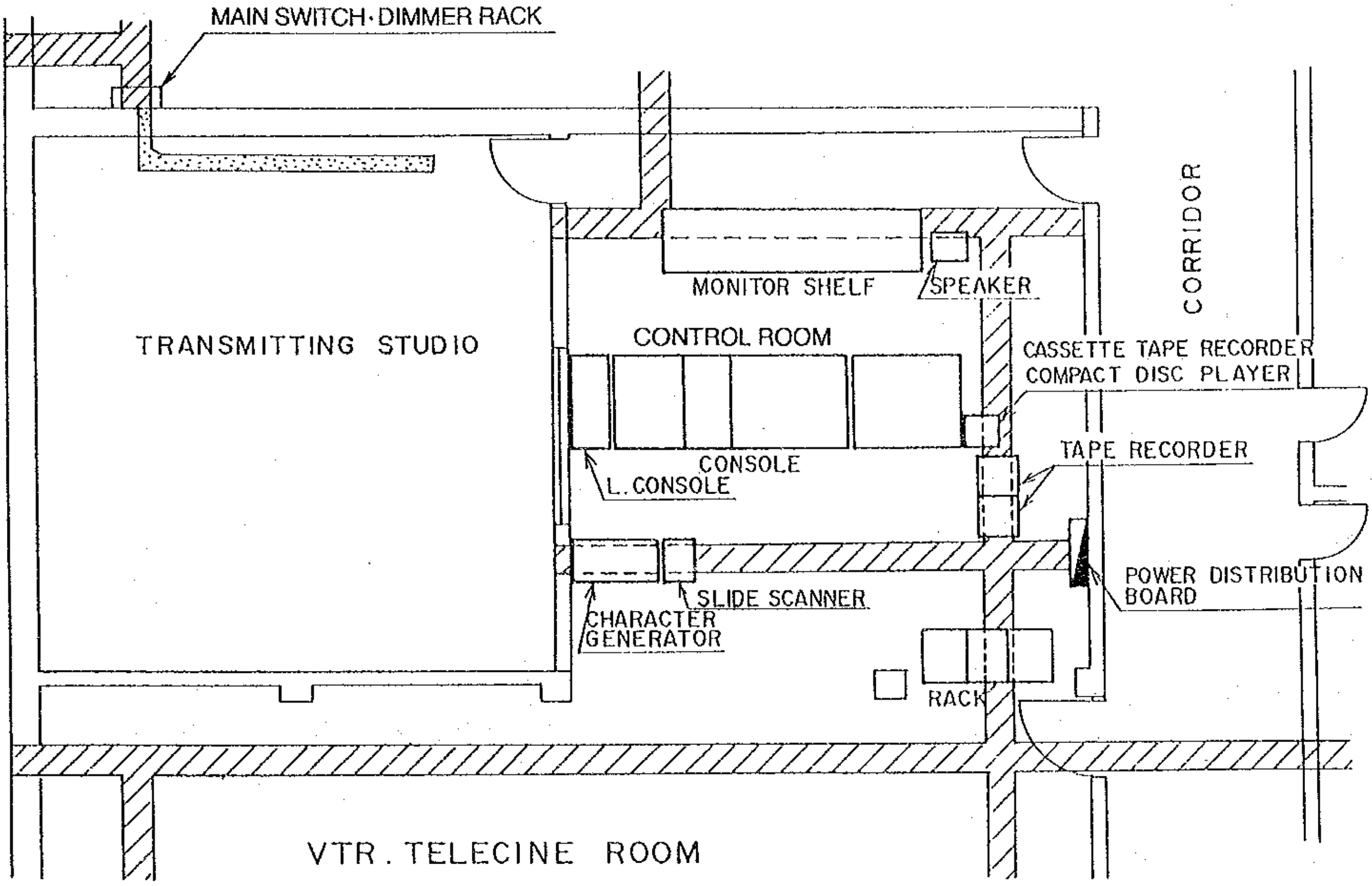


FIG.4-3-5 LIGHTING LAYOUT OF PRODUCTION STUDIO



LEGEND

▨ : FLOOR DUCT

░ : WIRING DUCT (ON GRID PIPE)

SCALE:1/100

FIG.4-3-6 EQUIPMENT LAYOUT OF TRANSMITTING STUDIO CONTROL ROOM

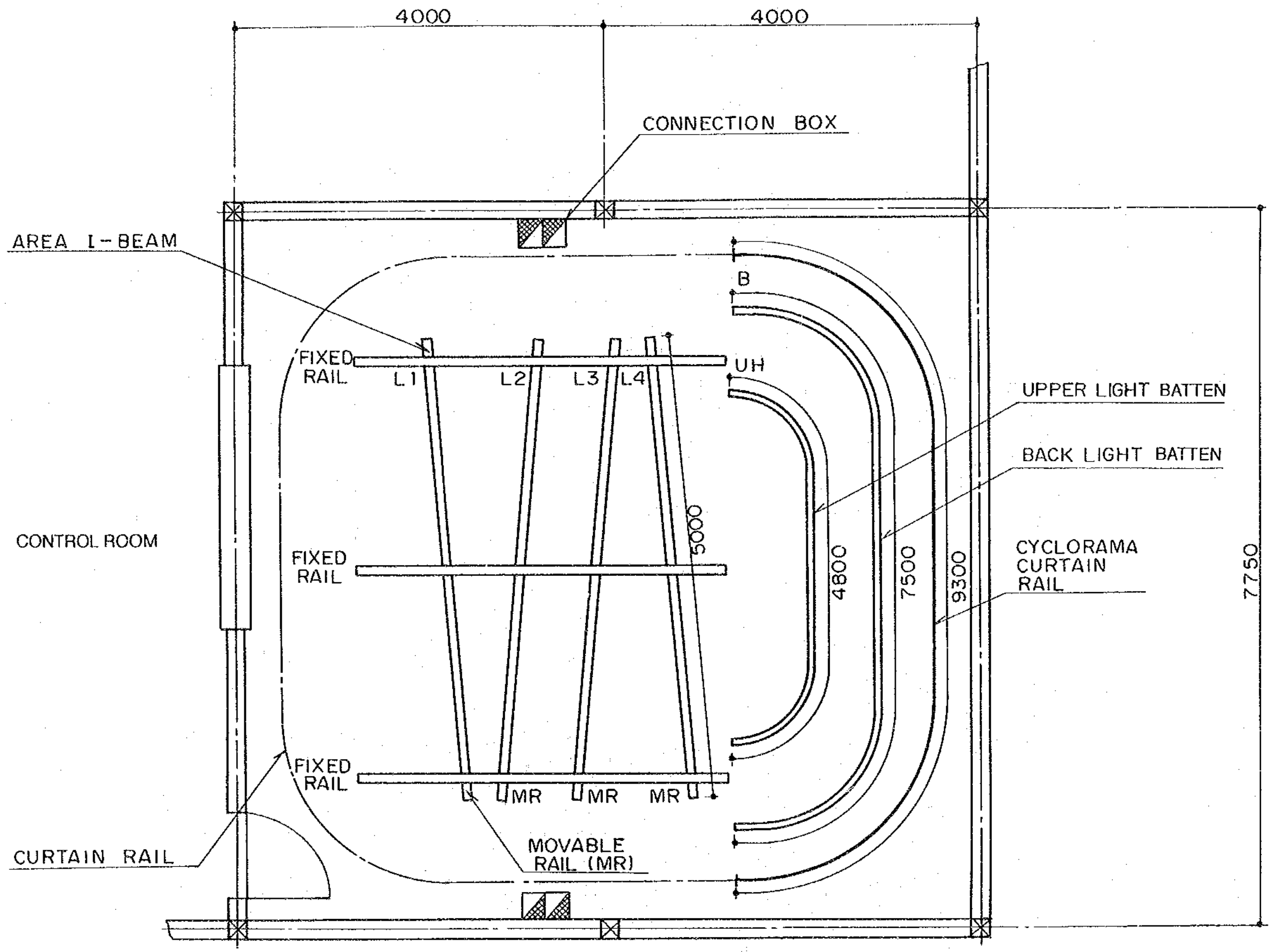
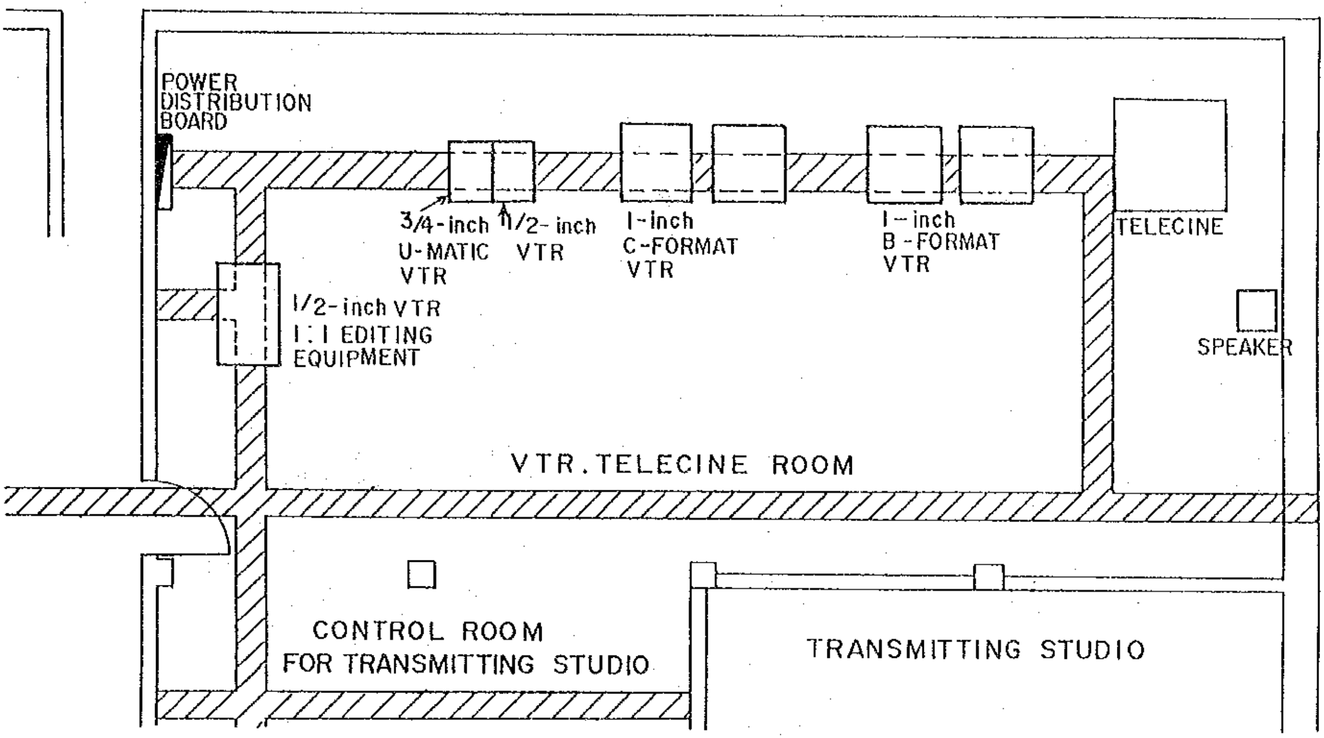


