C
G
P
N
N-SHEET

AFLOAT COMMUNICATIONS SYSTEMS

TERMS:

1. SIMPLEX. The ability to send *and* receive, but not both at the same time.

2. DUPLEX. The ability to send and receive at the same time.

3. HALF-DUPLEX. The ability to send or receive, but not both.

4. DIVERSITY.

   Frequency diversity. Reception/Transmission of different "RF" signals containing the same intelligence.

   Space diversity. The reception of the same "RF" signal on two different receivers, using two different antennas space one wavelength apart.

   Polarization diversity. The reception of the same "RF" signal on two different receivers, using two different antennas, one horizontally polarized and one vertically polarized.

   Tone or In-Band diversity. A technique for multichannel tone transmission where each information channel appears at two places in the 3 kHz transmission bandwidth. This method of diversity is also called "twinning," and helps to reduce the effects of frequency selective fading.

5. FLAT FADING. A type of fading in which all frequency components of the received radio signal fluctuate in the same proportion simultaneously.

6. SELECTIVE FADING. A type of fading in which the various frequency components of the received radio signal fluctuate independently.

7. RFCS. Radio Frequency Carrier Shift. The shifting of an unmodulated radio frequency carrier back and forth between two discrete frequencies of a teletype channel, one frequency being a MARK signal and the other being a SPACE signal. For reasons of clarity, it is more descriptive if this emission is referred to as "RFCS RATT" instead of "FSK RATT". (F1 emission.)

8. AFTS. Audio Frequency Tone Shift. When speaking in terms of "RF" emission, this is a means of keeping the radio frequency carrier constant and shifting back and forth between two discrete audio frequency tones to produce the MARK/SPACE signals of a teletype channel. The Navy uses the emission designator A7 to denote this type of emission, whether single channel or multi-channel ratt. A7 type emissions have been referred to by a variety of terms, including Tone Modulated RATT, FSK RATT, VFTG, VFCT, SSB RATT, DSB RATT and ISB RATT. It is more descriptive if A7 type emissions are referred to as "AFTS RATT" instead of the various foregoing terms.

TERMS (CONT'D):

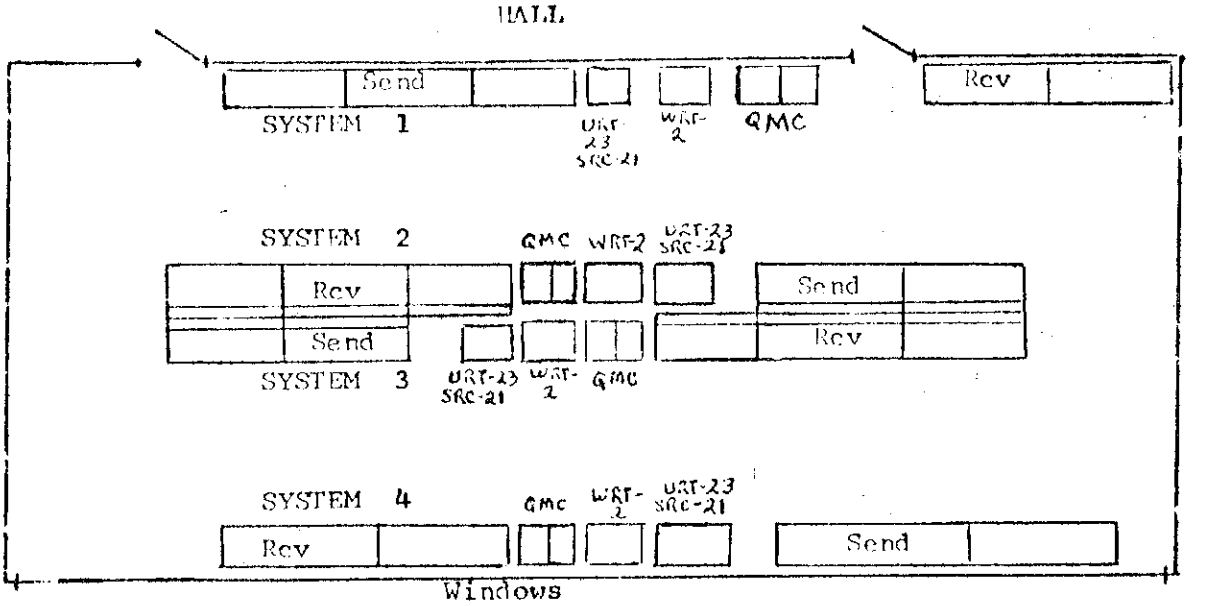
9. SSB. Single Sideband. (3A3J) Method in which the carrier and one sideband is suppressed prior to transmitting, gaining more power in the remaining sideband which will be radiated from the antenna.

10. MUX. Multiplexing. (3A7J) Two or more intelligence channels grouped together and transmitted via a common carrier frequency.

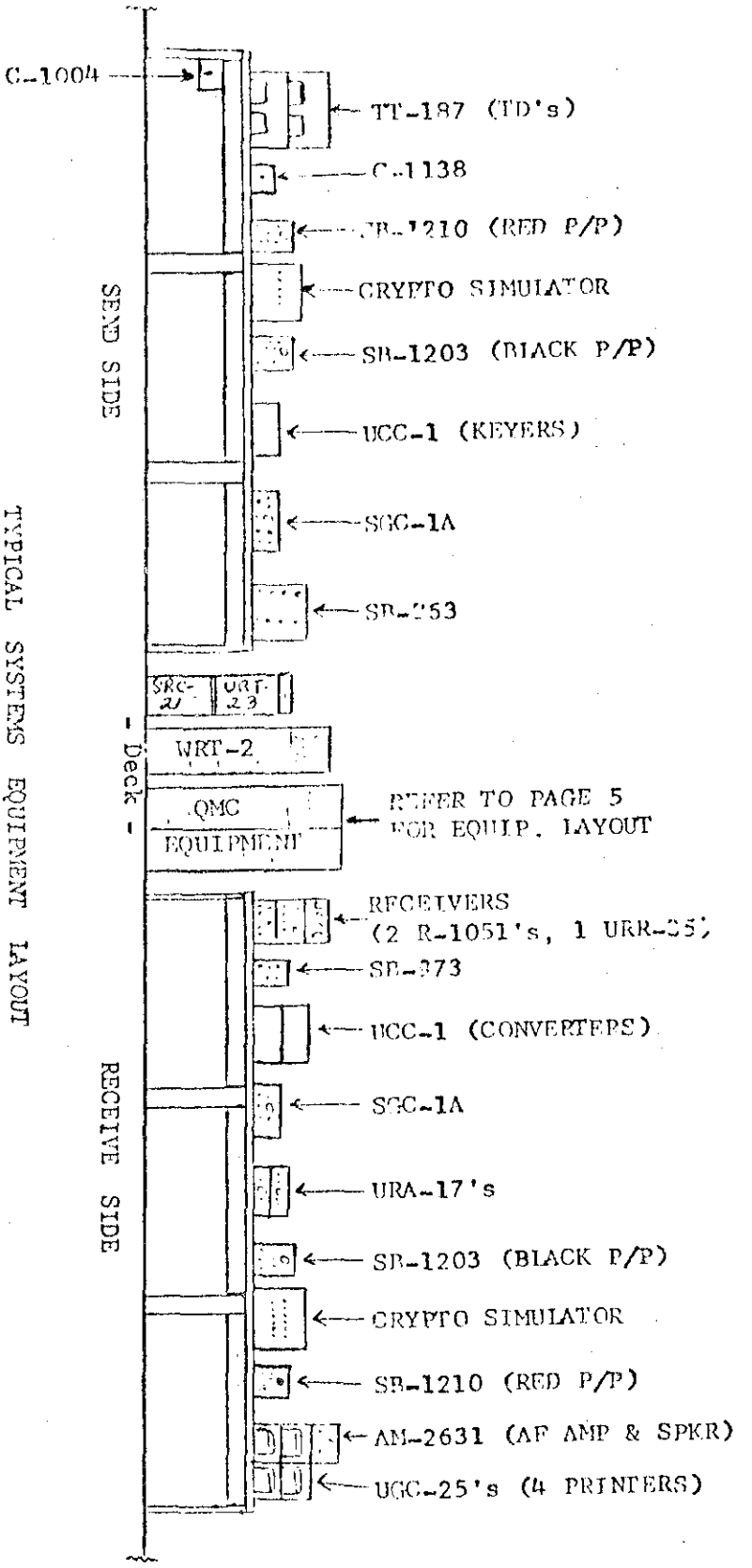
11. VFCT. Voice Frequency Carrier Telegraph. Sometimes referred to as VFTG (Voice Frequency Tone Group). A group of tones within a specified bandwidth, each carrying a ditferent intelligence information unless two different tones are "twinned" to carry the same intelligence. This type of emission is employed with Frequency Division Multiplex equipment such as the UCC-1 and FGC-59/60.

