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MULTICHANNEL DISPLAY SYSTEM EXPANSION

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AGS DIVISION TECHNICAL NOTE

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Introduction

The Operations CATV portion of the Multichannel Display System will be expanded to handle additional data inputs. When originally planned there was no apparent need for Operations CATV distribution in the EAO buildings. However, system experience over the past two years has shown that the lack of Operation CATV in the EAO buildings has limited operational flexibility and video quality. Therefore, a dedicated CATV cable will be installed in the EAO buildings to form a Operations CATV Reverse Trunk. This cable will be the first phase of an anticipated three phase system expansion. The other phases are: phase II - AGS/ISA Injection, and phase III - AGS/ISA Data Exchange.

Phase I - Operations/EAO Reverse Trunk

Construction of the first phase, Operations/EAO Reverse Trunk will start this year. Figure 1 is a functional diagram of the trunk cable. This reverse trunk cable will not be directly connected to the existing Operations or Users CATV cable. If information on the Operations/EAO Reverse Trunk is to be sent out on either Operations of User CATV the demodulated signal will be used to modulate a channel on the desired CATV cable.

Cable taps will be provided at the flag target stations only. Initially only six flags positions will implemented, for example,A,A',B,B', and C'. This should result in improved picture quality of the flags. Three additional channels have been allocated for future expansion. Table 1 is a preliminary listing of channel assignments. Demodulators will be located in the SWIC equipment rack in the CATV headend (Building 911B).

Phase II - AGS/ISA Injection

A futher extension of the Operation/EAO Reverse Trunk will be required for the

testing and operation of the AGS-ISA injection line. Fifteen flag cameras will be provided for the W,X, and Y lines. Tentatively they have been allocated five each per line. Video from the cameras will be remotely switched, as desired by the MCR operators, to three CATV RF-modulators will he housed in the Injection Power Supply Building. Although fifteen flag camera will provided at this time, the system is expandable by adding additional cameras and a second fifteen position switcher, allowing up to thirty cameras. Figure 2 is a functional diagram of the AGS-ISA Injection Trunk.

The coaxial cable will be run in cable trays on top of the injection line berm. The tray system will be an extension of the trays on the U line berm. A CATV line extender amplifier will required to make up cable losses and injection losses into the Operations/EAO reverse trunk. This amplifier will be located in the EAO building and powered from a power supply in the injection line power supply building.

Three RF-demodulators in the building 911B headend will provide the selected baseband video signals for the rack-mount triple monitor in the MCR injection console. Three 15-position push-button switch banks will be located under the three monitors for remote video selection. This will give the MCR operators complete freedom in selecting the flags to be observed. Remote 3X15 video switch control can be via a Data Con channel or a hard wire control cable.

Phase III - AGS/ISA Data Exchange

When ISA in operational, a data exchange between ISA and AGS will be required. Both control rooms, ISA and AGS, will have to be kept informed of the status of the other machine. AGS will have to inform its experimental users when it will be required to inject into ISA, length of time required, etc. Figure 3 illustrates a possible interconnection method for this data exchange.

A mid-split cable, providing 5 to 107 MHz transmission in one direction, with 174 to 300 MHz transmission in the other direction, will connect the ISA service building to the Injection P.S. buildings. Figure 3 is a function diagram of the AGS-ISA Trunk. The AGS-ISA Injection Trunk will have to be converted to a sub-split system. Sub channels at 5 to 30 MHz will be used for AGS data channels to the injection PS building, while data back to AGS will on the 50 to 300 MHz channels.

Signal Processors will convert the AGS-ISA trunk channels to AGS-ISA Injection Trunk channels. A break in the AC/DC ground will be provided to prevent ground loops between AGS and ISA.

The cable run between the ISA service building and Injection PS building and/or AGS building 911 has not been determined as yet. Therefore the number and location of CATV line extender amplifiers has not been determined. Cable trays along the injection line and ISA berms in one possible path, while conduit between the

Injection PS building and the ISA service building in another possible path.

The above discussion of the phase III equipment is considered to be very tentative, and is presented as one possible solution. Finalization of the AGS/ISA interfact will have to wait for finalization of system requirements.