FIG.4-3-7 LIGHTING LAYOUT OF TRANSMITTING STUDIO

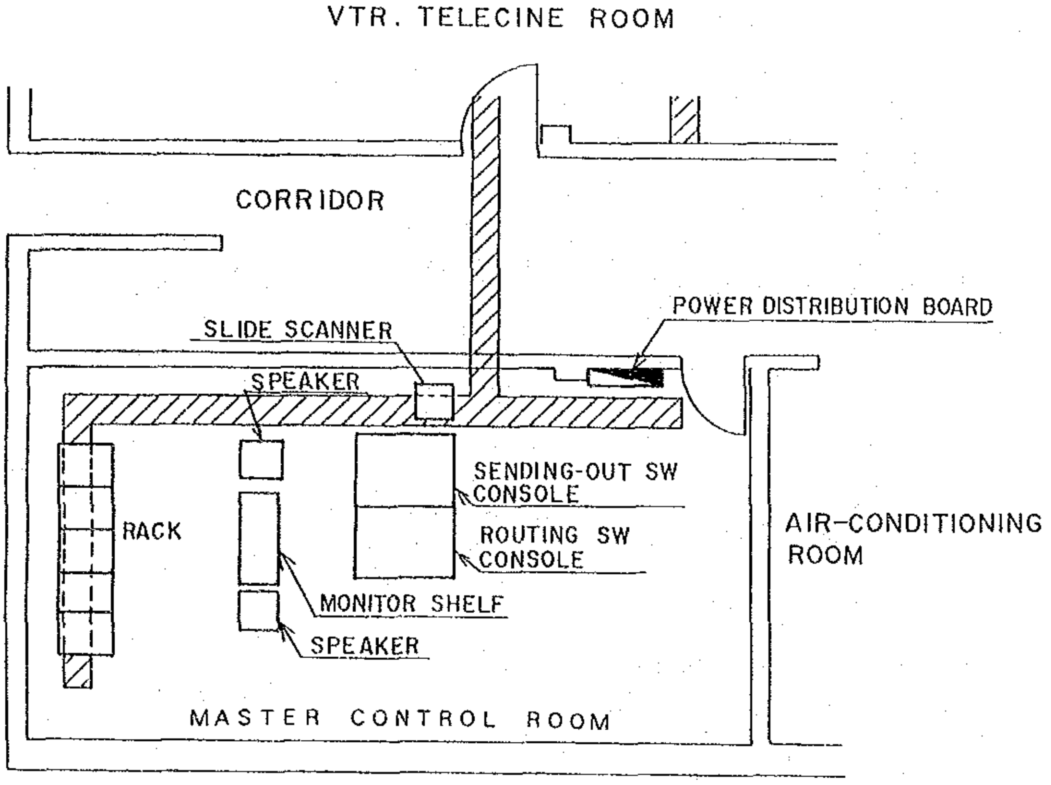


LEGEND

▨ : FLOOR DUCT

SCALE : 1/100

FIG.4-3-8 EQUIPMENT LAYOUT OF VTR · TELECINE ROOM



LEGEND
▨ :FLOOR DUCT

SCALE : 1/100

FIG.4-3-9 EQUIPMENT LAYOUT OF MASTER CONTROL ROOM

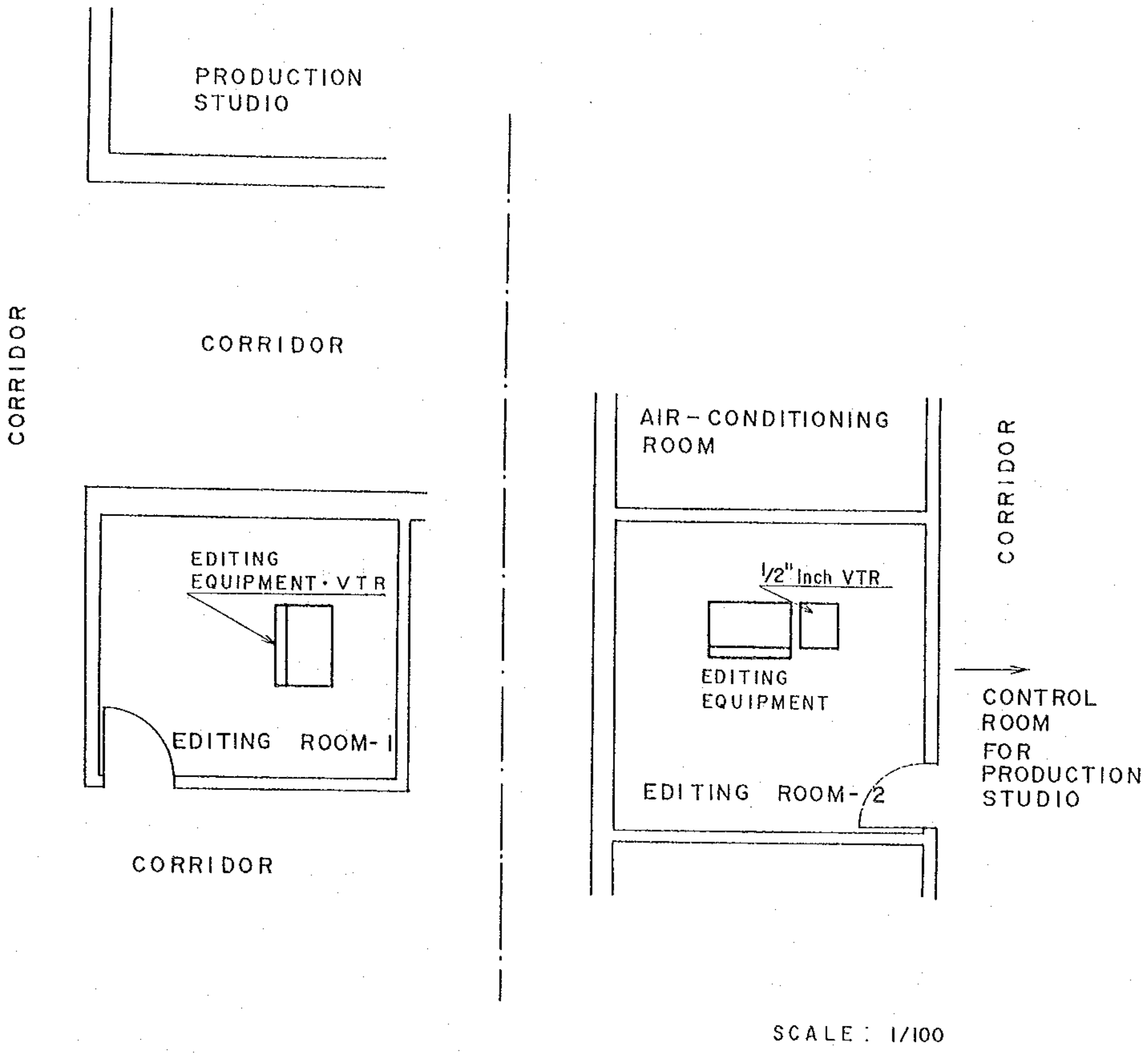


FIG.4-3-10 EQUIPMENT LAYOUT OF EDITING ROOMS

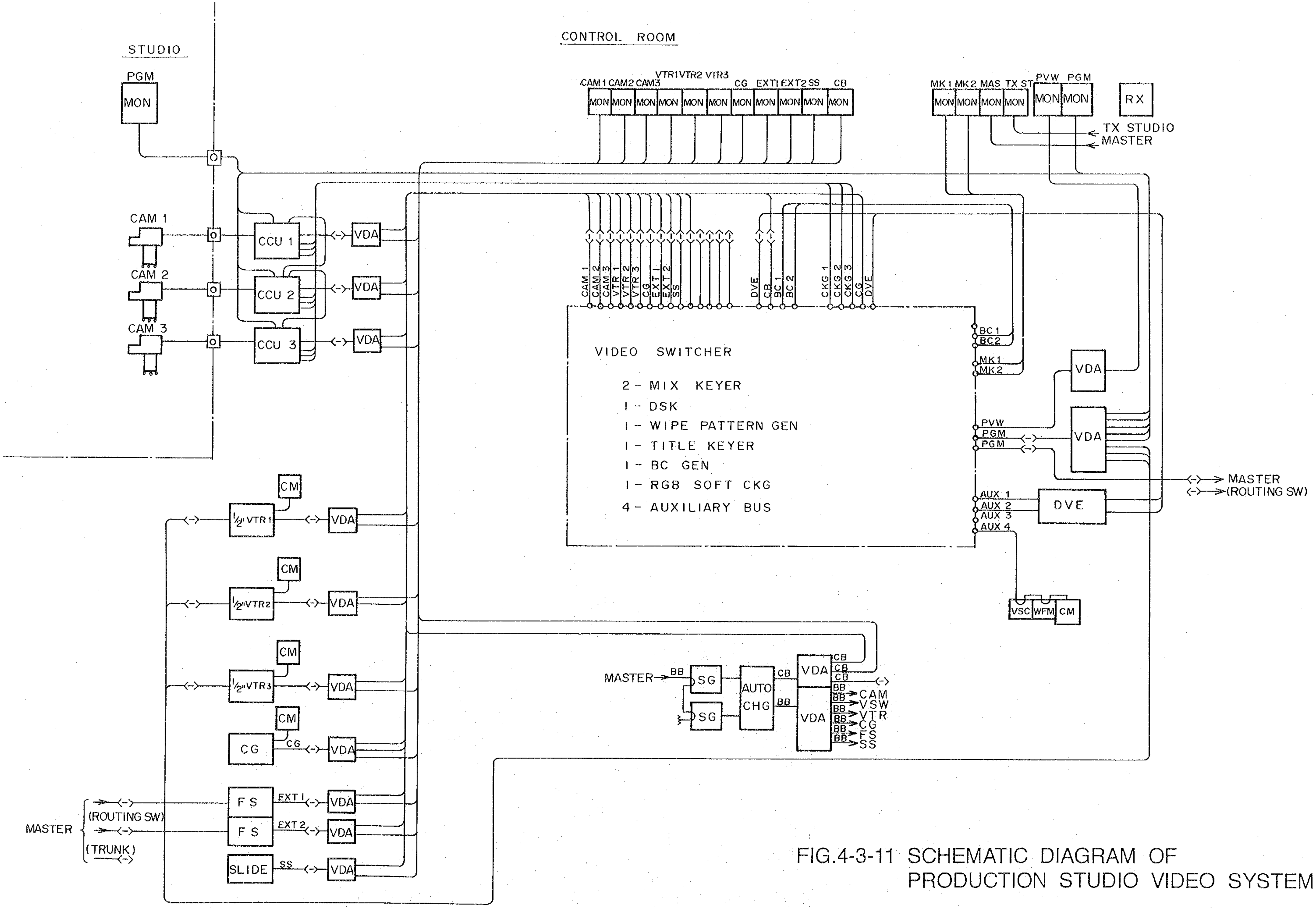


FIG.4-3-11 SCHEMATIC DIAGRAM OF PRODUCTION STUDIO VIDEO SYSTEM

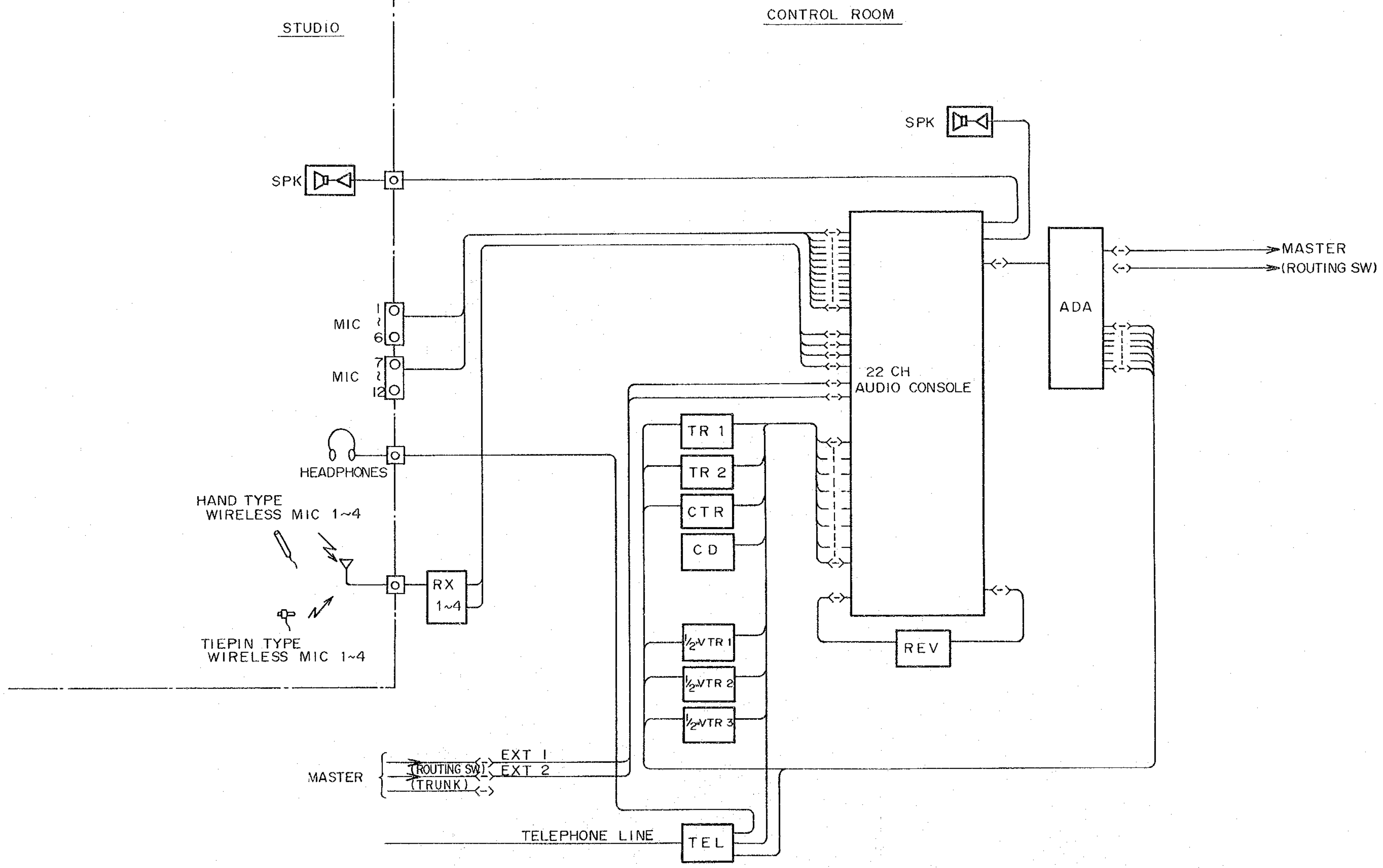