12. ON-LINE. The process of encryption and decryption which takes place electronically and simultaneously within the signal path of a communication system.

13. OFF-LINE. The process of encryption or decryption which takes place mechanically, externally, of the signal path of a communications system (such as codress traffic on a CW circuit).



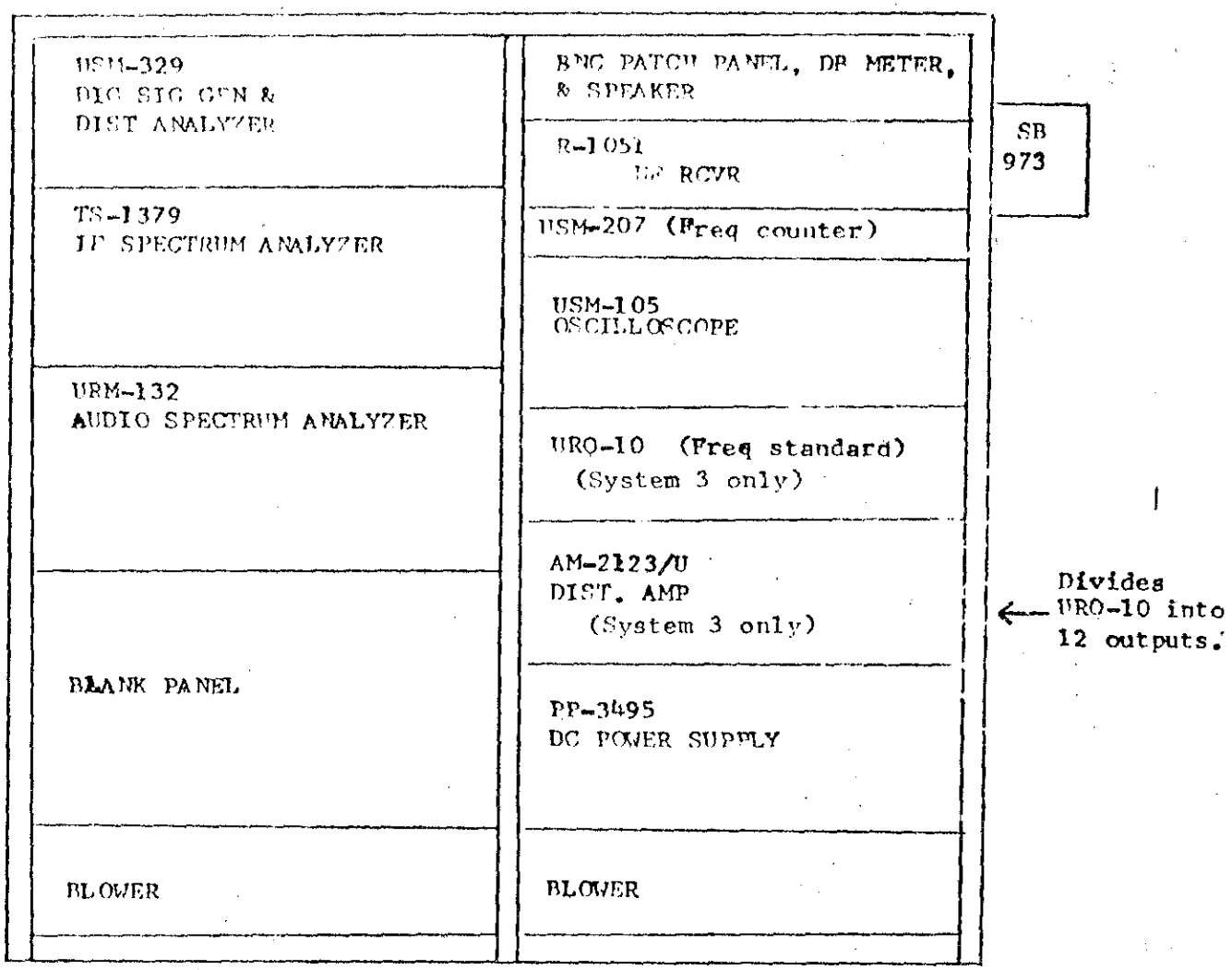
ROOM 107 LAYOUT



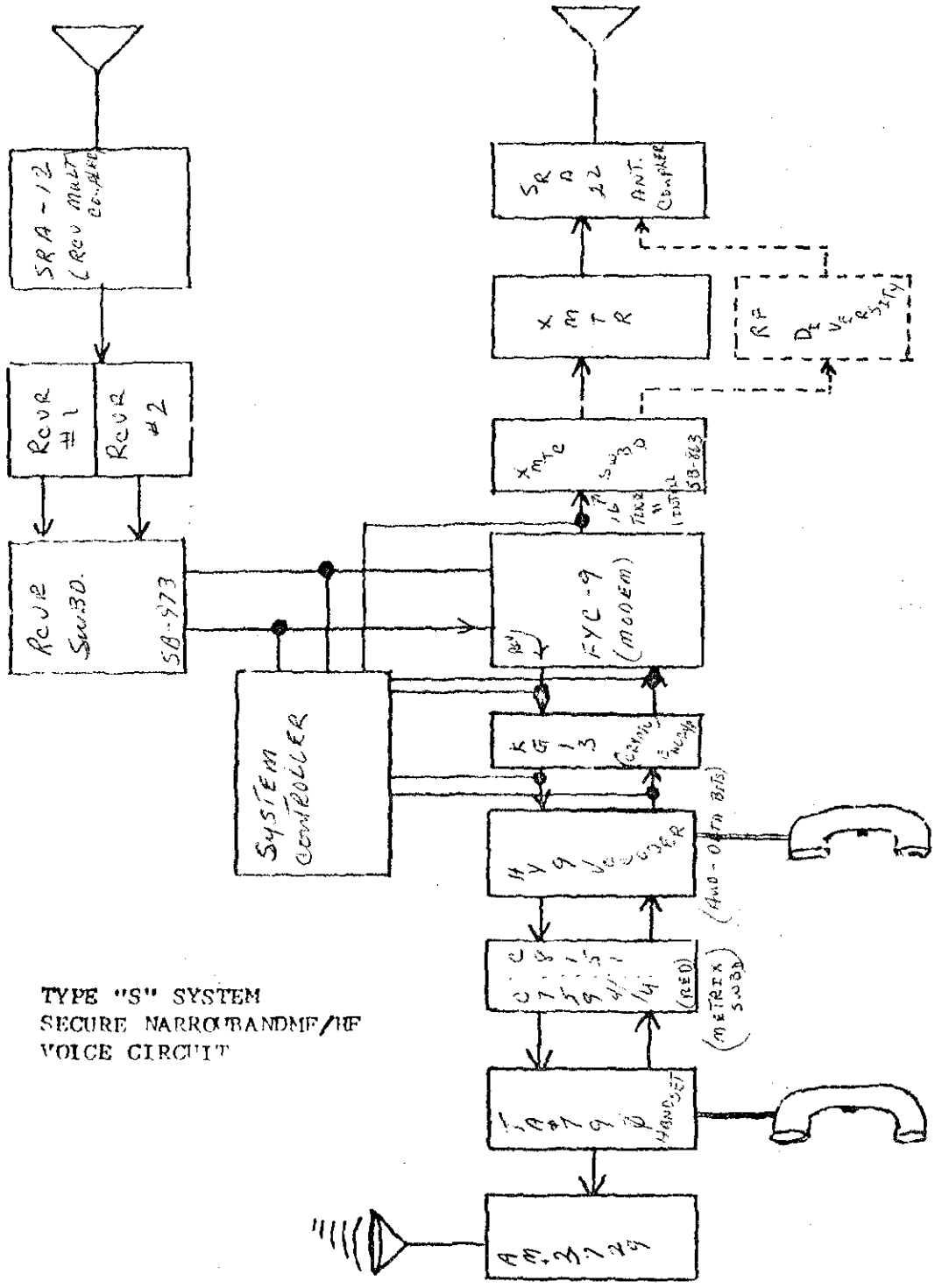
TYPICAL SYSTEMS EQUIPMENT LAYOUT

ROOM 107

INTERIM QUALITY MONITORING PANEL

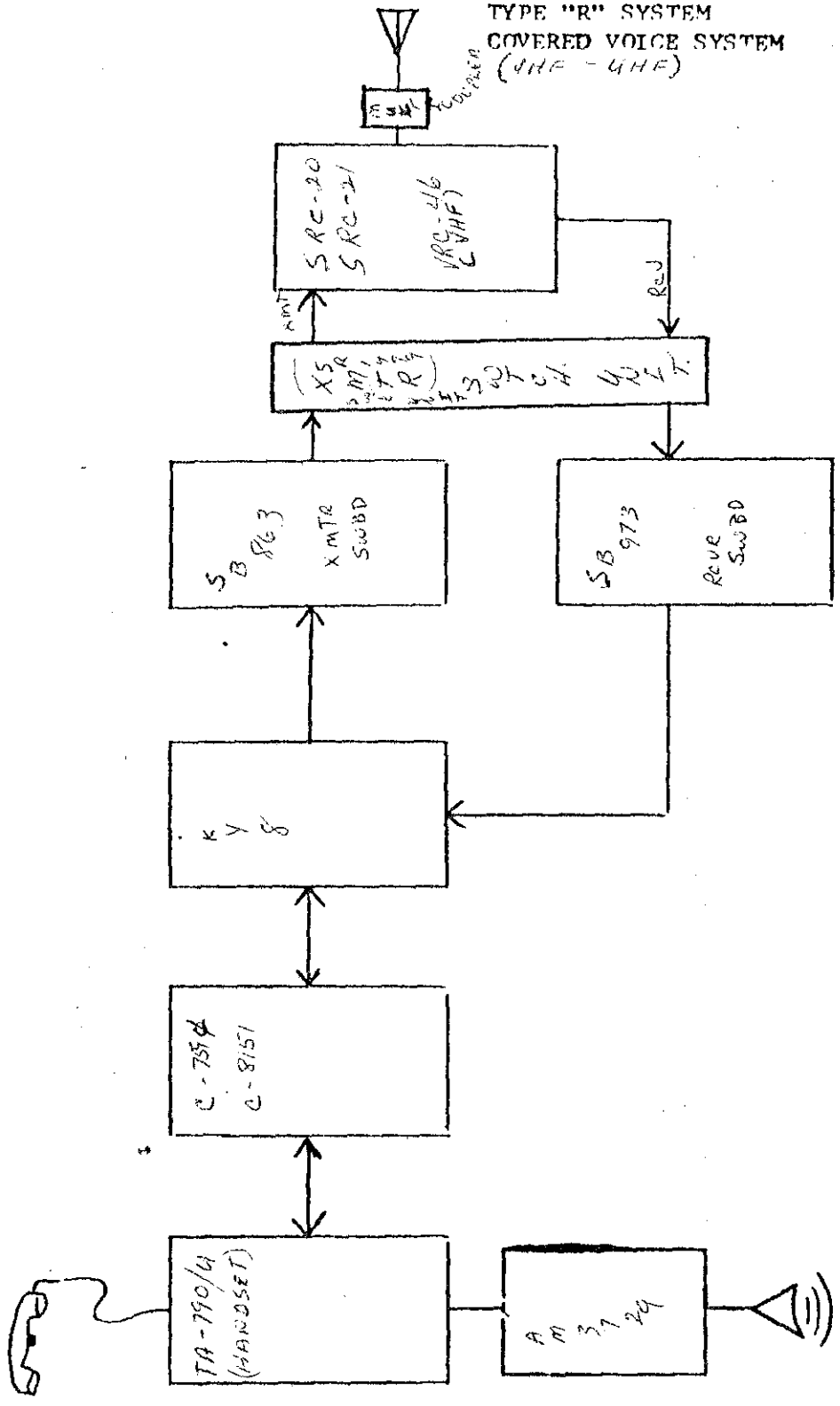


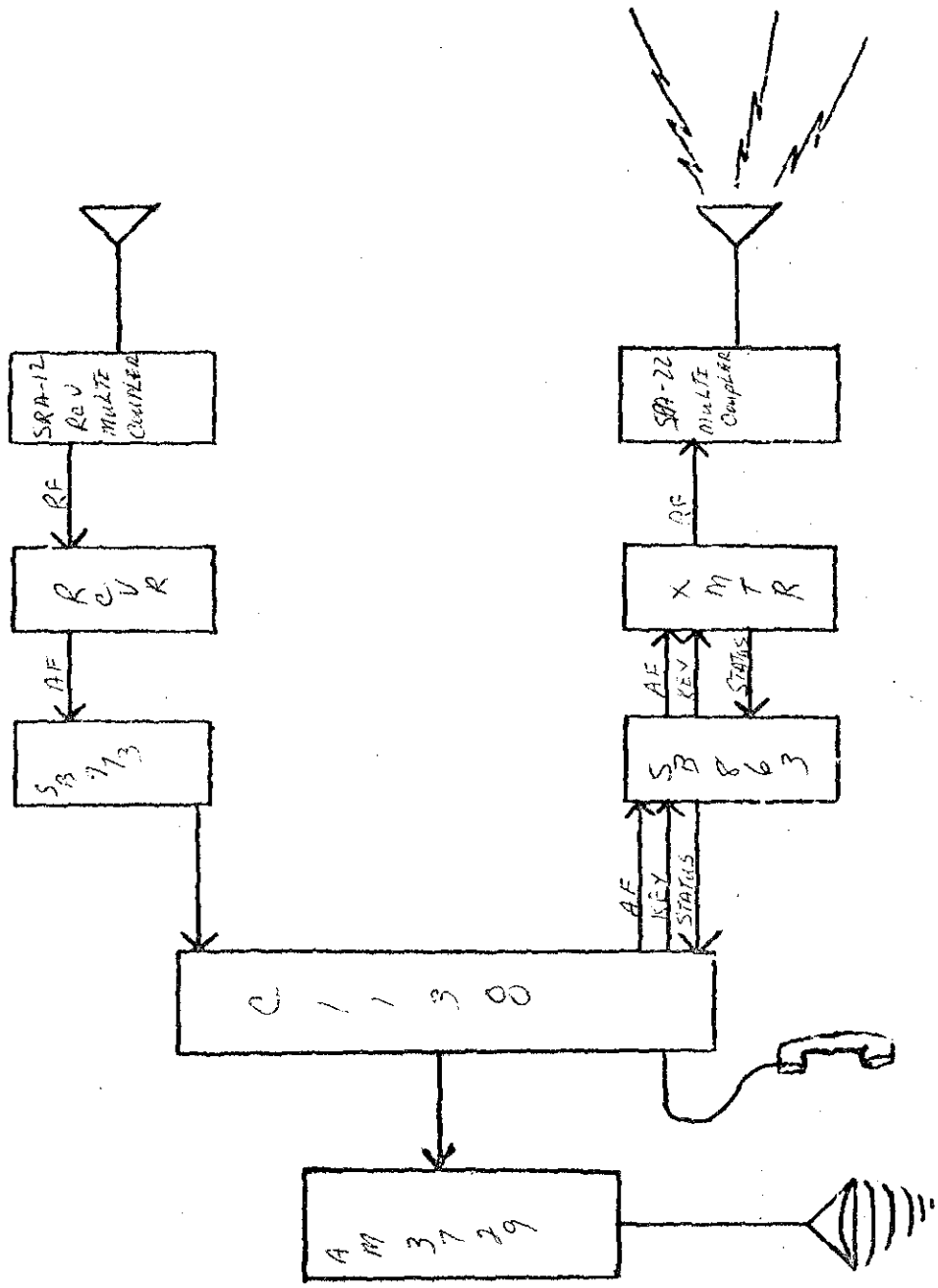
ROOM 107, one per system.