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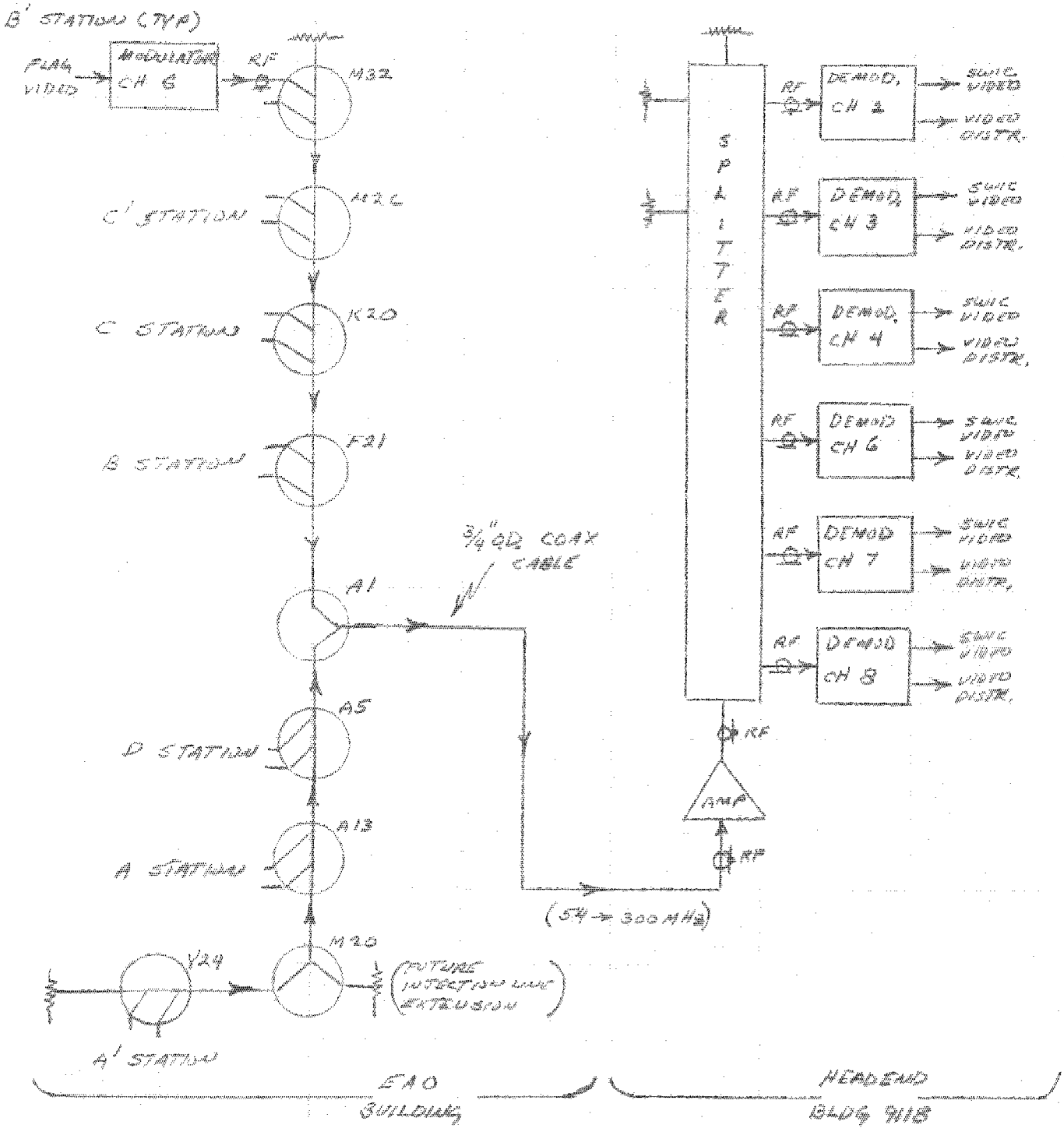
Table 1

Operations/EAO Reverse Trunk
Channel Assignments

Channel Number	Information transmitted	
T8	AGS Status 1	Reserved for information transmission AGS to ISA
T9	AGS Status 2	
T10	not required	
T11	Video Tape Program	
T12	not used-Guard band	
T13		
T14		
2	Flag video #1 (A flag)	
3	Flag video #2 (B flag)	
4	Flag video #3 (C flag)	
5	Reserved for flag video #4 (D flag)	
6	Flag video #5 (A' flag)	
7	Flag video #6 (B' flag)	
8	Flag video #7 (C' flag)	
9	Reserved for flag video #8 (D' flag)	
10	Reserved for flag video #9	
11	Reserved for AGS/ISA injection flag video	
12		
13		
J	Reserved information transmission ISA to AGS	
K		
L		
M		
N		
O	Available for expansion	
P		
Q		
R		
S	Reserved for RF/TV test	