FIG.4-3-12 SCHEMATIC DIAGRAM OF PRODUCTION STUDIO AUDIO SYSTEM

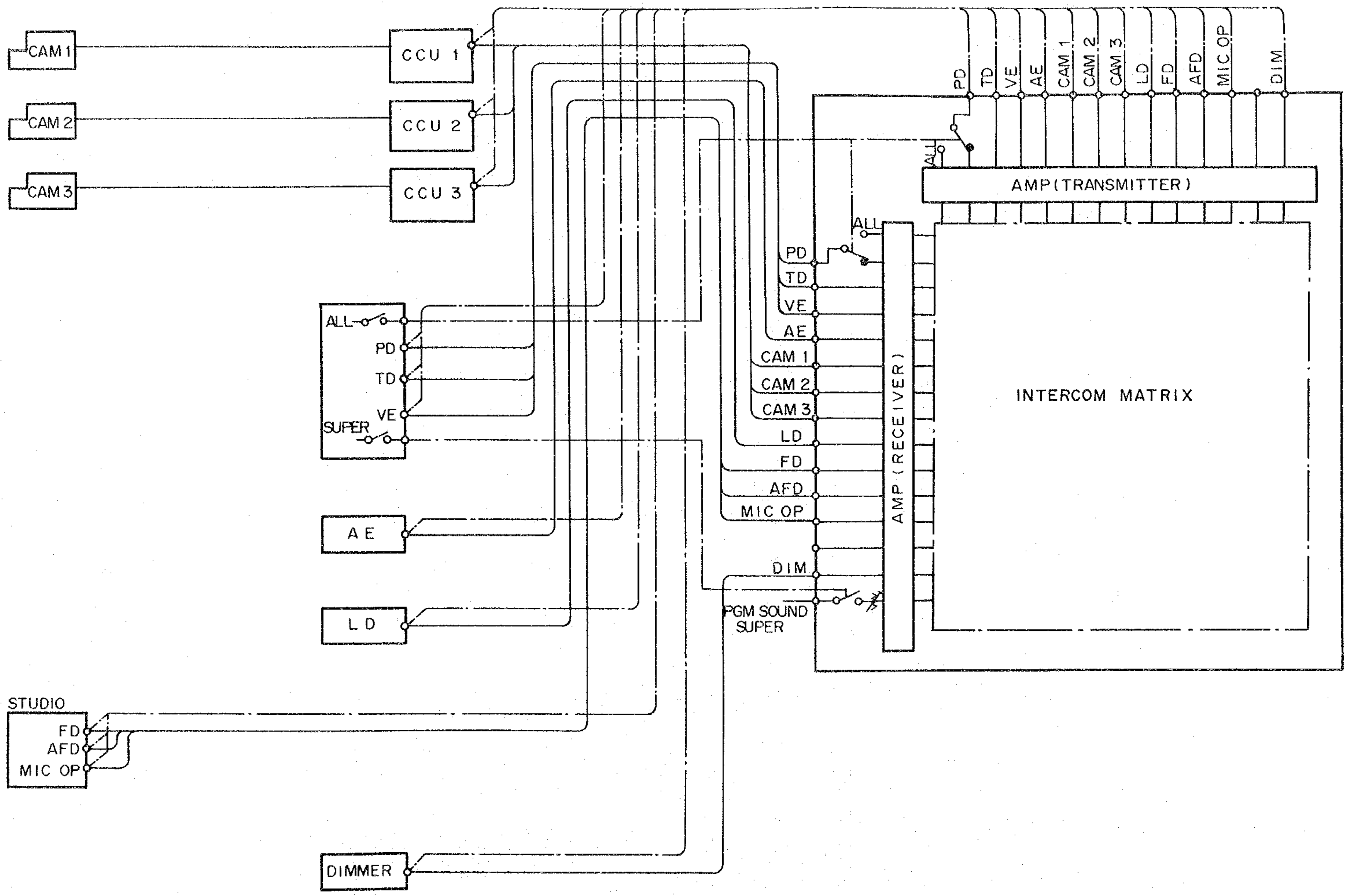


FIG.4-3-13 SCHEMATIC DIAGRAM OF PRODUCTION STUDIO INTERCOM SYSTEM

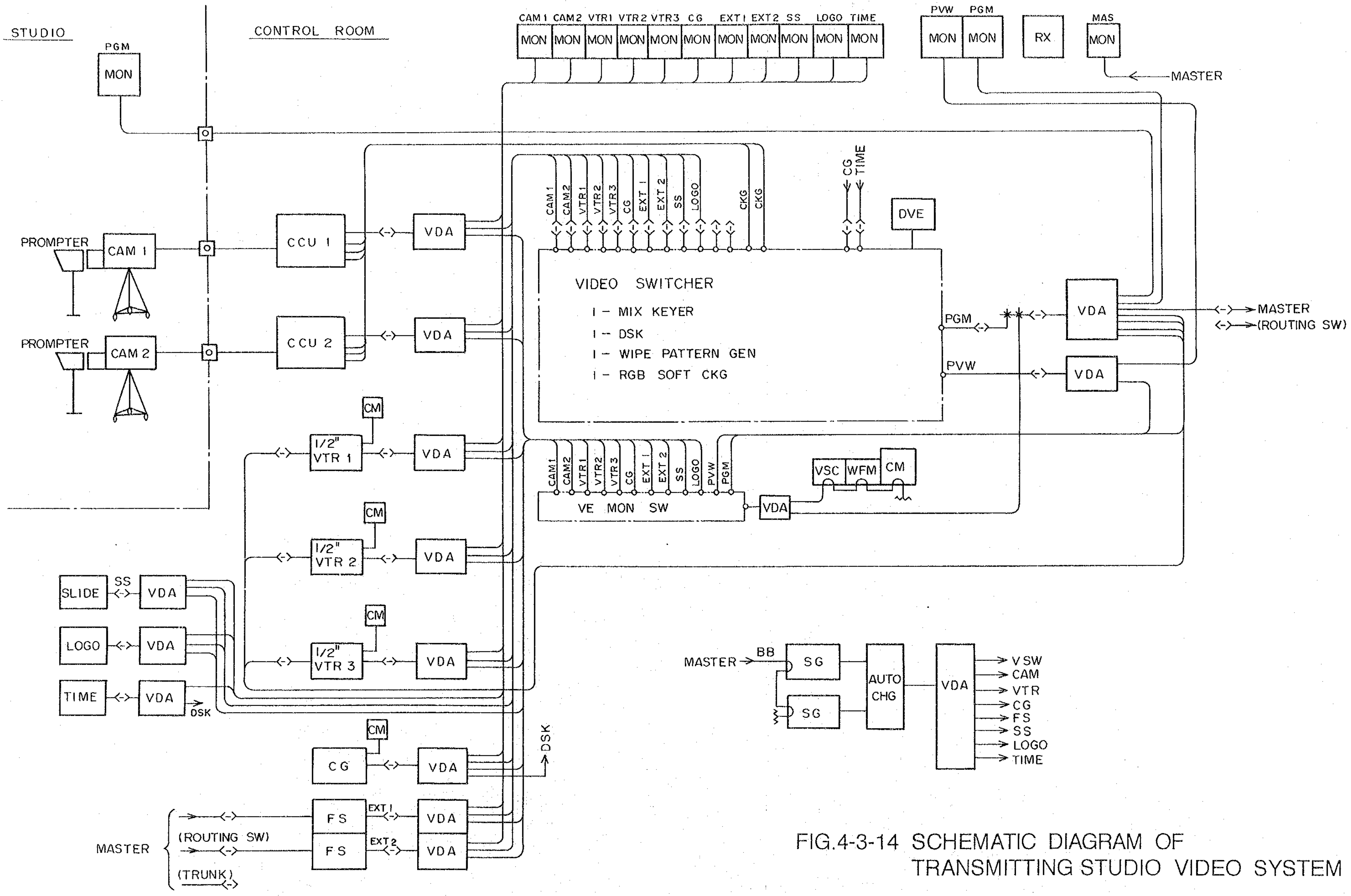


FIG.4-3-14 SCHEMATIC DIAGRAM OF TRANSMITTING STUDIO VIDEO SYSTEM

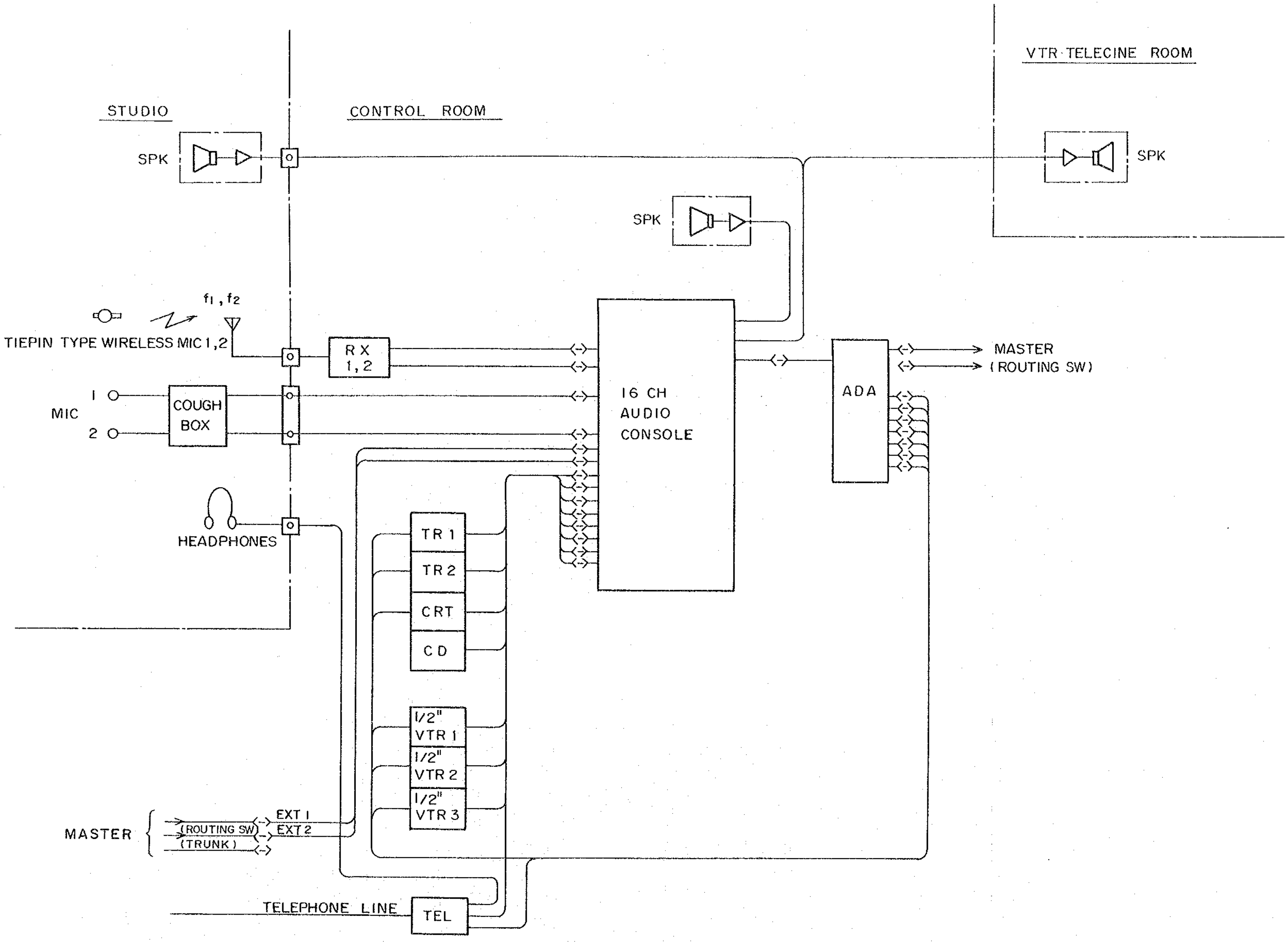


FIG.4-3-15 SCHEMATIC DIAGRAM OF TRANSMITTING STUDIO AUDIO SYSTEM

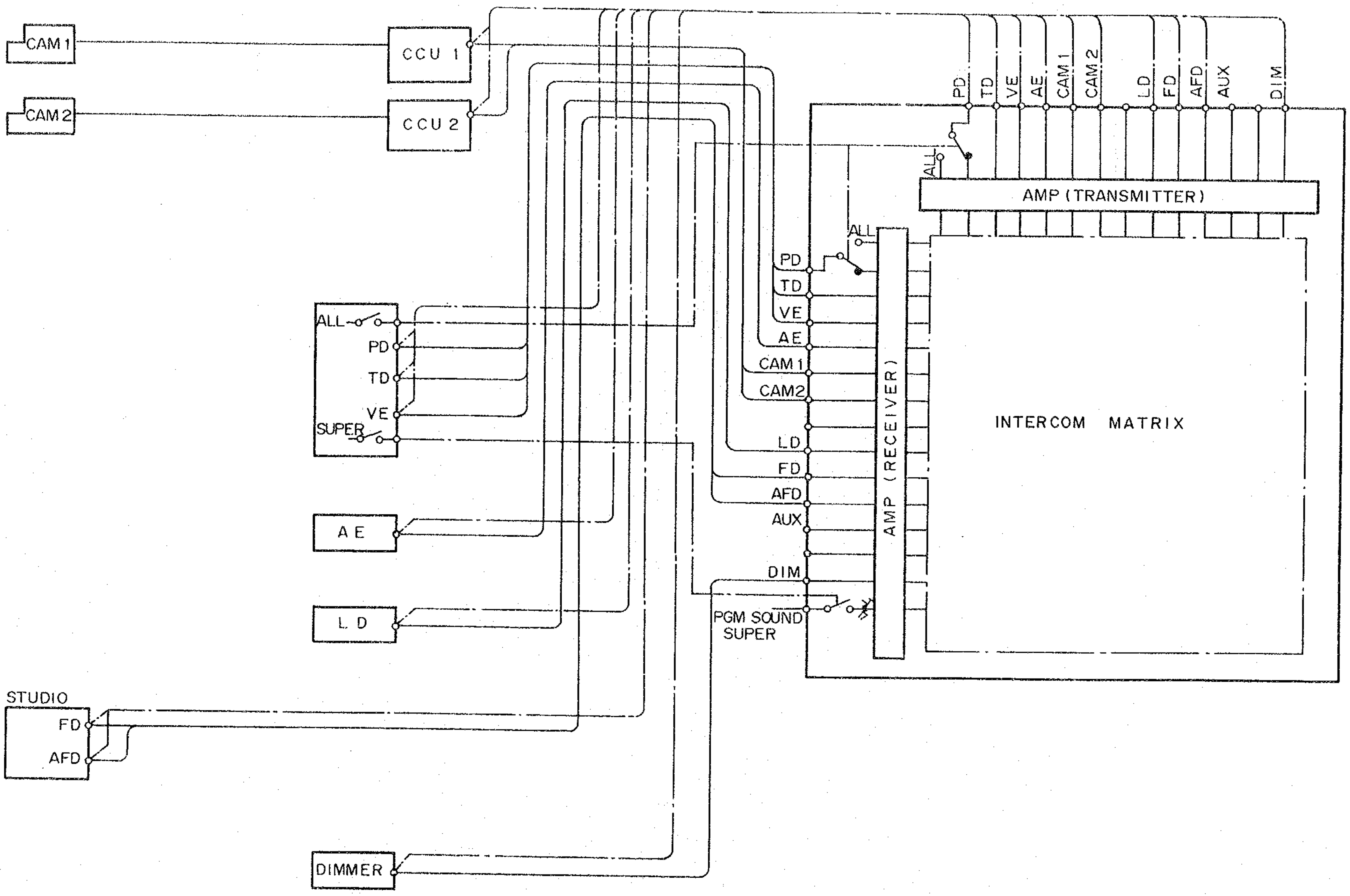
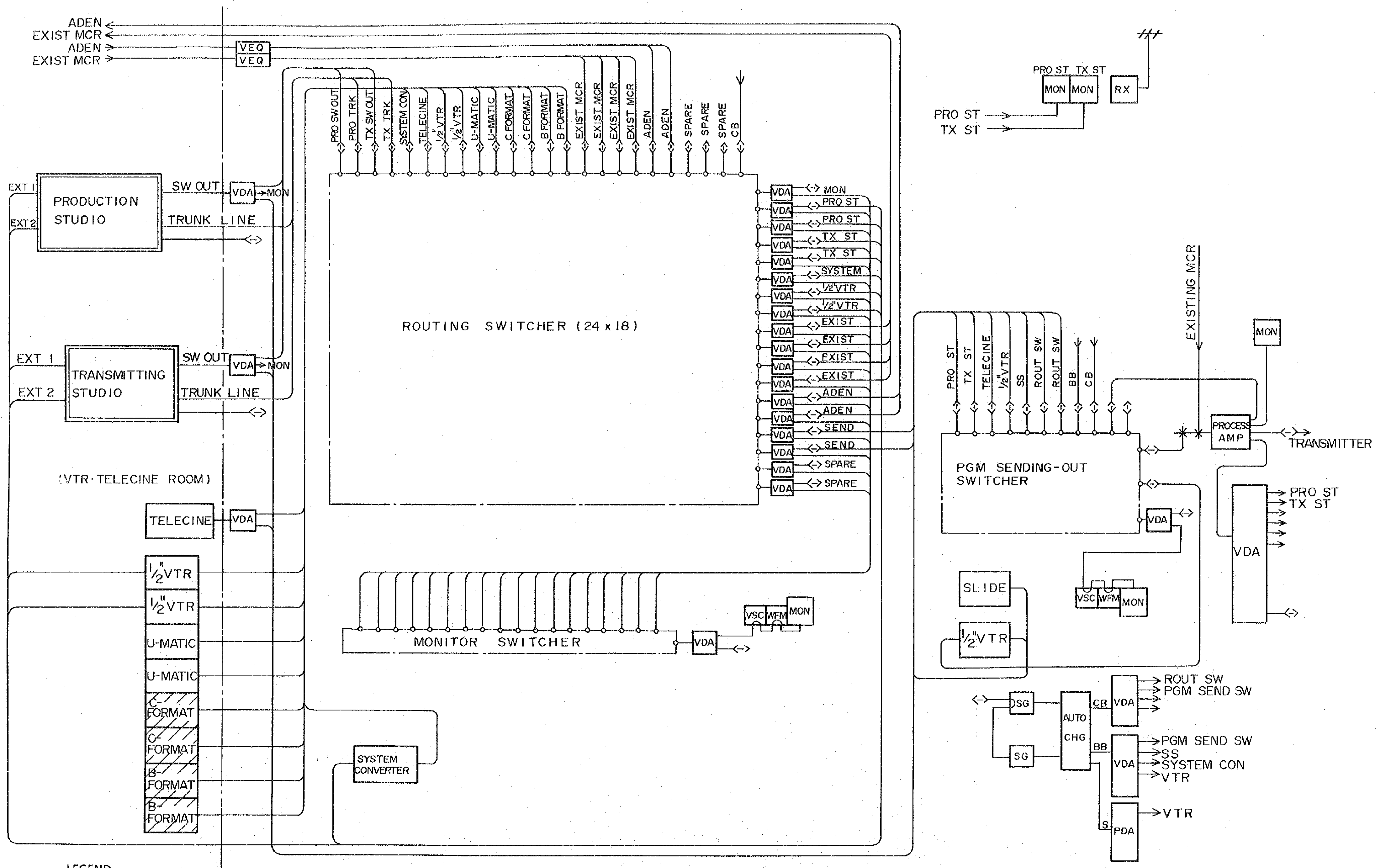