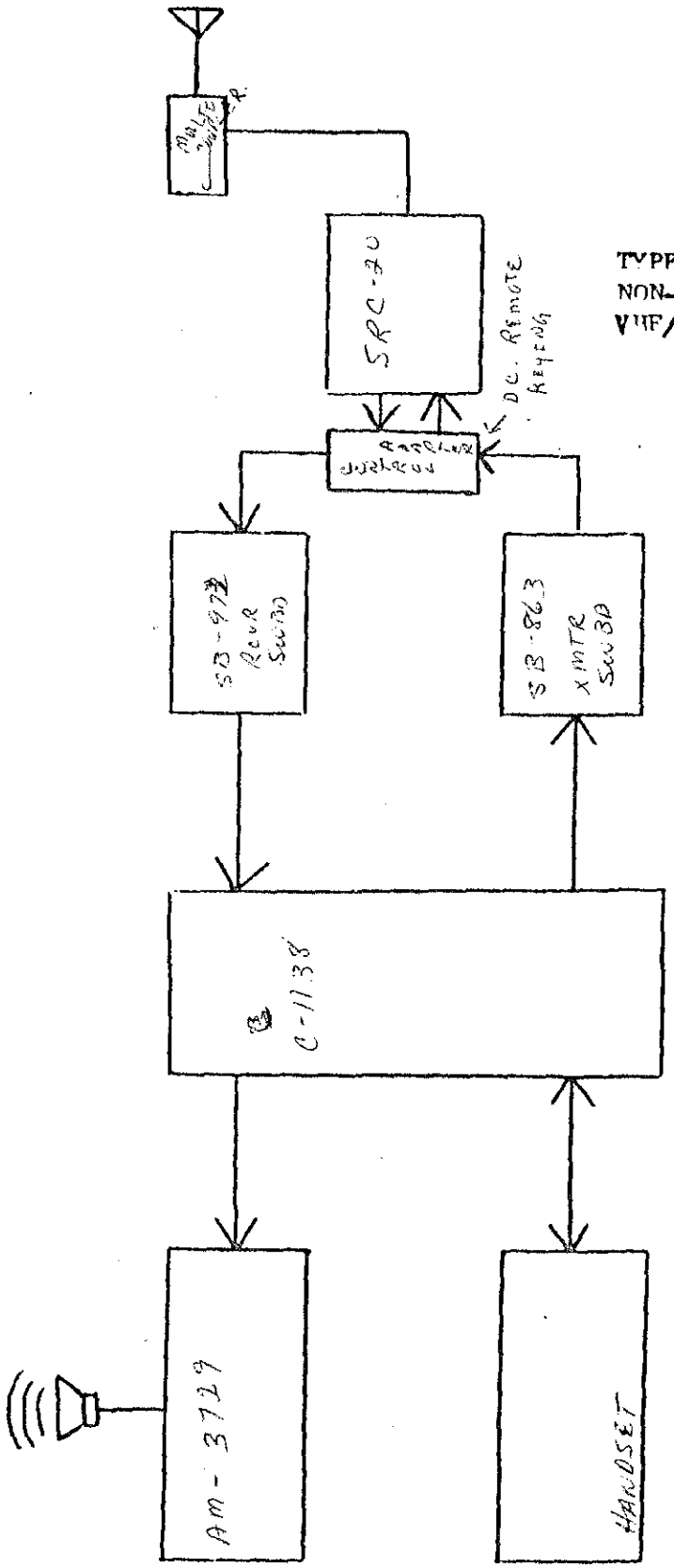
TYPE "S" SYSTEM
SECURE NARROWBAND MF/HF
VOICE CIRCUIT

TYPE "R" SYSTEM
COVERED VOICE SYSTEM
(VHF - UHF)