*** COLUMN NUMBER

DIRECTIONAL TAP

*** COLUMN NUMBER

3 dB SPLITTER

FIGURE 1

OPERATION/EAO REVERSE TRUNK

FUNCTIONAL DIAGRAM

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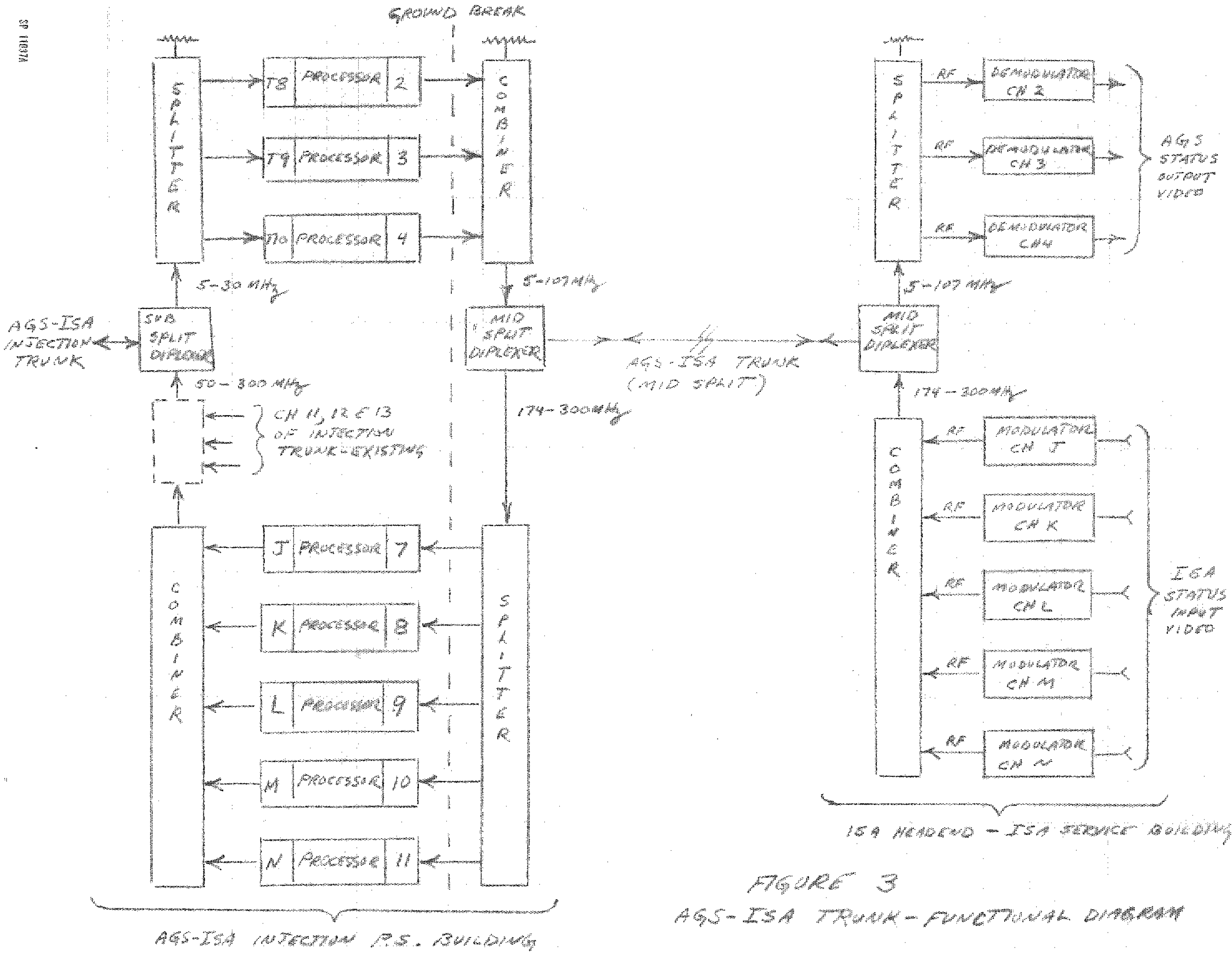