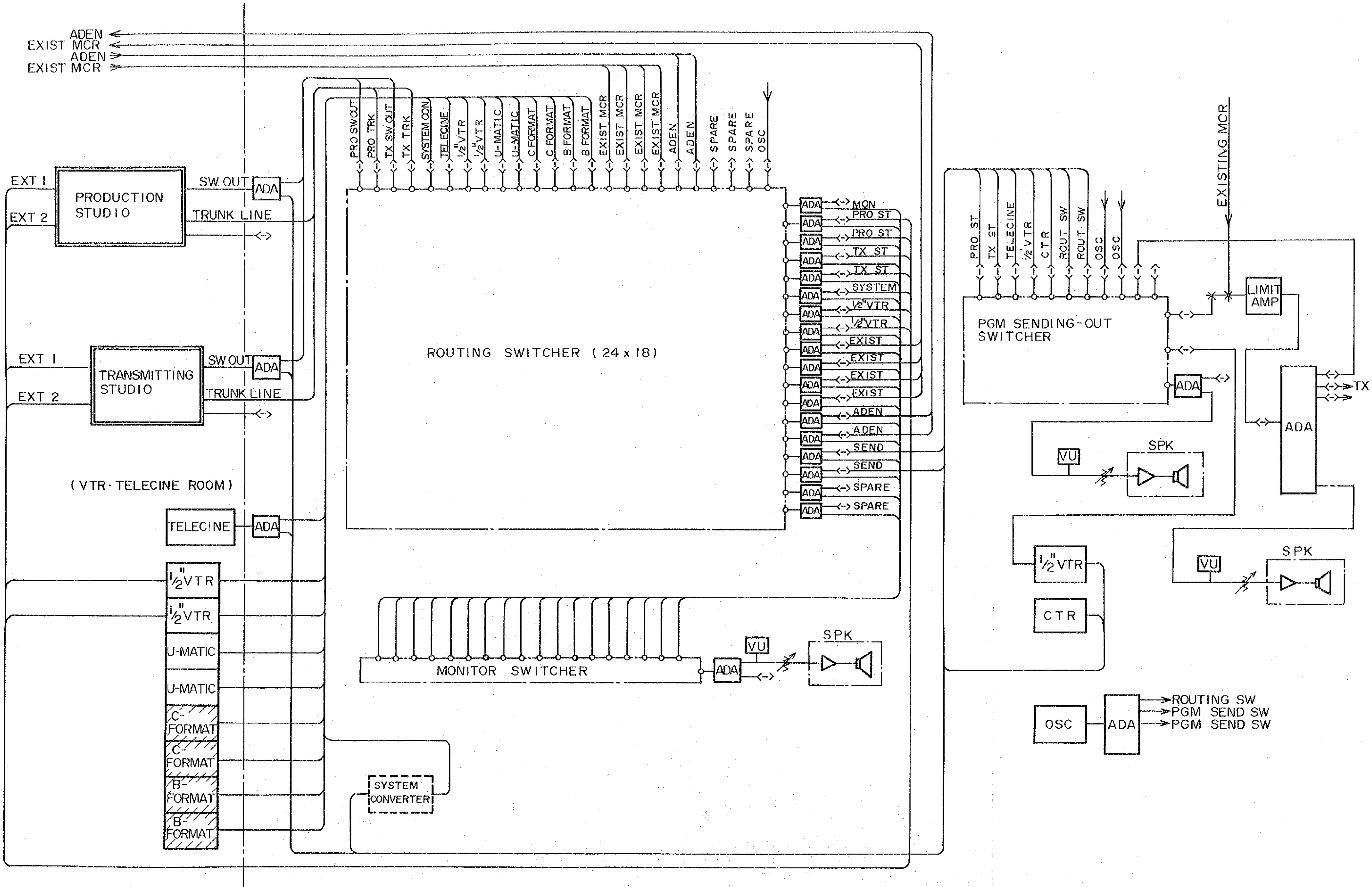
FIG.4-3-16 SCHEMATIC DIAGRAM OF TRANSMITTING STUDIO INTERCOM SYSTEM



LEGEND

▨ :EXISTING EQUIP.

FIG.4-3-17 SCHEMATIC DIAGRAM OF MASTER CONTROL ROOM VIDEO SYSTEM



LEGEND

▨ :EXISTING EQUIP.

FIG.4-3-18 SCHEMATIC DIAGRAM OF MASTER CONTROL ROOM AUDIO SYSTEM

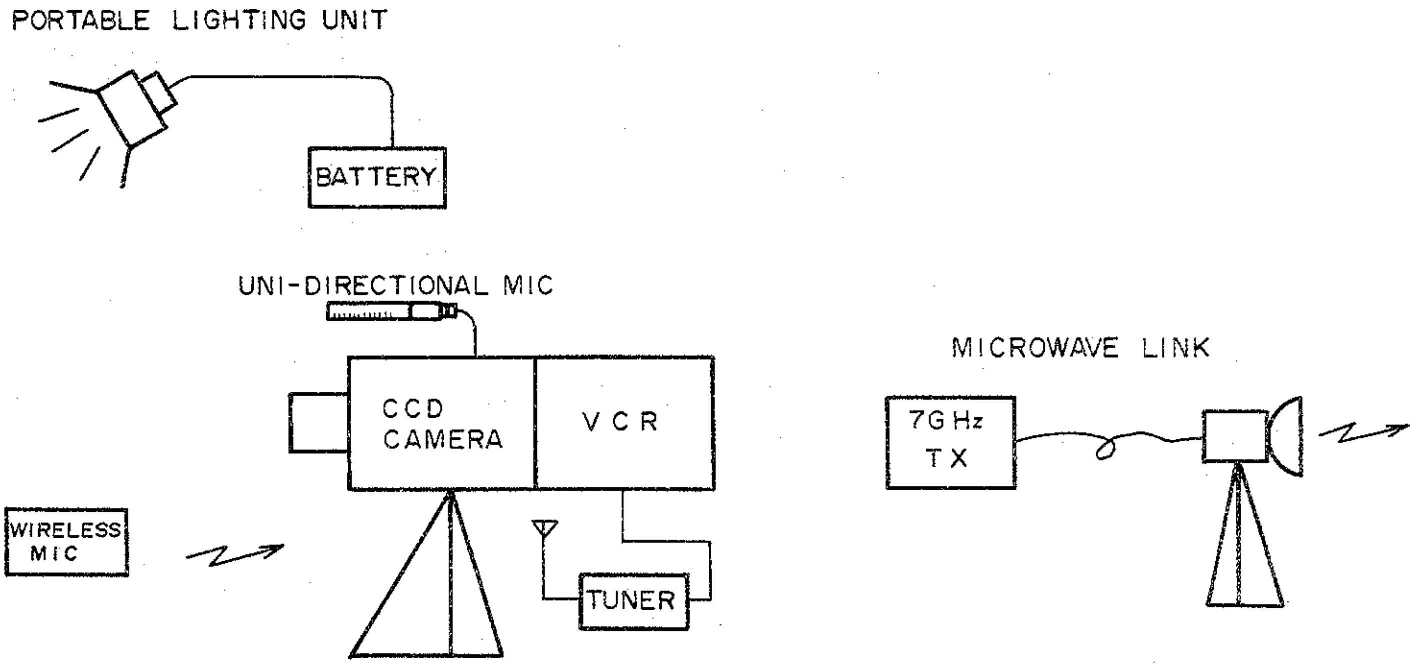


FIG.4-3-19 SCHEMATIC DIAGRAM OF OUTDOOR COVERAGE

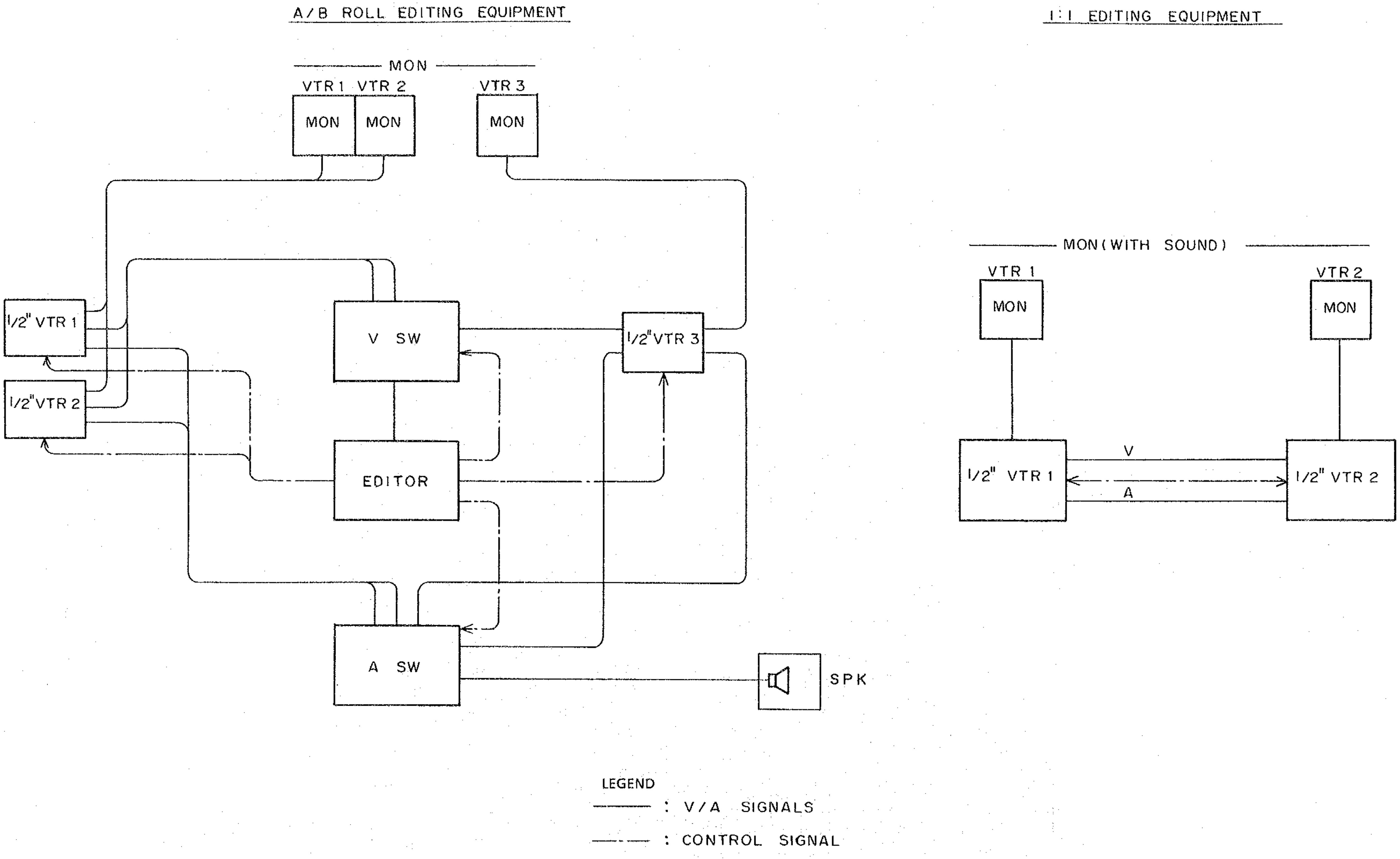


FIG.4-3-20 SCHEMATIC DIAGRAM OF EDITING ROOMS

4-4 Implementation Plan

4-4-1 Implementation Policy

Based on the fundamental idea of the Japanese Government's Grant Aid System, the consultant needs to keep the objectives in mind and to be in charge of the entire implementation of the project from detailed design until completion. The following are the policy for implementing the project:

① Based on the consultant contract between Yemen and the Japanese consultant, the consultant will be stationed at the site of the work during installation period and maintain close contact with its counterpart in Yemen and the contractor. The consultant will work to establish a proper system of cooperation to ensure smooth implementation of the project.