TYPE "Y" SYSTEM
SHIPS NON-SECURE NARROWBAND MF/HF VOICE CIRCUIT

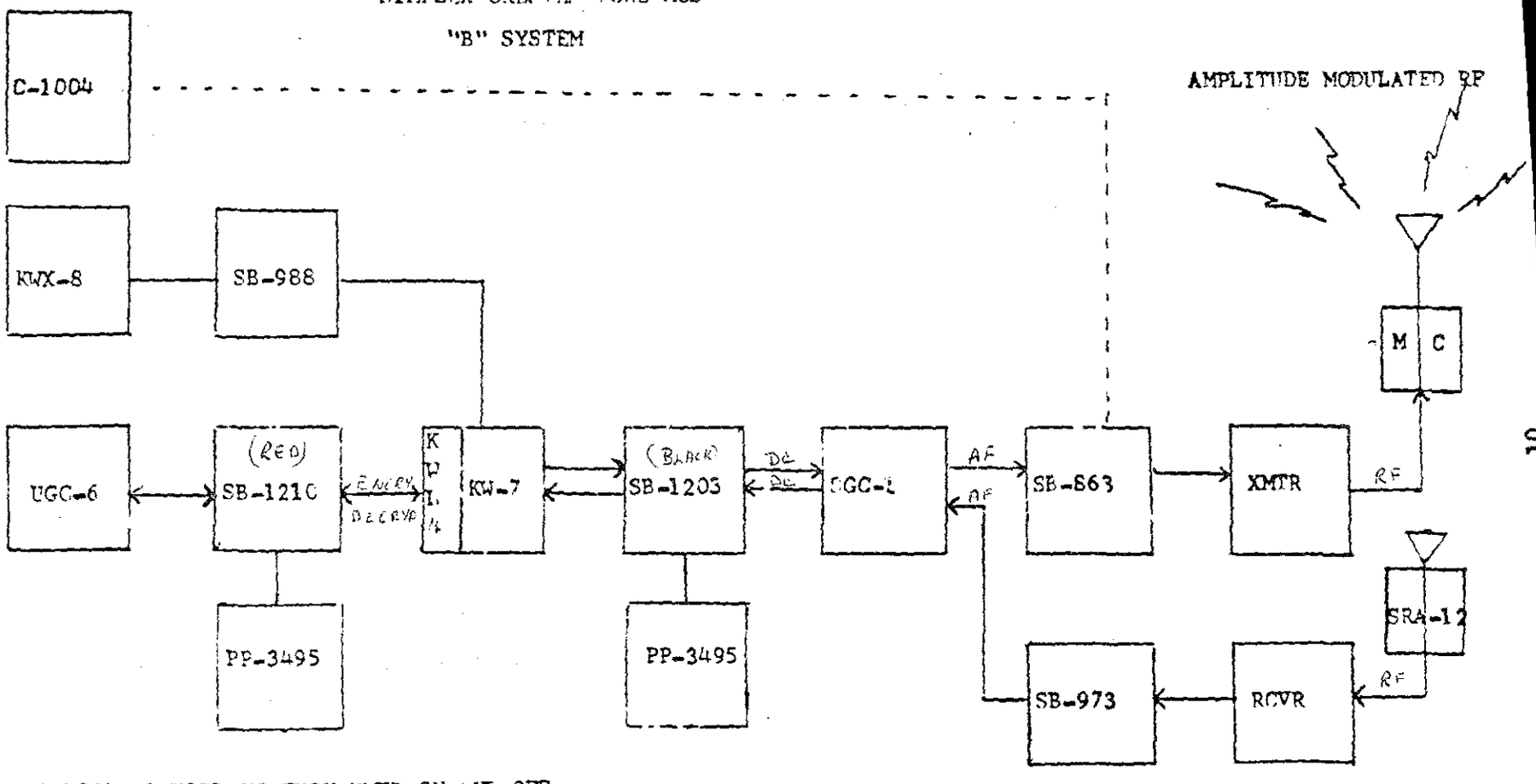


TYPE "U" SYSTEM
NON-SECURE WIDEBAND
VHF/UHF VOICE SYSTEM

CGPN
N-SHEET

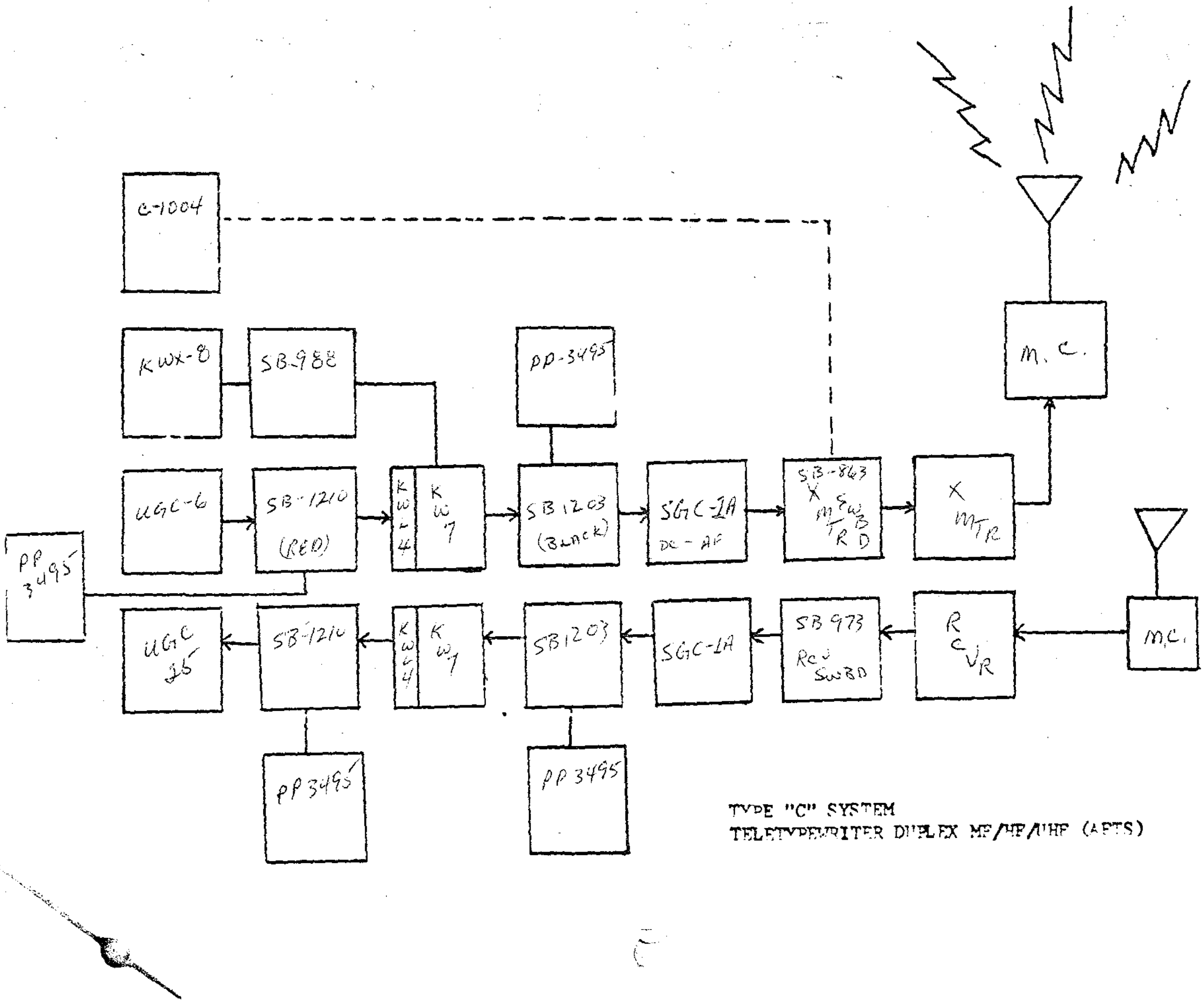
SIMPLEX CRESTES TONE MOD

"B" SYSTEM

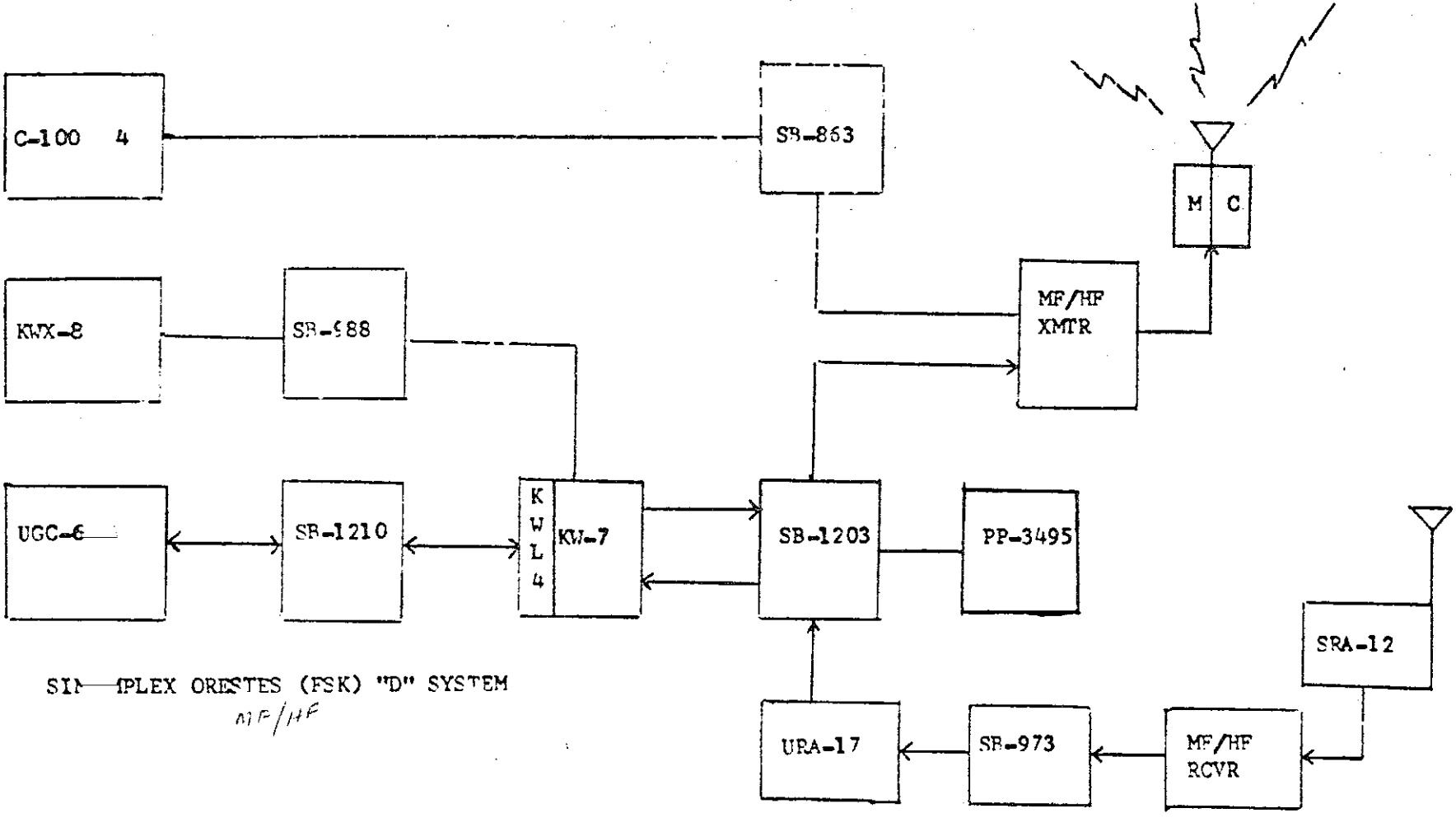


C-1004 IS USED TO TURN XMTR ON AND OFF.