FIGURE 3

AGS-ISA TRUNK - FUNCTIONAL DIAGRAM

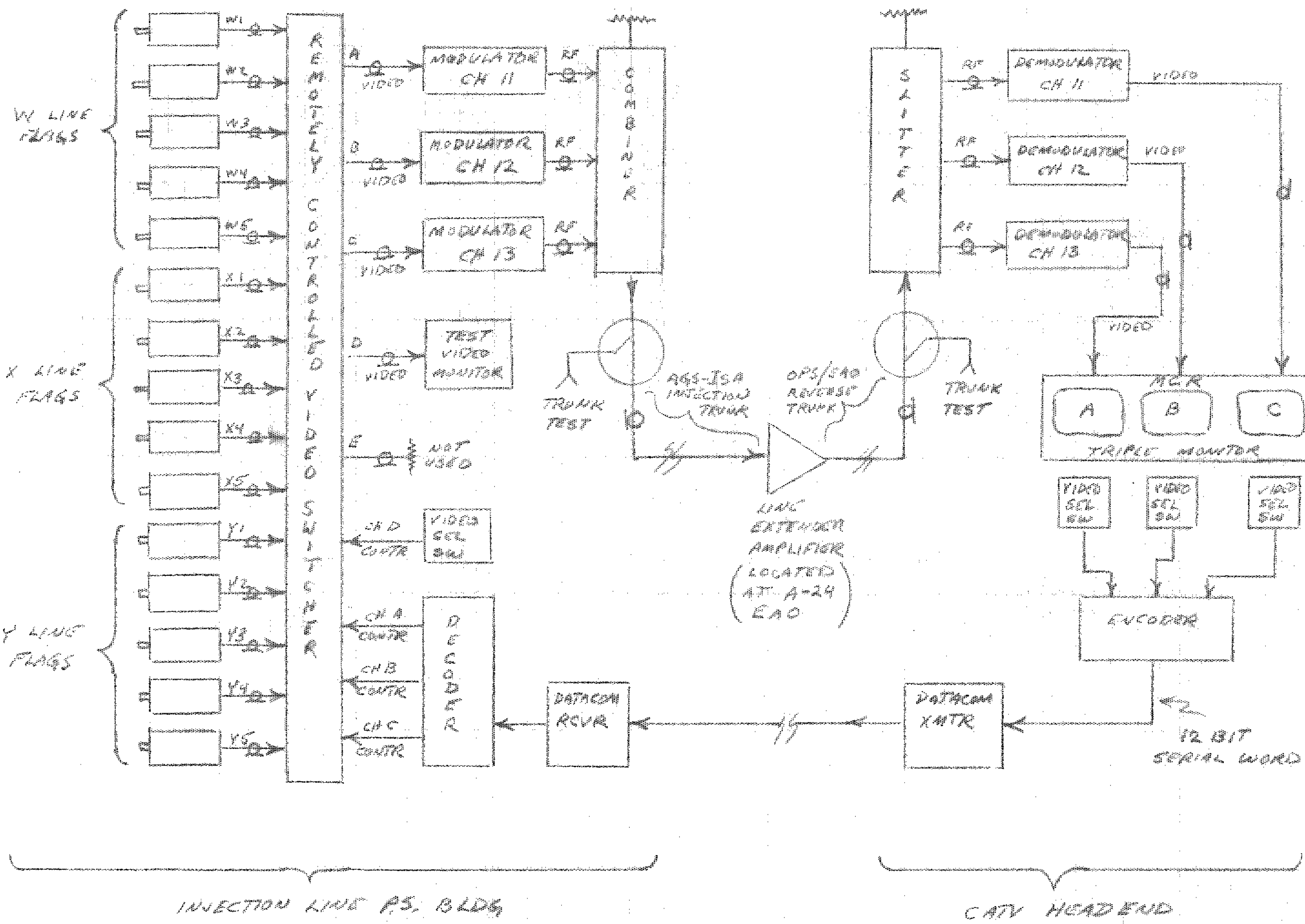

FIGURE 2
AGS-ISA INJECTION TRUNK - FUNCTIONAL DIAGRAM

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