② To work to coordinate new equipment with the existing equipment that will be moved in, the existing buildings, and the new building.

③ To pay the utmost attention to safety and see to it that the work is completed within the scheduled deadline.

④ To abide by laws and regulations involving electricity, construction, wireless and other related matters, and respect the customs and habits and working situation in Yemen.

⑤ To ensure safe storage of materials and equipment while the work is going on.

4-4-2 Supervisory Plan

In order to implement the project smoothly with Japan's grant aid, the following will be taken into consideration at each stage of the project:

(1) Detailed design

- To pay attention to coordination of the new studio center building and planned equipment.
- To pay attention to coordination of existing equipment and new equipment.
- To design a system with appropriate scales of appropriate equipment, according to the design policy.

(2) Tendering

- To procure the equipment and services through an open tender in Japan.
- To make the tender notice in an English newspaper widely circulated in the country.

(3) Contract

- To examine carefully statements of items of work, work conditions, etc. to ensure there will be no faults and to report to Yemen to make a contract with the selected Japanese Contractor.

(4) Approval of drawings

- To check the system.
- To check whether the amount of equipment and the specifications agree with the ones specified in the tender documents.

(5) Factory inspection

- To inspect equipment at plants. For inspection purposes, equipment will be arranged in a way as close as possible to how they would be installed in Yemen. There is a certain limit to what can be done by checking drawings alone. This is the stage to check what could have been missed at the stage of checking the drawings and to ensure that equipment and systems agree with the specifications of the tender documents.

(6) Supervision at the site

- To pay the utmost attention to safety when work is going on.
- To ensure close contact among those involved with the project.
- To see to it that necessary technological knowledge is transferred to Yemeni personnel.

(7) Acceptance inspection at site

- To see to it that all equipment work as shown in plant inspection data.

(8) Completion of work

- All the residue materials should be removed and the work site should be cleaned up before the equipment included in the project are officially handed over to Yemen.

This project calls on Japan to install equipment procured in Japan into the new studio center constructed by Yemen. The installation work shall be completed in a short time. In order to complete the necessary work within a specified period of time, smoothly and efficiently, appropriate experts and engineers should be dispatched at appropriate times. In any project, transportation can affect the time needed for completion. This is especially true of this project, because a large amount of electronic equipment has to be transported. With this in mind, it is important to choose a contractor who has experience in similar projects. It is also necessary to closely examine work processes and plan ahead carefully. Japan and Yemen should also exchange information and cooperate with each other to ensure smooth implementation of the project.

The consultant should keep in mind the above-stated policy, and based upon it, should assign the necessary personnel and maintain close contact with both the Japanese entities involved and with those in Yemen. The consultant should work to prevent problems and accidents, and promptly deal with problems and give adequate guidance and advice, if any problems should arise.

4-4-3 Scope of Work

Table 4-4-1 shows work to be covered by Japan under the grant aid and that to be undertaken by Yemen.

Table 4-4-1 Scope of Work

Items	Work to be undertaken by Japanese side	Work to be undertaken by Yemeni side
(1) Construction of new studio center, and work to equip the building with electricity, air-conditioning, tap water and sewage facilities	—	Work to be covered and conducted
(2) Partitioning work of transmitting studio	—	Work to be covered and conducted
(3) Installation of studio lighting grids	To supply data and information	Work to be covered and conducted
(4) Work to modify buildings or reinforce ceiling structure of production studio when needed to install the equipment	To supply data and information	To confirm strength of ceiling structure in accordance with the information provided by Japanese side. Work to be implemented, when need arises

Items	Work to be undertaken by Japanese side	Work to be undertaken by Yemeni side
(5) Studio interior finish work	To supply sound absorbing material	Work to be covered and conducted
(6) Installing earth	To supply information	To be covered and conducted
(7) Installing telephones and providing furniture (including curtains, carpets, etc.), utensils, etc., in new studio center.	—	To be prepared
(8) Equipment under the project	To be manufactured, transported, installed, and adjusted	To provide office and storage space with lock during installation period

In addition to the above, the following will be carried out by the Yemeni side and their cost should be covered by Yemen:

- To provide data and information necessary for the detailed design.
- To obtain all licensing necessary for implementation of the project.
- To ensure prompt unloading, tax exemption and customs clearance at ports of disembarkation in Yemen and internal transportation therein of the materials and equipment provided under the Grant.
- To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contract such facilities as may be necessary for their entry into Yemen and stay therein for the performance of their work.

- To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Yemen with respect to the supply of the products and services under the verified contract.
- To bear following commissions to the Japanese foreign exchange bank for banking services based upon the Banking Arrangement (B/A)

  Advising commission of Authorization to Pay (A/P)

  Payment commission
- To bear all the expenses necessary for implementation of the project, other than those to be borne by the Grant.
- To maintain and use properly and effectively the educational broadcasting equipment provided under the Grant.

4-4-4 Procurement Plan

Equipment and materials needed for installation will be procured in Japan. Equipment will be manufactured and assembled and inspected in Japan. Some items may be disassembled, if necessary, and the equipment will then be transported. After arrival at the site in Yemen, the equipment may be assembled again and will be installed and adjusted.

4-4-5 Implementation Schedule

This project will be completed through the following procedures:

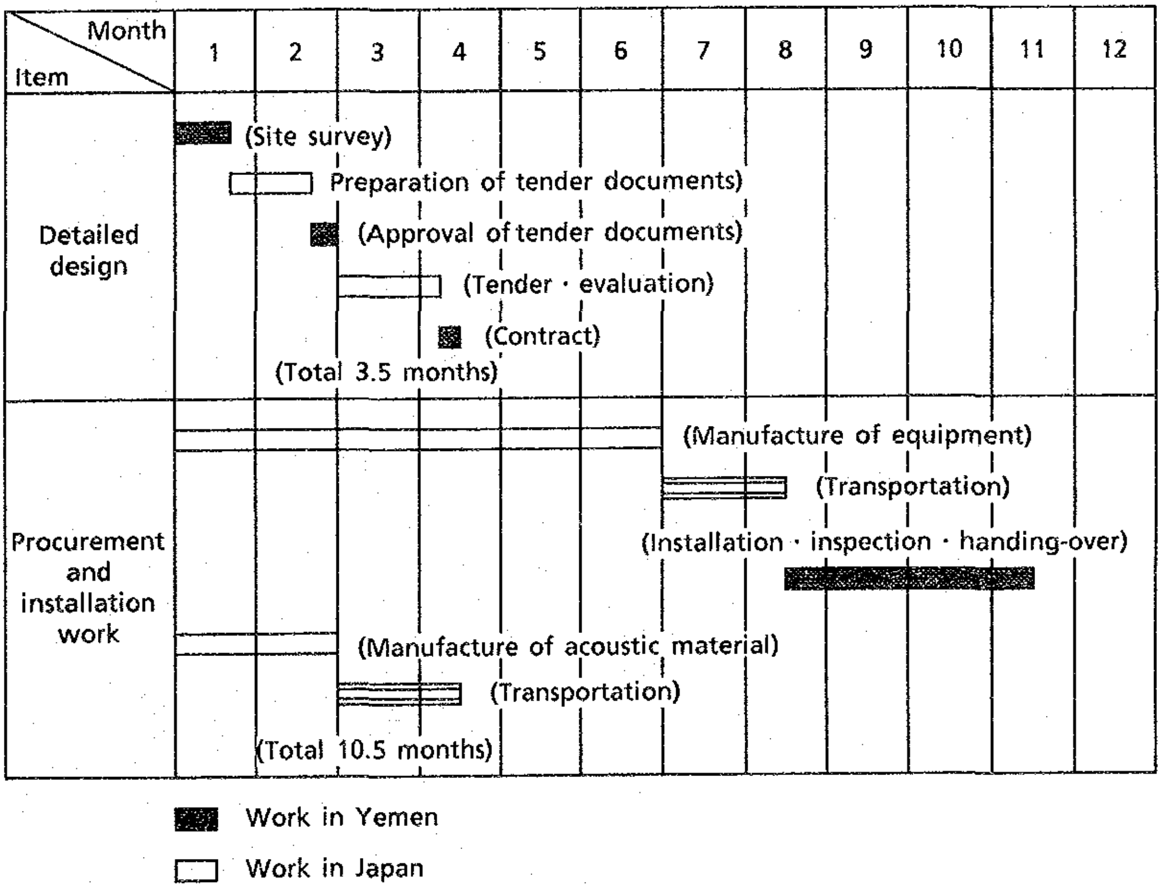
- After the conclusion of the Exchange of Notes between the Government of Japan and The Government of the Republic of Yemen, a consultancy agreement for the implementation of the Project will be made between The Government of the Republic of Yemen and the Japanese consultant company;

- after that, the detailed design and preparation of tender documents are carried out by the consultant and the tender will take place;
- after the evaluation of the tender proposals, a contract for the execution of the project will be made between the Government of the Republic of Yemen and the Japanese contractor. The work will then be started.

The term of the implementation of the project will be 3.5 months for the detailed design and tender, and 10.5 months for procurement and installation after the signing of the contract.

The tentative implementation schedule is shown in Table 4-4-2.

Table 4-4-2 Implementation Schedule



4-4-6 Approximate Project Cost

The approximate project cost to be borne by the Yemeni side is estimated at about 1.4 million rials as shown below.

Partitioning of transmitting studio with wall	305,000 rials
Supply and installation of studio lighting grids	620,000 rials
Interior finish of production studio and transmitting studio	475,000 rials
Total	1,400,000 rials

Chapter 5　Project Evaluation and Conclusion

Chapter 5 Project Evaluation and Conclusion

Current situation and problems	Measures to be taken in this project	Effects of the project and degree of improvements expected
• Yemen's urgent goal is to achieve social and economic development, using its abundant human resources. To achieve this goal, the top priority task is to raise the levels of education and knowledge of the people. Yemen hopes to expand and improve educational programs on television for this purpose. The existing facilities, however, are old and outdated. No cameras are available that are fit to use in the production studio. Cameras in outside broadcast vehicles are used in the studio, instead. Under such a situation, it is difficult to produce more and better educational programs. • Many of the existing facilities and equipment of Sana'a TV Station are small in scale and old. Using them, it is difficult to improve the quality and quantity of programs.	• One set of production studio equipment to produce educational programs, including three cameras, will be installed in the production studio at the new studio center constructed by Yemen. • To provide outdoor coverage equipment, including portable VTR combined cameras and a microwave link for locations outside the studio. • To install electronic editing equipment to enable editing of both recorded materials taped in studios and those taped outside to make complete programs. • To furnish one transmitting studio with the equipment necessary to send out daily programs according to an air timetable, and to produce news programs. • To equip the master control room with the equipment necessary to distribute video and audio signals coming in from inside the center and from outside to necessary destinations, to monitor quality of audio and video signals and to make final choice of programs to be sent out to transmitting stations.	• Production of nine hours of educational and informational programs a week will be made possible, including dialogues, panel discussions, commentaries, lectures, as well as cooking, handicrafts, school science experiments, skits to be used as part of educational programs and viewer participation programs. These programs are expected to raise the levels of education and knowledge of the public and will contribute to a better life for the people. • The new equipment will enable reporting crews to visit various parts of Yemen, and to introduce different customs and habits to other parts of the country. This is expected to contribute to deeper mutual understanding of the people. • Improved functions, maneuverability and reliability of new equipment will ensure production and transmission of better programs. • Network of the General Corporation for Radio and Television is estimated to cover the areas where 80 percent of the population or about 9.5 million live. They are the ones who will directly benefit from the better programs made possible by new equipment.
• The General Corporation for Radio and Television has constructed a new studio center to improve the situation. But it is difficult to procure the necessary broadcasting equipment because it is not available in Yemen and also there is a shortage of foreign currency funds.	• To furnish the studio center, newly built by Yemen, with the equipment minimally necessary for production of educational programs and their daily transmission.	• The new studio center will start functioning, fulfilling the hope of the Government of the Republic of Yemen to use television broadcasting as a tool to give better education and more knowledge to the people of Yemen.

Sana'a Station has been carrying out television broadcasting for nearly 20 years. Aden Station has a history of nearly 30 years of television broadcasting. The technical levels of engineering staff and program production staff are high, and they have enthusiasm for their work.

When equipment under the project are installed, Sana'a Station is expected to be ready to produce educational and informational programs of high quality.

Increases of personnel and maintenance and management costs will be necessary for operation of the equipment after it has been put into use. The Corporation already has plans to employ new staff and to train them. It has also been decided that more government subsidies will be provided to cover expected increases in spending.

The Corporation is also studying possibilities of expanding broadcasting channels and allocating a channel plan to establish additional transmitting stations in the future. The current project is the important first step to carry out a long-term plan for the future.

When the project is completed, it will be possible to extend broadcasting hours for educational and informational programs by nine hours a week.

Television broadcasting features immediateness, simultaneity and a wide scope in dissemination of information. Effective use of such a powerful medium is certain to contribute to improvement of the people's educational levels. So, it is considered most appropriate to carry out this project under the Japanese Government's grant aid.

It is also considered important for Japan to provide Yemen with Japanese programs. If this is done, more Japanese programs will be telecast using the equipment provided by Japan. It will also contribute to better mutual understanding and closer relations between the two countries.