10

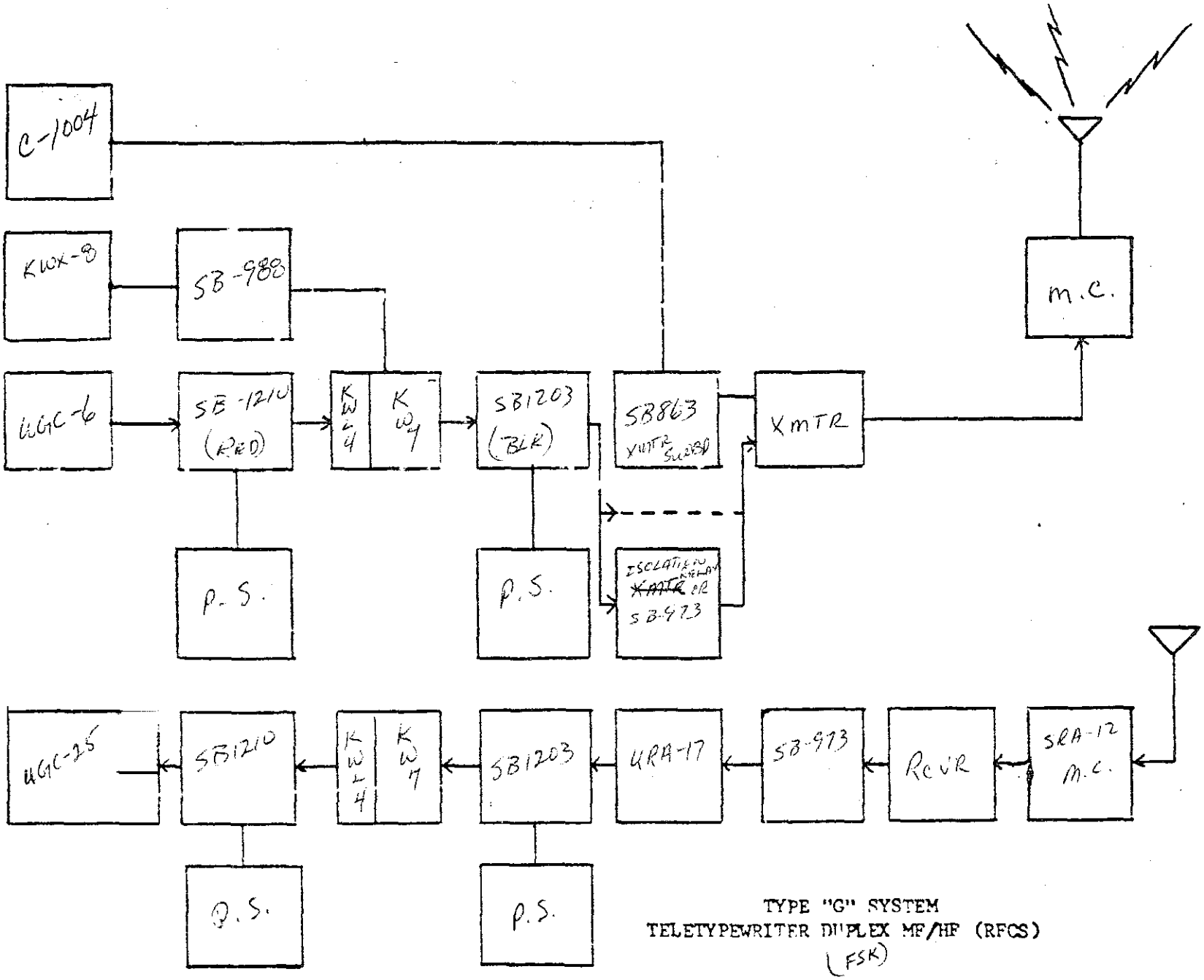


TYPE "C" SYSTEM
TELETYPEWRITER DUPLEX MF/HF/UHF (AFTS)



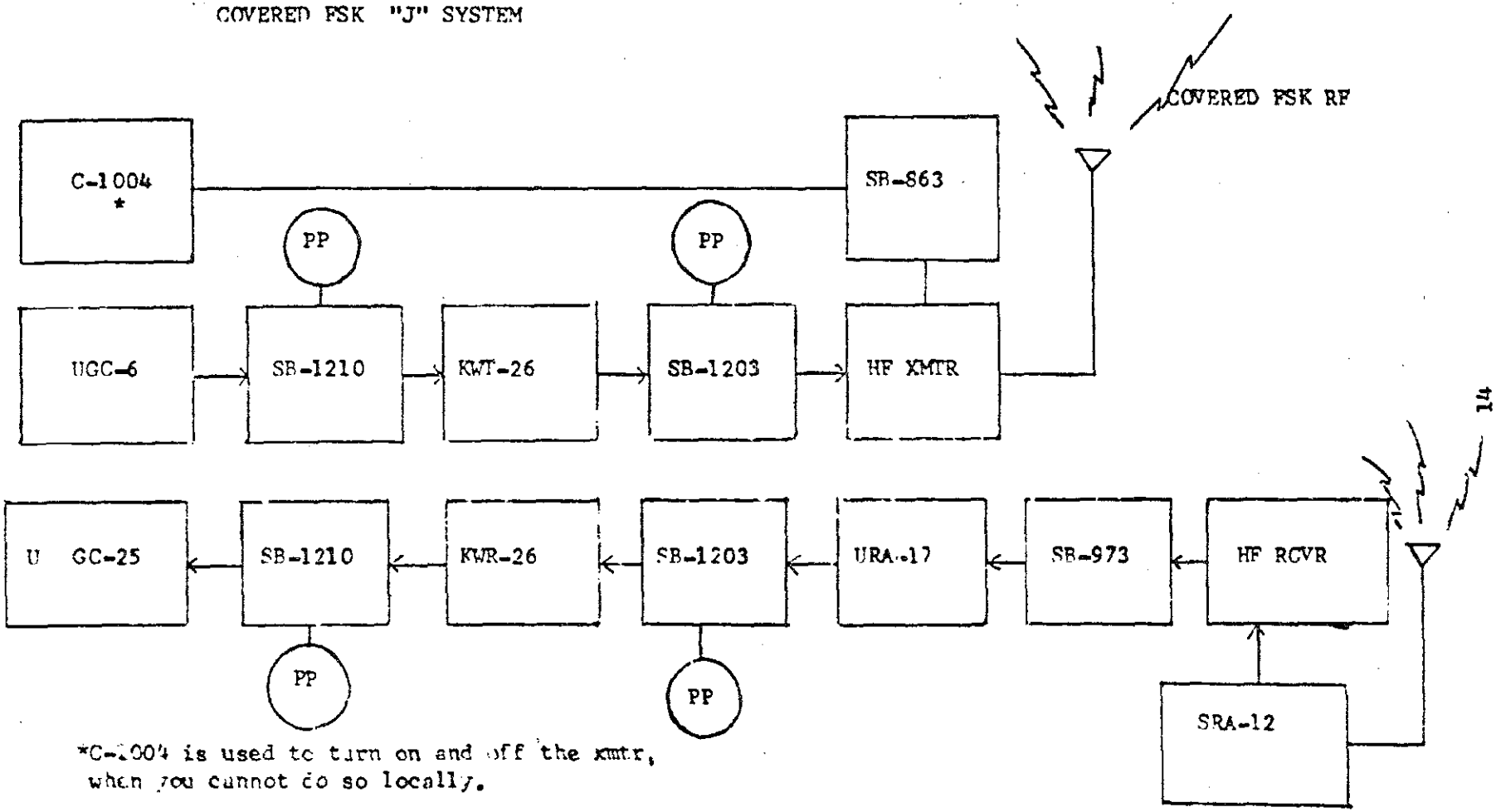
SIMPLEX ORESTES (FSK) "D" SYSTEM

MF/HF

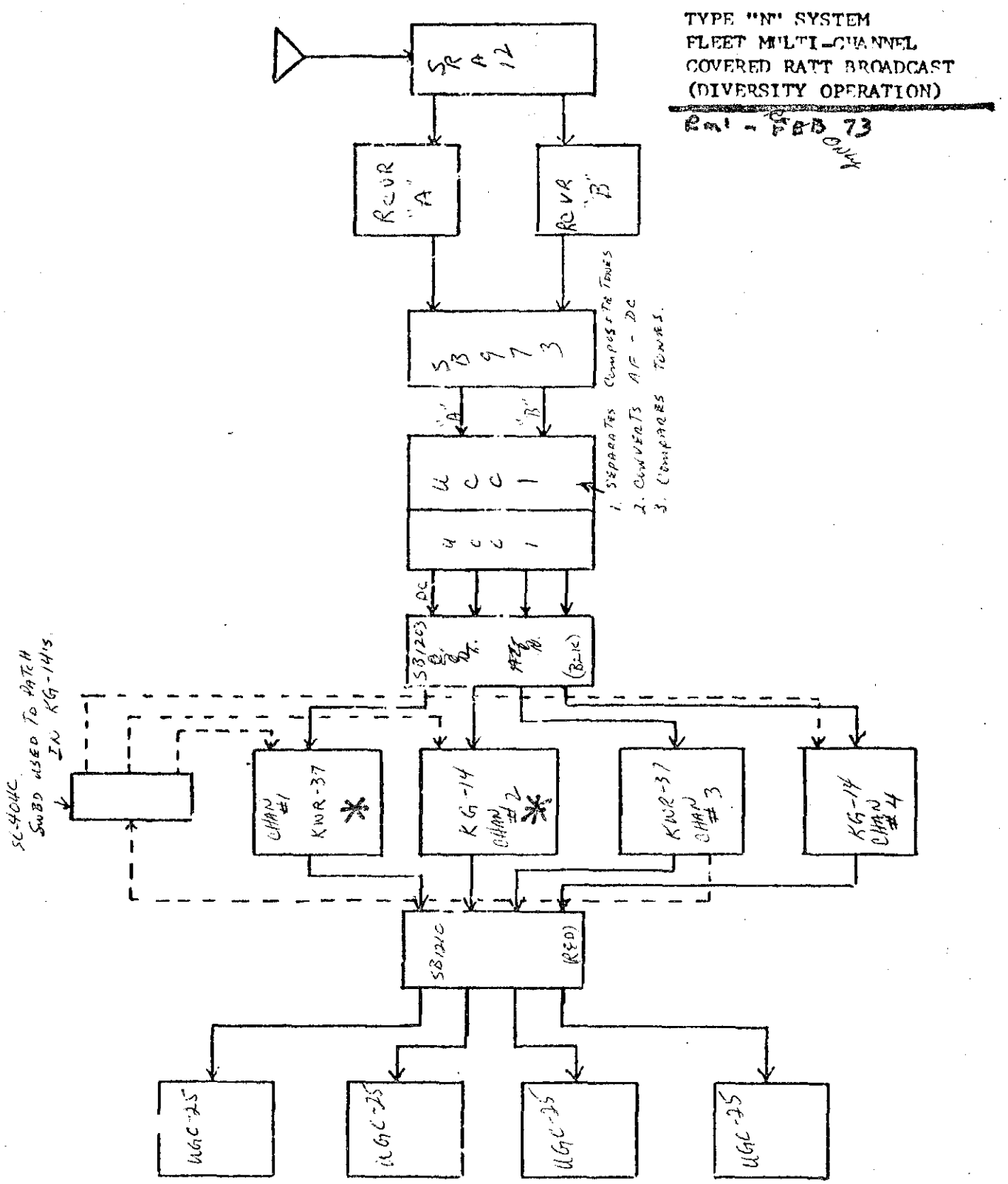


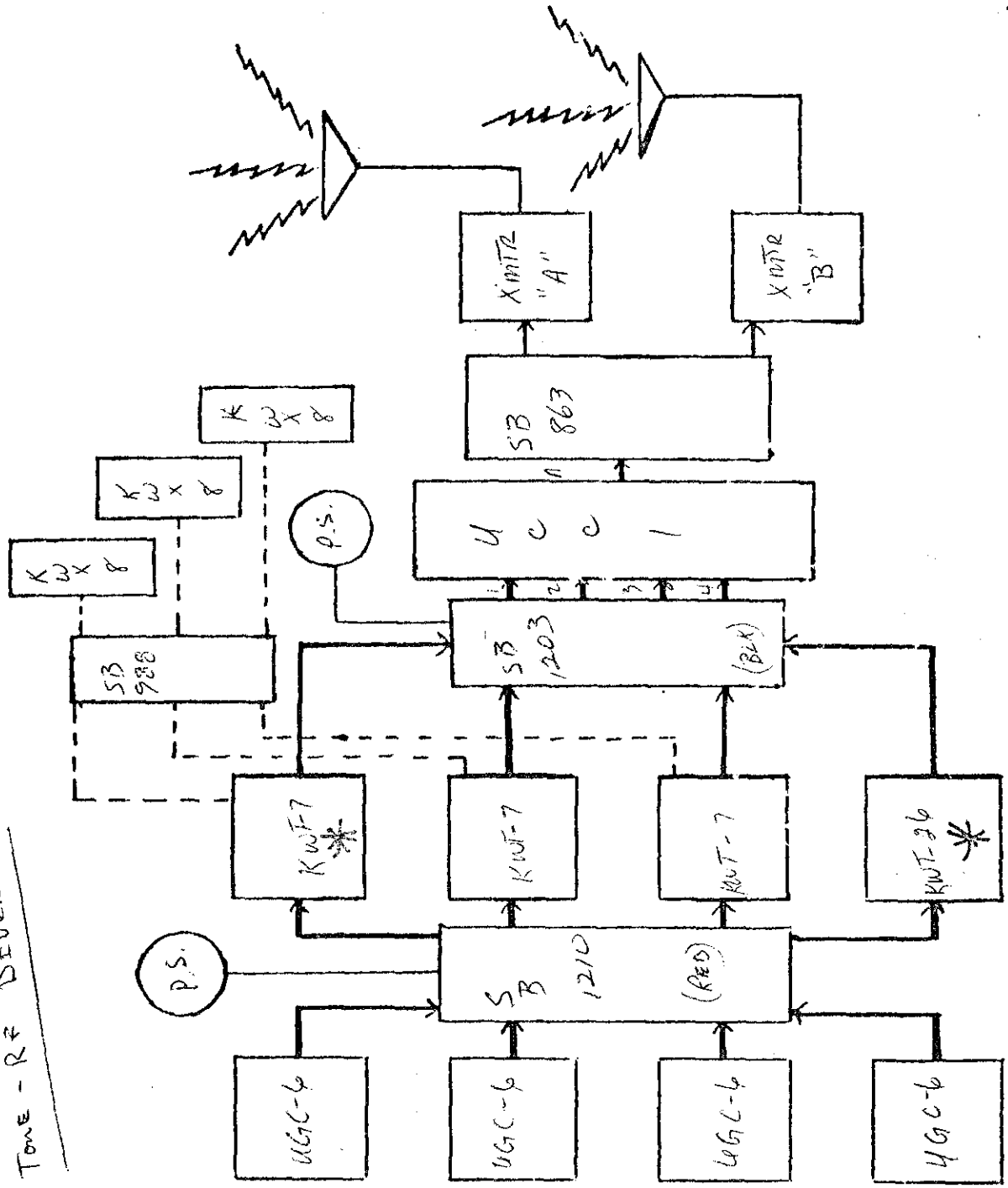
TYPE "G" SYSTEM
TELETYPEWRITER DUPLEX MF/HF (RFCS)
(FSK)

COVERED FSK "J" SYSTEM



*C-1004 is used to turn on and off the xmtr, when you cannot do so locally.