APPENDICES

5. Reference Data Attached

1. Member list of the Survey Team

1. Member List of the Survey Team

(1) Basic design study

Chiho MURAMATSU	Leader	Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs	Aug. 20 to 25, 1993
Hideki SHIMADA	Broadcasting Planner	International Cooperation Division, Ministry of Posts and Telecommunications	Aug. 17 to 28, 1993
Toru ENDO	Project Manager	NHK Integrated Technology Inc.	Aug. 17 to Sept. 6, 1993
Takashi MIYAGI	Facility Planner	NHK Integrated Technology Inc.	Aug. 17 to Sept. 6, 1993
Mihoko TAKEZAWA	Cost Estimate	NHK Integrated Technology Inc.	—

(2) Explanation of draft report

Katsuya IKKATAI	Leader	Second Middle East Division, Middle East and African Bureau, Ministry of Foreign Affairs	Nov. 19 to 27, 1993
Kazusa MATSUZAWA	Broadcasting Planner	International Cooperation Division, Ministry of Posts and Telecommunications	Nov. 16 to 27, 1993
Toru ENDO	Project Manager	NHK Integrated Technology Inc.	Nov. 16 to 27, 1993
Fumio SATO	Facility Planner	NHK Integrated Technology Inc.	Nov. 16 to 27, 1993

2. Survey Schedule

2. Survey Schedule

(1) Basic Design Study

No.	Date	Contents		
		Leader	Government official	Consultant
1	Aug. 17 (Tue.)		Lv. Narita at 14:05 (LH 711), Ar. Frankfurt at 18:55	
2	18 (Wed.)		Lv. Narita at 14:10 (LH 652), Ar. Sana'a at 23:40	
3	19 (Thu.)		Courtesy call to the Ministry of Planning and Development Courtesy call to Yemen General Corporation for Radio and Television, Meeting on study schedule Visit to Sana'a TV Station Meeting with the Embassy of Japan	
4	20 (Fri.)	Lv. Narita at 12:45 (AF 275), Ar. Paris at 18:15	Internal meeting	
5	21 (Sat.)	Lv. Paris at 10:15 (AF 8030), Ar. Sana'a at 18:15	Explanation of inception report and administering of questionnaire to Yemen General Corporation for Radio and Television	
6	22 (Sun.)	Meeting with Yemen General Corporation for Radio and Television		
7	23 (Mon.)	Meeting with Yemen General Corporation for Radio and Television Visit to Sana'a TV Station Discussions on draft of Minutes of Discussions Courtesy call to Minister, the Ministry of Information		
8	24 (Tue.)	Signing of Minutes of Discussions Report to the Embassy of Japan		
9	25 (Wed.)	Lv. Sana'a at 14:45 (RB 382), Ar. Damascus at 19:25	Meeting on questionnaire and studio system Lv. Sana'a at 22:15 (KL 536)	
10	26 (Thu)		Ar. Amsterdam at 6:15	Study on personnel plan, Study on power receiving system
11	27 (Fri.)		Lv. Amsterdam at 14:50 (KL 861)	Reviews of data collected
12	28 (Sat.)		Ar. Narita at 09:10	Study on program plan, Additional study on power supply system
13	29 (Sun.)			Study on present transmitting system and future plan, Study on wiring duct of new studio center
14	30 (Mon.)			Study on site layout of Sana'a TV Station
15	31 (Tue.)			Discussion on equipment list and system of project, Study on new studio center

No.	Date	Contents		
		Leader	Government official	Consultant
16	Sept. 1 (Wed.)			Discussion on equipment list and system of project, Study on cable route of main power supply
17	2 (Thu.)			Discussion on equipment list and system of project, Study on use of existing equipment, Visit to primary schools in Sana'a
18	3 (Fri.)			Visit to Ashmur transmitting station, Study on wiring duct of new studio center
19	4 (Sat.)			Report to the Embassy of Japan, Receipt of answers to questionnaires
20	5 (Sun.)			Lv. Sana'a at 00:40 (AF 8029), Ar. Paris at 06:45 Lv. Paris at 16:00 (AF 276)
21	6 (Mon.)			Ar. Narita at 10:45

(2) Explanation of draft report

No.	Date	Contents	
		Leader	Member
1	Nov. 16 (Tue.)		Lv. Narita at 12:30 (KL 862), Amsterdam at 16:45
2	17 (Wed.)		Lv. Amsterdam at 11:30 (KL 535), Ar. Sana'a at 21:55
3	18 (Thu.)		Courtesy call to Yemen General Corporation for Radio and Television Submission of draft report
4	19 (Fri.)	Lv. Jeddah at 12:00 (IY 719), Ar. Sana'a at 14:45	Internal meeting
5	20 (Sat.)	Meeting with the Embassy of Japan	
6	21 (Sun.)	Explanation of draft report	
7	22 (Mon.)	Explanation of draft report	
8	23 (Tue.)	Explanation of draft report Discussion on draft of Minutes of Discussions	
9	24 (Wed.)	Signing of Minutes of Discussions Report to the Embassy of Japan	
10	25 (Thu.)	Lv. Sana' a at 00:25 (LH 653), Ar. Frankfurt at 07:10	
11	26 (Fri.)	Lv. Frankfurt at 16:55 (LH 710)	
12	27 (Sat.)	Ar. Narita at 12:05	

3. List of Interviewees

3. List of Interviewees

- Ministry of Information

Minister : Mr. Hassan Ahmed Al-Louzy

- Ministry of Planning and Development

Deputy Minister : Mr. Abdul Wali Al-Agel

Director General, Department of Bilateral Economic Cooperation with Industrialized Countries : Mr. Hisham Sharaf Abdalla

Director, Department of Bilateral Economic Cooperation with Industrialized Countries : Mr. Hamood Al-Hamdanee

Deputy Chief, Division of Bilateral Economic Cooperation with Industrialized Countries : Mr. Mohammed Zohrah

- Yemen General Corporation for Radio and Television

Director General : Mr. Ali Saleh Al-Gamrah

Head of Engineering Sector : Mr. Hussein Ahmed Moqbil

Director General, TV Sector Channel 1 : Mr. Ali Ahmad Ishaq

Director, Department of Foreign Relations and Cooperation : Mr. Nagib Muhamned Hussain

Director, Department of Program Production, TV Sector : Mr. Naser Al-Aulaqi

Director, Engineering Department, TV Sector : Mr. Mohamed Al-Samman

Director, Production Department : Mr. Al-Awlaghi Nasser

Director, Research Department : Mr. Ali Al-Kobati

Studio Technical Director : Mr. Abdulla Al-Gabri

Technical Director, Radio Sector : Mr. Mohamed Bather

Sound Engineer : Mr. Mohamed Moqbil

Video Engineer : Mr. Yehia Ali

Camera Engineer : Mr. Abdullah Rihan

Electric Engineer : Mr. Homadi Al-Zarai

Electric Engineer : Mr. Moghabish Al-Kory

- Embassy of Japan

  Ambassador Extraordinary and Plenipotentiary : Mr. Kazuo Wanibuchi

  First Secretary : Mr. Mitsuru Murase

  First Secretary : Mr. Yasuo Nakano

4. Minutes of Discussions

4. Minutes of Discussions (Basic Design Study)

MINUTES OF DISCUSSIONS

BASIC DESIGN STUDY
ON
THE PROJECT FOR
IMPROVEMENT OF EDUCATIONAL BROADCASTING EQUIPMENT
IN
REPUBLIC OF YEMEN

In response to a request from the Government of Republic of Yemen, the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of Educational Broadcasting Equipment (hereinafter referred to as "the Project"), and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Yemen a study team, which is headed by Ms. Chiho MURAMATSU, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs and is scheduled to stay in the country from August 18 to September 4, 1993.

The team held discussions with the officials concerned of the Government of Republic of Yemen and conducted a field survey at the study area.

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

Sana'a, August 24, 1993

Muramatsu
Ms. Chiho MURAMATSU
Leader
Basic Design Study Team
JICA

Mr. Ali S. AL-GAMRAH
Director General
Yemen General Corporation
for Radio and Television

Mr. Hisham Sharaf ABDALLA
Director General
Cooperation with Industrial Countries
Ministry of Planning & Development

ATTACHMENT

1. Objective

The objective of the Project is to improve the educational and knowledge levels of the nation prerequisite to the execution of the national development plan by improving educational broadcasting equipment of Sana'a station.

2. Project site

The project site is the new studio building of Sana'a station(Ch. 1) in Sana'a, the capital city of Yemen.

3. Executing agency

Yemen General Corporation for Radio and Television is the responsible organ for the administration and execution of the Project.

4. Items requested by the Government of Republic of Yemen

After discussions with the Basic Design Study team, the following items to be installed in Sana'a station were finally requested by the Yemeni side.

(1) Educational Production studio equipment	1 set
(2) Transmitting studio equipment	1 set
(3) Master control room equipment	1 set
(4) Outdoor coverage equipment	1 set
(5) Editing equipment	1 set
(6) Measuring equipment and tools	1 set
(7) Spare parts	1 set
(8) Installation materials	1 set

However, the final components of the Project will be decided after further studies.

5. Japan's Grant Aid system

(1) The Government of Republic of Yemen has understood the system of Japanese Grant Aid explaind by the team.

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

6. Schedule of the Study

(1) The consultants will proceed to futher studies in Yemen until September 4, 1993.

(2) JICA will prepare the draft report in English and dispatch a mission in order to explain its contents in November, 1993.

(3) In case that the contents of the report are accepted in principle by the Government of Republic of Yemen, JICA will complete the final report and send it to the Government of Republic of Yemen in February, 1994.

ANNEX : Necessary measures to be taken by the Government of Republic of Yemen, in case Japan's Grant Aid is extended.

1. To prepare data and information necessary for detailed design.

2. To complete construction of the studio building including interior finish and to provide electricity, air-conditioning, room lights, etc., prior to commencement of equipment installation.

3 To ensure prompt unloading and customs clearance at ports of disembarkation in Yemen and internal transportation therein of the materials and equipment provided under the Grant.

4. To bear following commissions to the Japanese foreign exchange bank for banking services based upon the Banking Arrangement (B/A).
   1) Advising commission of Authorization to Pay (A/P)
   2) Payment commission

5. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contract such facilities as may be necessary for their entry into Yemen and stay therein for the performance of their work.

6. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Yemen with respect to the supply of the products and services under the verified contract.

7. To maintain and use properly and effectively the educational broadcasting equipment provided under the Grant.

8. To bear all the expenses other than those to be borne by the Grant, necessary for implementation of the Project.

(Explanation of Draft Report)

MINUTES OF DISCUSSIONS

BASIC DESIGN STUDY
ON
THE PROJECT FOR
IMPROVEMENT OF EDUCATIONAL BROADCASTING EQUIPMENT
IN
REPUBLIC OF YEMEN
(CONSULTATION ON DRAFT REPORT)

In August 1993, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study team on the Project for Improvement of Educational Broadcasting Equipment (hereinafter referred to as "the Project") to Republic of Yemen, and through discussions, field survey and technical examination of the results in Japan, has prepared the draft report of the study.

In order to explain and to consult Republic of Yemen on the components of the draft report, JICA sent to Republic of Yemen a study team which is headed by Mr. Katsuya Ikkatai, Second Middle East Division, Middle East and African Bureau, Ministry of Foreign Affairs, and is scheduled to stay in the country from November 17th to November 24th, 1993.

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

Sana'a, November 24th, 1993

Katsuya Ikkatai

Mr. Katsuya IKKATAI
Leader
Draft Report Explanation Team
JICA

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ATTACHMENT

1. Components of draft report

The Government of Republic of Yemen has agreed and accepted in principle the components of the draft report proposed by the Team.

2. Japan's Grant Aid system

(1) The Government of Republic of Yemen has understood the system of Japanese Grant Aid explained by the Team.

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

3. Further schedule

The Team will make the final report in accordance with the confirmed items, and send it to the Government of Republic of Yemen by the end of February, 1994.

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Annex: Necessary measures to be taken by the Government of Republic of Yemen in case Japan's Grant Aid is extended.

1. To provide facilities for electricity, air-conditioning and other incidental facilities to the new studio center prior to commencement of installation of the equipment.

   (1) Main power supply and air-conditioning with enough capacity to all technical areas where the equipment is installed

   (2) Partition of the transmitting studio with a wall

   (3) Studio lighting grid in the production studio and the transmitting studio

   (4) Reinforcement of the ceiling of production studio, if necessary

   (5) Modification of the building if the necessity arises in the course of detailed design

   (6) Installation of acoustic materials on the walls of the production and transmitting studios

   (7) Earthing for the equipment in each technical room

   (8) Telephone,furniture such as carpets,curtains,tables,chairs and others.

2. To prepare data and information necessary for the detailed design.

3. To ensure prompt unloading,to exempt taxes and to take necessary measures for customs clearance, at ports of disembarkation in Yemen and internal transportation therein of the materials and equipment provided under the Grant.

4. To bear following commissions to the Japanese foreign exchange bank for banking services based upon the Banking Arrangement(B/A).

   (1) Advising commission of Authorization to Pay(A/P)

   (2) Payment commission

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5. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contract such facilities as may be necessary for their entry into Yemen and stay therein for the performance of their work.

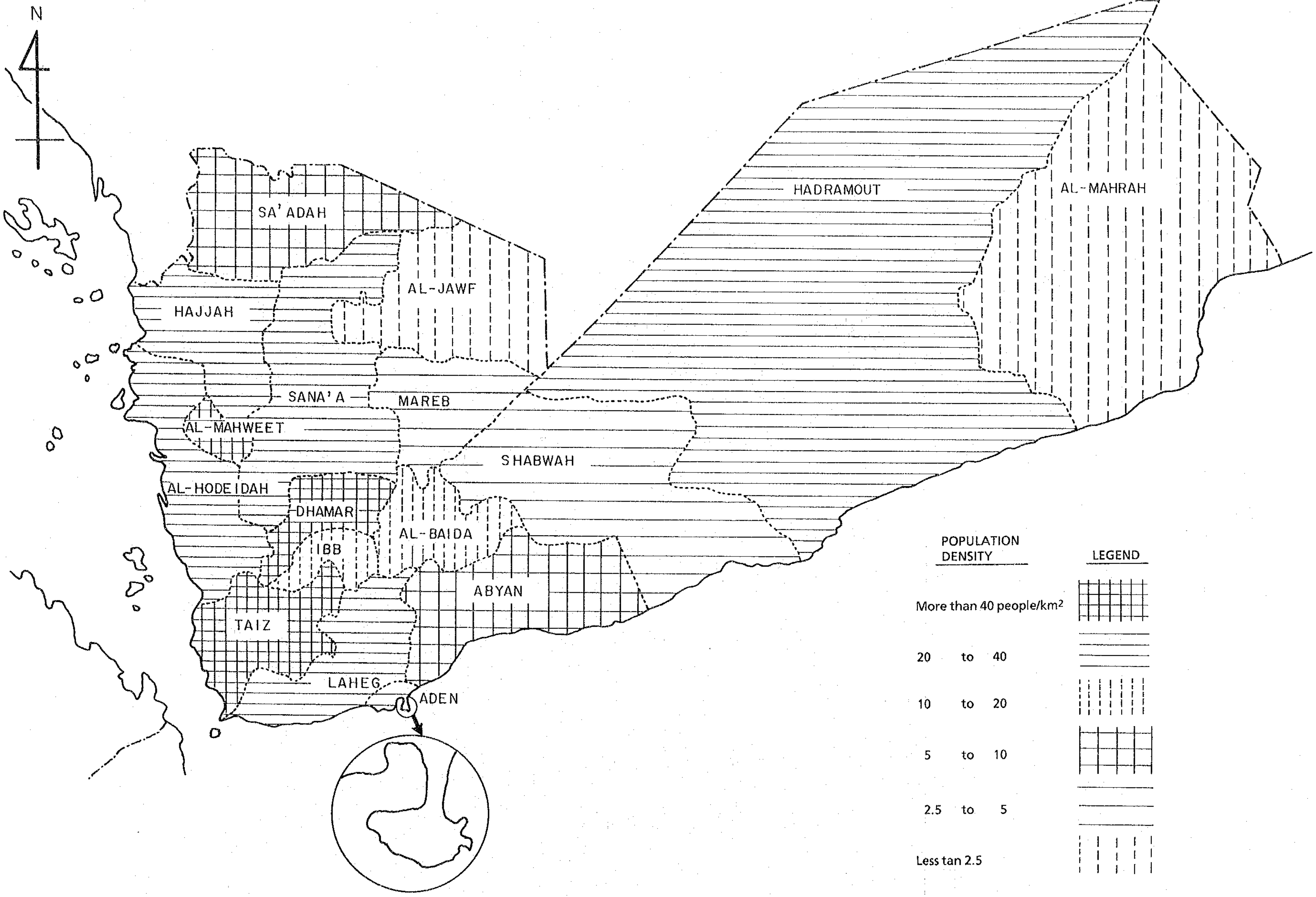
6. To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in Yemen with respect to the supply of the products and services under the verified contract.

7. To maintain and use properly and effectively the educational broadcasting equipment provided under the Grant.

8. To bear all the expenses other than those to be borne by the Grant, necessary for implementation of the Project.

5. Reference Data Attached

5-1 Map of Population Density by Governorates



5-2 Main Existing Equipment of Sana'a Television Station

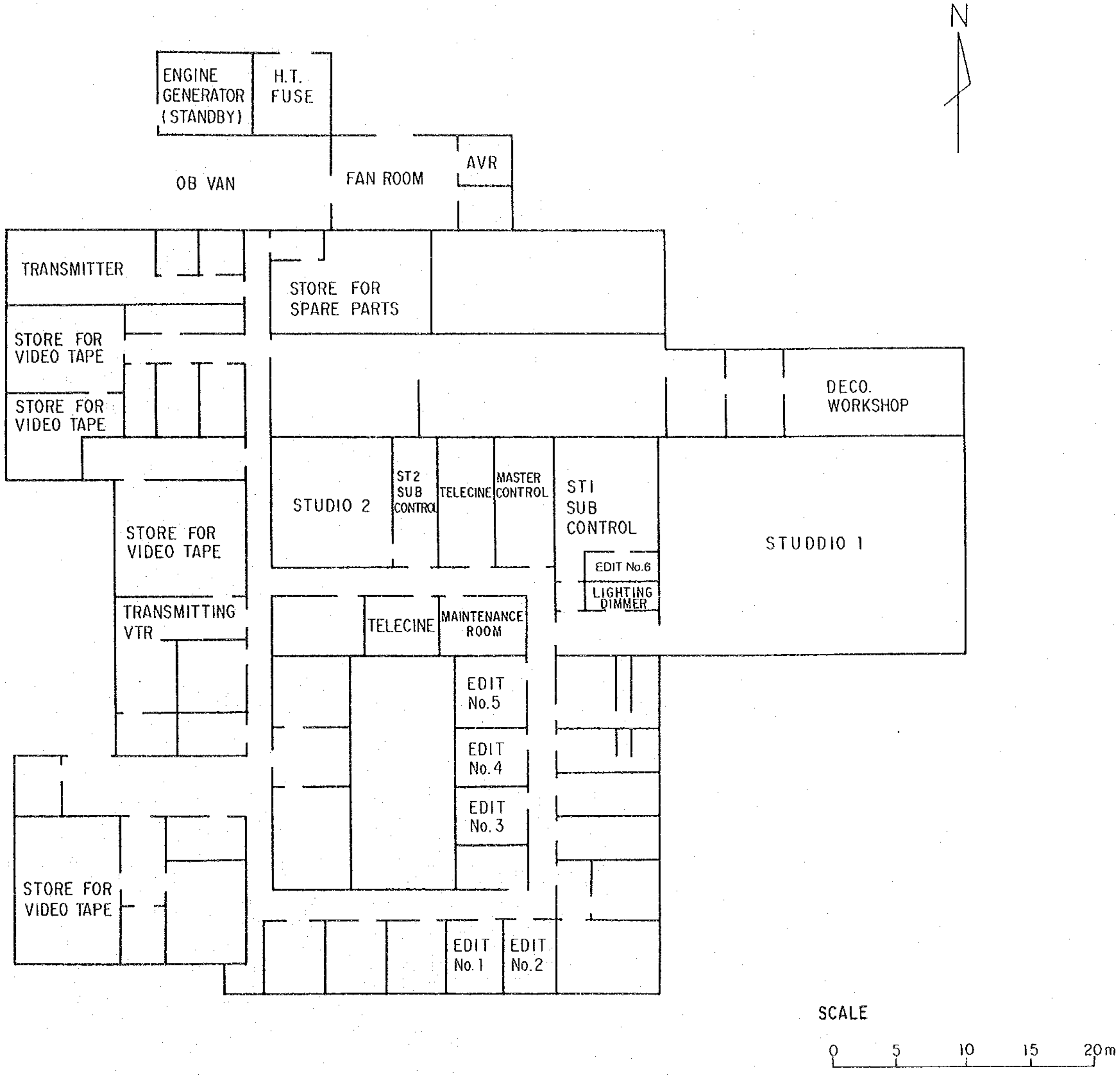
Equipment	Manufacturer	Model	Q'ty	Current condition
1. Studio No.1 (Production studio)				
(1) Camera (ENG type)	Ampex	CVC-7P	1	Good
(2) Camera	Marconi	MARK-Ⅷ	3	Not available
(3) Video switcher	Marconi	—	1	Poor
(4) Audio mixer	Digitec	—	1	Fair
(5) Lighting equipment	—	—	1	Poor
(6) Color monitor	Barco	CTVM-2151	2	Poor
(7) Audio tape recorder	Digitec	SA-F462	2	Fair
2. Studio No. 2 (Transmitting studio)				
(1) Camera	Marconi	MARK-Ⅷ	2	Poor
(2) Camera	Bosch	KCF-1	2	Poor
(3) Video switcher	Marconi	—	1	Poor
(4) Audio mixer	Shlumberger	—	1	Poor
(5) Lighting equipment	Grosman	—	1	Fair
(6) Color monitor	—	C-202HM	1	Poor
(7) Color monitor	Sony	KV-2082	3	Fair
(8) Audio tape recorder	Digitec	SA-F462	2	Fair
3. Master control room				
(1) Routing switcher	Bosch	—	1	Good
(2) Program sending-out switcher	Marconi	—	1	Poor
(3) Sync generator	Marconi	B3615	2	Poor
(4) Sync generator	Tektronix	1411	1	Poor
(5) System converter (SECAM/PAL)	Cox	SP03	1	Poor
(6) Color monitor	Barco	CTVM-2151	2	Poor
(7) Color monitor	Sony	KV-2082M	2	Fair

Equipment	Manufacturer	Model	Q'ty	Current condition
4. VTR room				
(1) 2-inch VTR	Ampex	AVR-3	2	Poor
(2) 1-inch C-format VTR	Sony	BVH-2000PS	1	Fair
(3) 1-inch C-format VTR	Sony	BVH-3100PS	1	Fair
(4) 1-inch B-format VTR	Bosch	BCN51	2	Fair
(5) U-matic VTR	Sony	BVU-870P	2	Good
(6) 1/2-inch VTR	Sony	BVW-75P	2	Good
5. Editing room No.1				
(1) 1-inch C-format VTR	Ampex	VPR-2	2	Poor
(2) Editor	Ampex	TRE-2	1	Fair
6. Editing room No. 2				
(1) U-matic VTR	Sony	BVU-870P	1	Good
(2) 1/2-inch VTR	Sony	BVW-75P	2	Good
(3) Video switcher	Sony	SEG-2550AP	1	Good
(4) Audio mixer	Sony	MXP-29	1	Good
(5) Editor	Sony	BVE-900	1	Good
(6) Audio tape recorder	Revox	PR99	1	Good
7. Editing room No. 3				
(1) 1-inch B-format VTR	Bosch	BCN-51	1	Good
(2) 1-inch B-format VTR	Bosch	BBL-91E	1	Good
(3) U-matic VTR	Sony	BVU-800P	1	Fair
(4) 1/2-inch VTR	Sony	BVW-10P	1	Poor
(5) Editor	Sony	BVE-800P	1	Fair

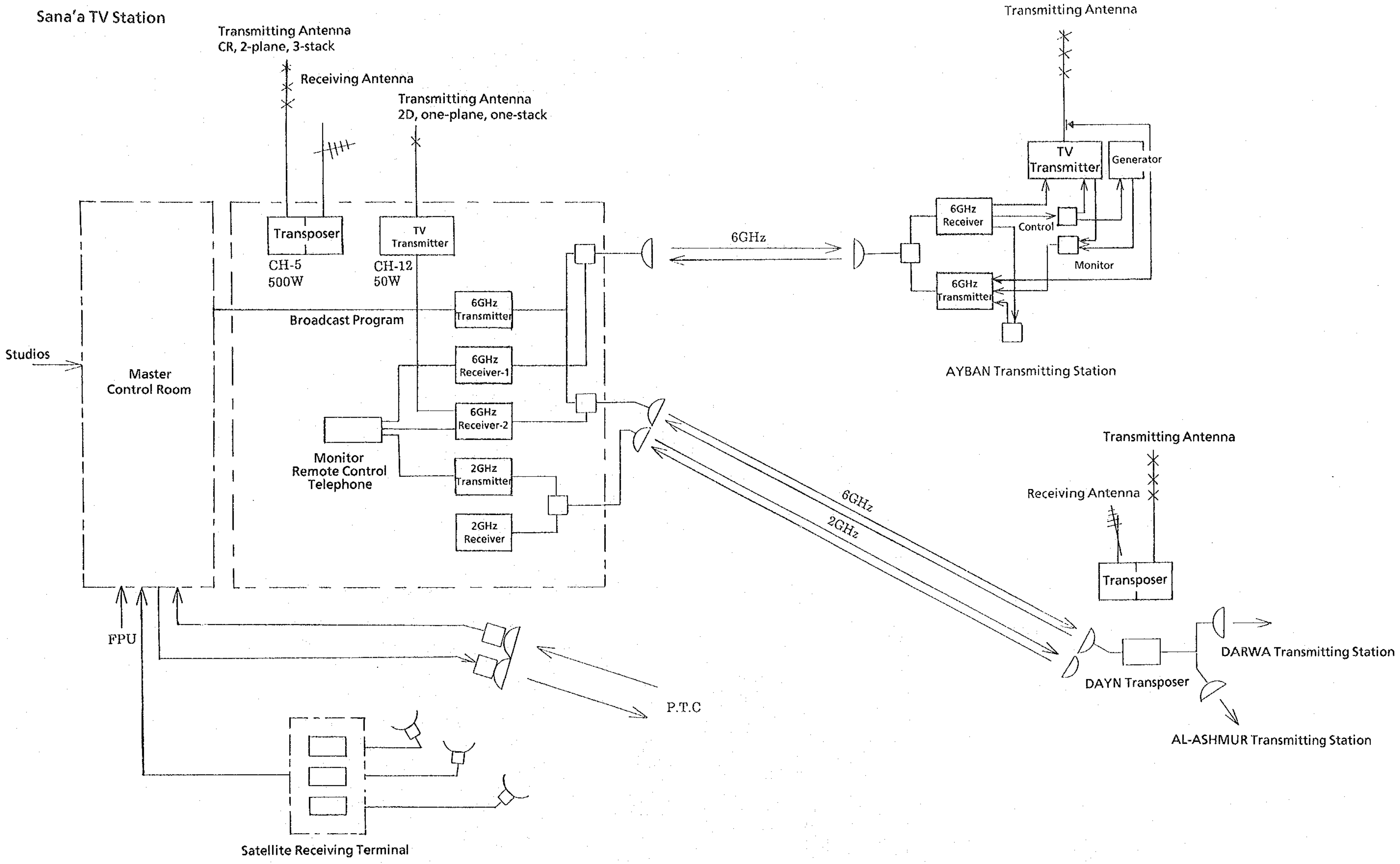
Equipment	Manufacturer	Model	Q'ty	Current condition
8. Editing room No. 4				
(1) U-matic VTR	Sony	BVU-950P	1	Good
(2) U-matic VTR	JVC	CR-8200E	1	Good
(3) 1/2-inch VTR	BTS	BCB-70	1	Fair
(4) 1/2-inch VTR	BTS	BCB-60	1	Fair
(5) Video switcher	Sony	SEG-2550AP	1	Good
(6) Audio mixer	Sony	MXP-29	1	Good
(7) Editor	Sony	BVE-900	1	Good
9. Editing room No. 5				
(1) U-matic VTR	Sony	BVU-950P	2	Good
(2) 1/2-inch VTR	Sony	BVW-75P	2	Good
(3) VHS VTR	JVC	HR-7600MS	1	Poor
(4) VHS VTR	Sony	SLV-X50ME	1	Good
(5) Audio mixer	Sony	MXP-21	1	Good
10. Editing room No. 6				
(1) 1/2-inch VTR	Sony	BVW-75P	3	Good
(2) Video switcher	Sony	SEG-2550	1	Good
(3) Audio mixer	Sony	MXP-290	1	Good
(4) Editor	Sony	BVE-910	1	Good
11. OB vehicle				
(1) OB vehicle No. 1 (Medium size, 3 cameras)	Bosch		1	Fair
(2) OB vehicle No. 2 (Medium size, 3 cameras)	Bosch		1	Poor
(3) OB vehicle No. 3 (Small size, 2 cameras)	Sana'a Station modified to color OB van		1	Fair (mainly used for production studio)