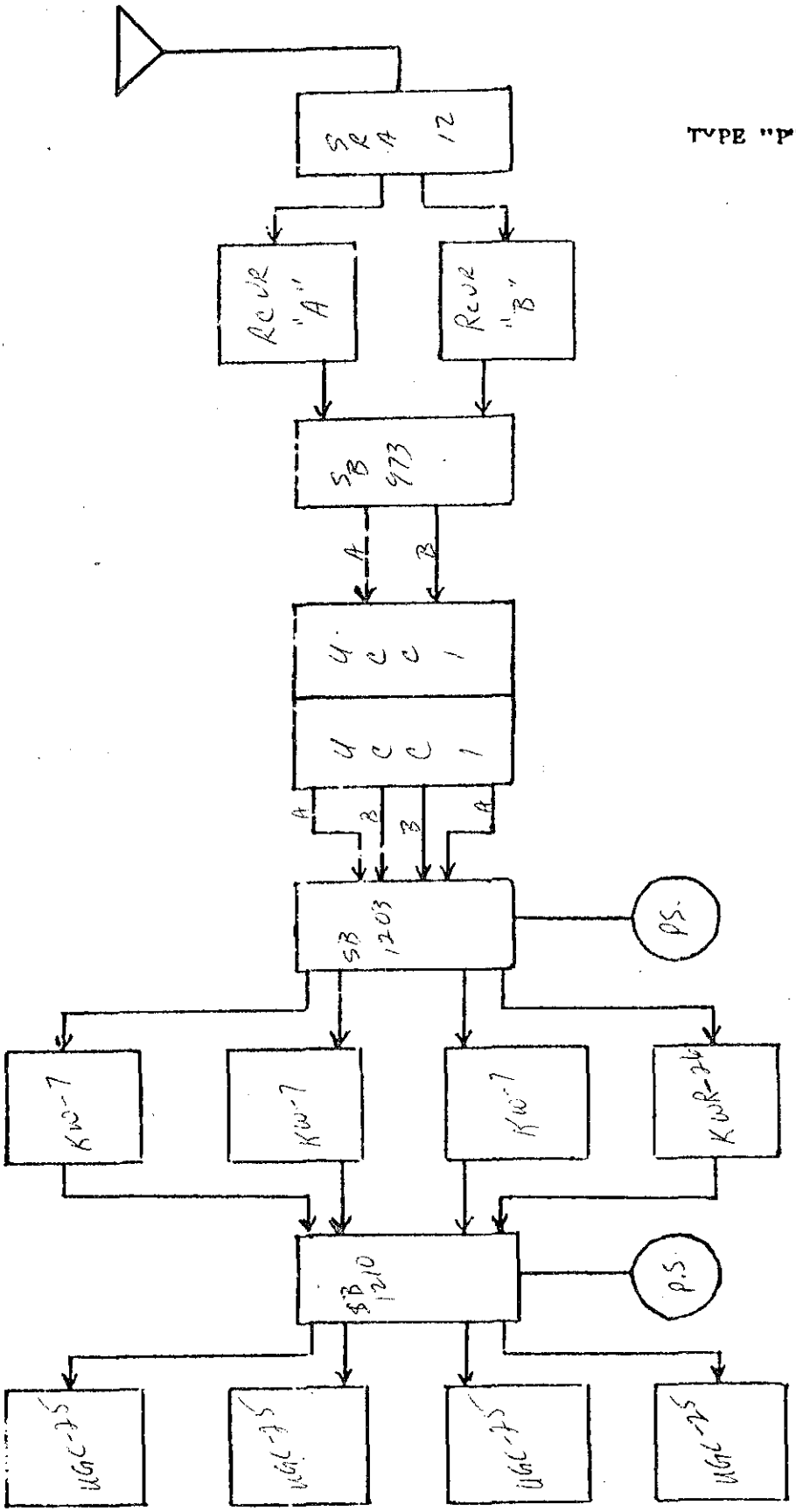

TYPE "N" SYSTEM
FLEET MULTI-CHANNEL
COVERED RATT BROADCAST
(DIVERSITY OPERATION)
Rev - FEB 73
SR A 12
RCVR "A"
RCVR "B"
SB 9 7 3
"A"
"B"
U C C 1
4 C C 1
1. SEPARATES COMPOSITE TONES
2. CONVERTS AF - DC
3. COMPARES TONES.
DC
SB/203
(BLK)
SC-404C
SWBD USED TO PATCH
IN KG-14'S
CHAN #1
KWR-37
KG-14
CHAN #2
KWR-37
CHAN #3
KG-14
CHAN #4
SB/210
(RED)
UGC-25
UGC-25
UGC-25
UGC-25



MULTICHANNEL
POINT-POINT
TONE - RF DIVERSITY

TYPE "P" SEND Rev - FEB 73

TYPE "P" RECV


SRA 12
Recvr "A"
Recvr "B"
SB 973
A
B
U C C 1
U C C 1
A
B
B
A
SB 1203
P.S.
KWR-7
KWR-7
KWR-7
KWR-26
SB 1210
P.S.
UGC-25
UGC-25
UGC-25
UGC-25

SYSTEM DESCRIPTIONS

I. VOICE SYSTEMS

A. TYPE "S" SYSTEM
1. Secure narrowband MF/HF voice system.
2. Can be used in full duplex mode or push-to-talk simplex mode.
3. Formerly known as "Steamvalve".
4. Transmitters and receivers used in this system must be extremely accurate and stable (synthesized).
5. Frequency error within the entire system must not exceed ± 2 Hz.
6. Diversity reception should be employed, if feasible.

B. TYPE "R" SYSTEM
1. Secure wideband VHF/UHF voice system.
2. With one KY-8, simplex operation can be accomplished.
3. Normally utilized with UHF transceivers capable of BROADBAND modes (URC-9, SRC-21, SRC-20, SRC-27) or with VHF (FM) transceivers (VRC-46, SRC-25).
4. Formerly known as "Romeo-8".
5. Provides line-of-sight secure voice communications in a local area (ship/ship, ship/shore, ship/air, and air/ground).
6. Being installed in many ships, will eventually replace all ship/ship VHF/UHF tactical communication circuits.

C. TYPE "Y" SYSTEM
1. Non-secure narrowband MF/HF voice system
2. Provides voice radio communications, simplex or duplex, for ship/ship, ship/shore/ship, shore/shore, ship/air, and air/ground.
3. Primarily for SSB emission, although can be used for AM emission.
4. Configurations can be various, depending on type of installation and need.

D. TYPE "U" SYSTEM
1. Non-secure wideband VHF/UHF voice system.
2. Provides voice radio communications, push-to-talk simplex, for line-of-sight communications utilizing existing transceivers.
3. Widely used now in shipboard tactical communication circuits, field tactical units, harbor circuits, SAR missions, etc.
4. Installations various depending on required use, type of vessel, or capabilities.

II. RECORD SYSTEMS

A. TYPE "A" SYSTEM.
1. Secure single channel radio-teletypewriter system.
2. Simplex AFTS RATT (MF/HF/UHF) A3 emission (AM).
3. Utilizes AN/SGC-1 tone terminal equipment.
4. KW-7 crypto covered.

B. TYPE "B" SYSTEM.
1. Identical to the Type "A" system except for the teletype equipment. The "A" system uses an AN/UGC-20 with page printer and keyboard. The "B" system uses an ASR set, AN/UGC-6K with page printer, keyboard, perforator, and reperforator.

C. TYPE "C" SYSTEM
1. Secure single channel RATT system.
2. Full duplex AFTS RATT.
3. Can be used on MF/HF/UHF equipment capable of A3 emission.
4. Used for ship/ship, ship/shore/ship RATT circuits.
5. Utilizes 2 AN/SGC-1 tone terminal equipments.
6. KW-7 crypto covered.

D. TYPE "D" SYSTEM
1. Secure single channel RATT system.
2. Simplex FSK (AFTS/RECS) RATT.
3. Used only in the MF/HF range.
4. Primarly used for submarines, although can be used for non-NFDS ships capable of, or required to receive LINK-14 information.

E. TYPE "E" SYSTEM
1. Secure single channel RATT system.
2. Full duplex FSK (AFTS/RECS) RATT.
3. Used only in the MF/HF range.
4. Most common configuration for ship/shore Itinerant Orestes circuits.
5. KW-7 crypto covered.

F. TYPE "P" SYSTEM
1. Secure multi-channel RATT system.
2. Normally set up as a full duplex system.
3. Used in the MF/HF range.
4. Provides the command with rapid, secure point-to-point communications, and/or full period terminations for ship/shore/ship communications.
5. Utilizes multiplex techniques using VFCT (DCC-1) equipment.
6. Consists of 2 or more teletype channels.
7. KW-7 or KW-26 crypto equipment can be used or any combination of both.
8. One channel (generally channel 1) reserved for an "orderwire" channel.
9. Transmitters and receivers must be synthesized.

G. TYPE "N" SYSTEM
1. Fleet secure multi-channel RATT broadcast system (MULCAST).
2. Half-duplex (receive) system.
3. Reception in the LF/MF/HF/UHF ranges.
4. LF/MF/HF receivers must be synthesized.
5. Primary method for delivering record traffic to a large number of ships operating in broad ocean areas.
6. Configurations are various, depending upon ships' type and its mission, operational requirements and available equipment.
7. For the channel designators and their use, refer to page 20.

MULCAST DESIGNATORS AND USE:

CHNL	DESIG	USE
1	ASW	U.S. Fleet. May be used for, but not limited to ASW information.
2	SPC	Special purpose. To be assigned by CNO. Assignment authority may be delegated to Fleet Commanders in Chief.
3	ALD	U.S. Fleet and Allied. Use will be extended to Allied Navies when necessary.
4	USN	U.S. Fleet. U.S. traffic only unless specifically directed otherwise by CNO.
5	NSC	Nuclear Strike Coordination.
6	OPI	Special Intelligence. For ships having SECCOM DIV'S on board.
7	HIC	Fleet High Command.
8	MET	Meteorological. For ships having WXDET'S on board.