Equipment	Manufacturer	Model	Q'ty	Current condition
12. Outdoor coverage equipment				
(1) U-matic VTR · Camera	Sony	BVU-110P/ BVP-330AP	4	Fair
(2) U-matic VTR	Sony	BVU-110P	2	Good
(3) 1-inch B VTR · Camera	Bosch	—	1	Fair
(4) 1/2-inch VTR · Camera	Sony	BVV-5PS/ BVP-50P	5	Fair
(5) 1/2-inch VTR · Camera	Sony	BVV-1AP/ BVP-3AP	2	Fair
(6) 1/2-inch VTR · Camera	Sony	VA-5P/ BVW/550P	2	Good
13. Film laboratory and telecine				
(1) Developing machine			3	Fair
(2) Film camera			20	Fair
(3) Telecine equipment	Bosch		2	Poor Film projectors are out of order and only slide projector is available
(4) Telecine equipment	Bosch		1	Poor For 16 and 35 mm films
14. Measuring equipment				
(1) Oscilloscope	Tektronix	465	1	Good
(2) Oscilloscope	Tektronix	545B	1	Good

5-3 Layout of Present Sana'a TV Studio Building



5-4 Schematic Diagram of Microwave Link and Transmitting Equipment of Sana'a TV Station



5-5 Transmitter and Transposer Stations of Sana'a Television Station (CH.1)

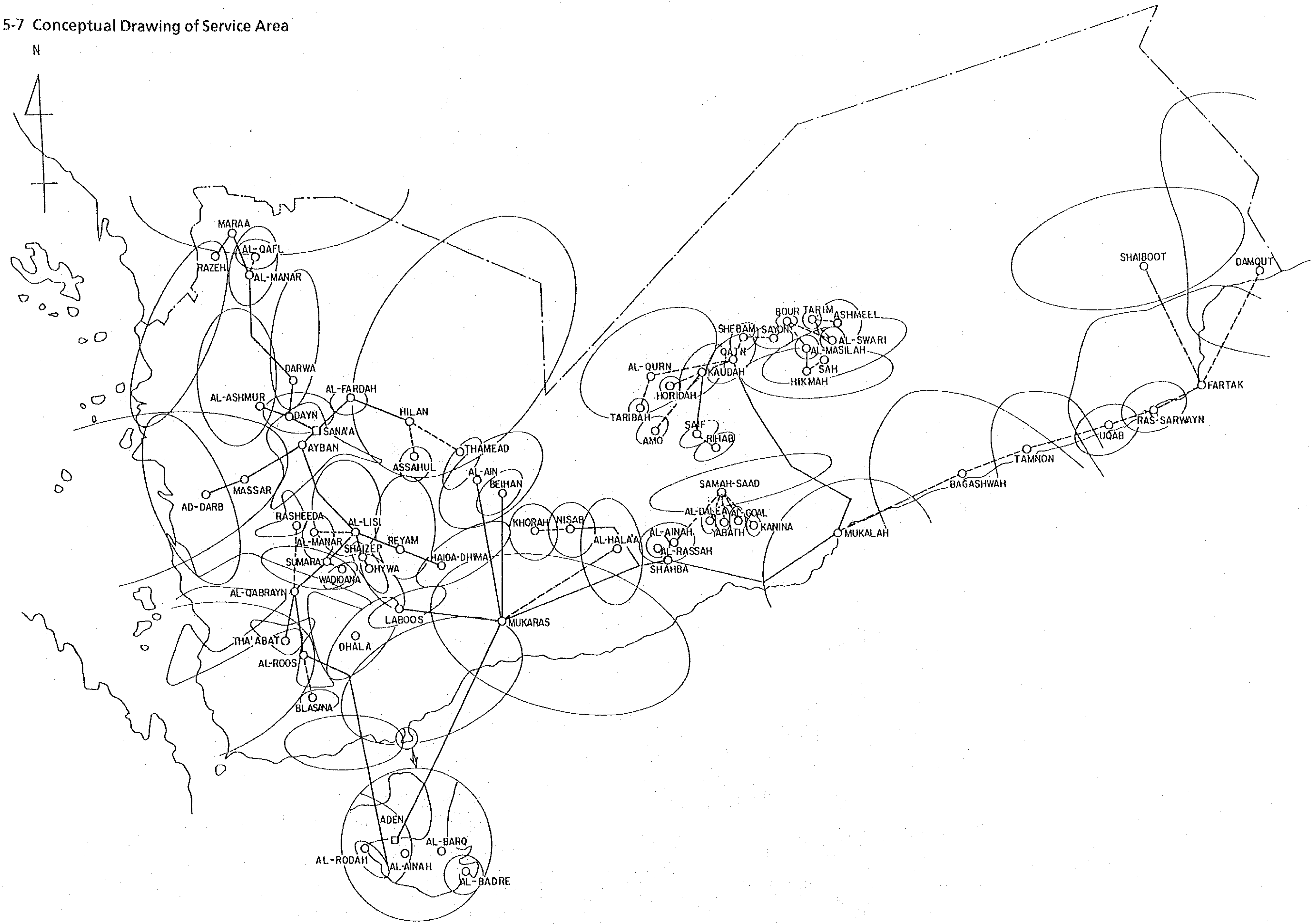
Station	Power output	CH	Manufacturer	Year of installation	Remarks
AYBAN	1	7	Thomson LGT	1978	Transmitter
AL-LISI	0.4	5	Thomson LGT	1978	Transmitter
AL-QABRAYN	1	8	Thomson LGT	1978	Transmitter
THA'ABAT	0.2	6	Thomson LGT	1978	Transmitter
AL-ARUS	1	11	Thomson LGT	1978	Transmitter
MASSAR	1	10	Thomson LGT	1978	Transmitter
AL-DARB	1	6	Thomson LGT	1978	Transmitter
AL-ASHMUR	1	12	Thomson LGT	1978	Transmitter
AL-AHMAR	0.25	8	NEC	1979	Transmitter
DARWA	0.1	6	NEC	1979	Transmitter
AL-FARDAH	0.2	8	Thomson LGT	1985	Transmitter
HILAN	4	6	Thomson LGT	1984	Transmitter
REYAM	4	9	Thomson LGT	1984	Transmitter
HAIDA-DHIMA	0.4	12	Thomson LGT	1984	Transmitter
MARAA	10	11	Thomson LGT	1988	Transmitter
RAZEH	2	8	Thomson LGT	1988	Transmitter
SUMARA	0.2	12	Thomson LGT	1978	Transmitter
DAYN	0.1	10	NEC	1978	Transposer
AL-QAFL	0.01	10	NEC	1979	Transposer
AL-MANAR	0.01	9	Yugoslavian make	1986	Transposer
RASHEEDA	0.01	6	Yugoslavian make	1986	Transposer
SHAIZER	0.01	8	Yugoslavian make	1986	Transposer
HYWA	0.01	12	Yugoslavian make	1986	Transposer
BLASINA	0.01	6	Yugoslavian make	1986	Transposer
ALSAHUL	0.01	12	Yugoslavian make	1987	Transposer
THAMED	0.01	10	Yugoslavian make	1987	Transposer
WADIBANA	0.01	6	Thomson LGT	1986	Transposer
ADEN	0.01	12	Thomson LGT	1986	Transposer

5-6 Transmitter and Transposer Stations of Aden Television Station (CH.2)

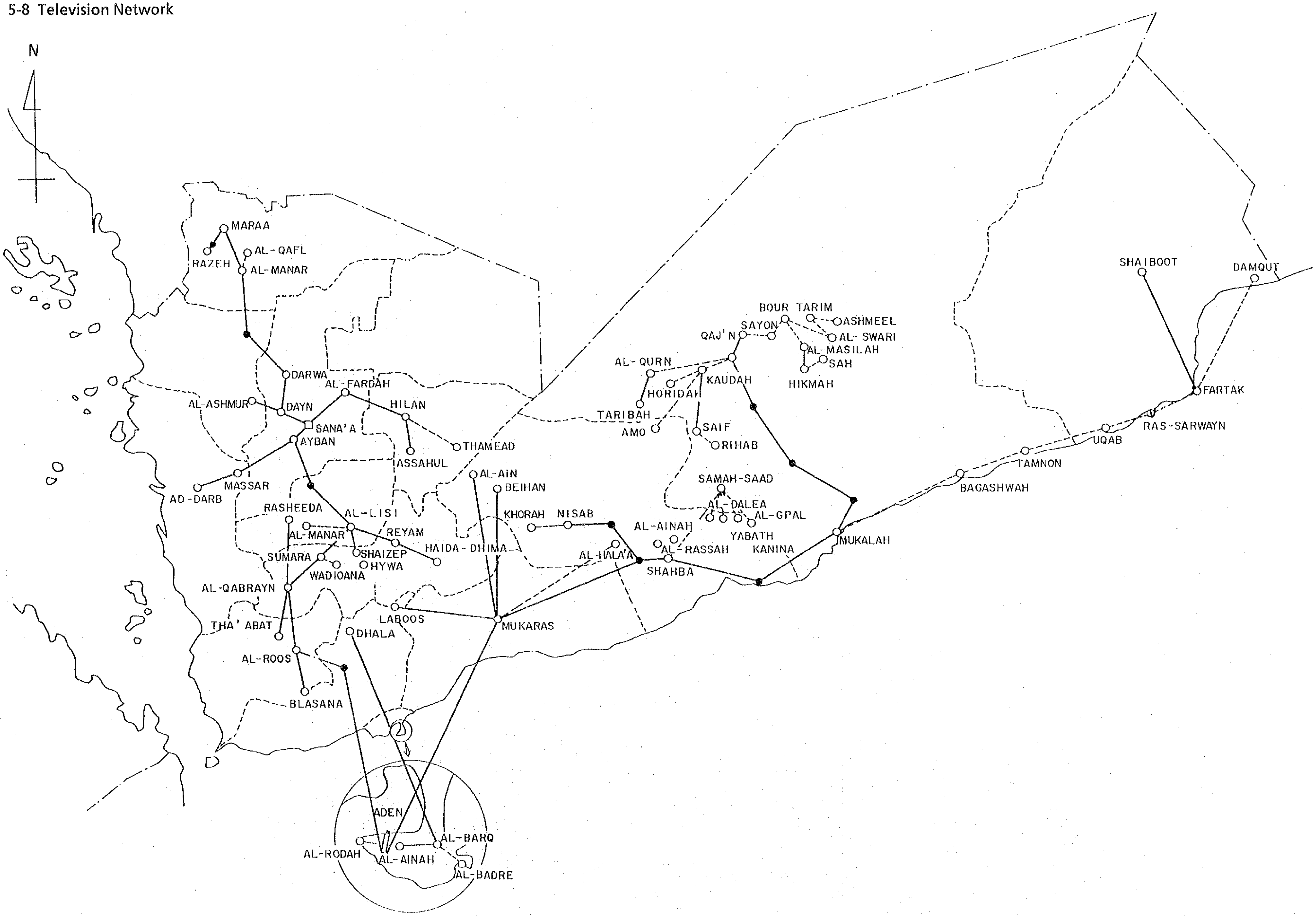
Station	Power output	CH	Manufacturer	Year of installation	Remarks
AL-AINAH	0.5	9	NEC	1979	Transmitter
AL-BARQ	2	10	NEC	1979	Transmitter
MUKARAS	2	7	NEC	1981	Transmitter
NISAB	0.1	9	Thomson LGT		Transmitter
SHAHBA	0.1	8	Thomson LGT		Transmitter
MUKALAH	0.1	7	Thomson LGT		Transmitter
QATN	0.1	8	Thomson LGT		Transmitter
SHEBAM	0.05	10	Thomson LGT		Transmitter
SANA'A	0.5	5	Thomson LGT		Transmitter
AL-RASSAH	0.01	5	Marconi		Transposer
AL-BADRE	0.01	8	Marconi		Transposer
DHALA	1	5	NEC	1981	Transposer
LABOOS	0.1	12	Thomson LGT		Transposer
AL-AIN	0.5	11	Thomson LGT		Transposer
BEIHAN	0.1	11	Thomson LGT		Transposer
AL-HALA'A	0.5	9	Thomson LGT		Transposer
KHORAH	0.1	11	Thomson LGT		Transposer
AL-RODAH	0.01	6	Thomson LGT		Transposer
AL-HOTAH	0.1	6	Thomson LGT		Transposer
SAMAH-SAAD	0.1	5	Thomson LGT		Transposer
AL-DALEA	0.05	11	Thomson LGT		Transposer
YABATH	0.01	11	Thomson LGT		Transposer
AL-GOAL	0.05	11	Thomson LGT		Transposer
KANINA	0.01	11	Thomson LGT		Transposer
KAUDAH	0.1	10	Thomson LGT		Transposer
HORIDAH	0.01	6	Thomson LGT		Transposer
AMD	0.05	6	Thomson LGT		Transposer
SAIF	0.05	6	Thomson LGT		Transposer
RIHAB	0.05	11	Thomson LGT		Transposer
AL-QURN	0.5	6	Thomson LGT		Transposer
TARIBAH	0.01	12	Thomson LGT		Transposer
SAYUN	0.05	6	Thomson LGT		Transposer

Station	Power output	CH	Manufacturer	Year of installation	Remarks
BOUR	0.01	12	Thomson LGT		Transposer
AL-SWARI	0.01	10	Thomson LGT		Transposer
TARIM	0.01	6	Thomson LGT		Transposer
AL-MASILAH	0.01	8	Thomson LGT		Transposer
ASHMEEL	0.05	10	Thomson LGT		Transposer
HIKMAH	0.1	12	Thomson LGT		Transposer
SAH	0.1	5	Thomson LGT		Transposer
BAGASHWAH	0.5	5	Hungarian make		Transposer
TAMNON	0.1	8	Hungarian make		Transposer
UQAB	0.01	8	Hungarian make		Transposer
RAS-SARWAYN	0.01	12	Hungarian make		Transposer
FARTAK	0.5	8	Hungarian make		Transposer
SAHIBOOT	0.1	12	Thomson LGT		Transposer
DAMQUT	0.5	12	Thomson LGT		Transposer

5-7 Conceptual Drawing of Service Area



5-8 Television Network



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